Comment ID	From Page	From Line	To Page	To Line	Comment	Response
68987	0	0	0	0	IA: No review code link available on Climatic Impact Drivers pages [Seth McGinnis, United States of America]	Noted. The functionality of the CID is much more limited and there is no need to link to a particular configuration in order to provide context information for a review comment
68989	0	0	0	0	IA: It's not obvious how to get back to the "main" maps view if you click on one of the links at the top of the page (About | Instructions | License | Climatic Impact Drivers). Eventually I figured out that you can click on the IPCC logo or the (much smaller) "Interactive Atlas" link, but I was really expecting it to be with the rest of the links. I recommend moving the Interactive Atlas link from the to left to the first item in the list of links at the top right. [Seth McGinnis, United States of America]	Taken into account. This has been taken into account in the final design.
69019	0	0	0	0	IA: Currently the Instructions link at the top of the page gives instructions to reviewers. I presume that the final version will have instructions on how to use the atlas. I think these instructions sould include a detailed description of the five regional analyses, especially how to read the plots. (I.e., what different colors and symbology mean.) [Seth McGinnis, United States of America]	Noted. The instructions page was intended for review purposes. This has been removed in the final version and a user guidance has been included to describe the functionalities of the Interactive Atlas and the products displayed.
69031	0	0	0	0	IA: Language localization (EN / ES toggle, upper right) is not currently working on About, Instructions, etc. [Seth McGinnis, United States of America]	Noted. This possibility has been included in the design of the Interactive Atlas and the actual implementation will align with the translation timeline for the WGI report.
69055	0	0	0	0	IA: There are no review links for the support pages (About, Instructions, License, and Climatic Impact Drivers). This is probably a known bug, but I thought I'd mention it for the future. [Seth McGinnis, United States of America]	Noted. Review links are only provided for the interactive products. The static pages can be reviewed including the comment directly.
69057	0	0	0	0	IA: I think many users would benefit from having a view history, which would allow you to go back to what you were looking at previously (at least within the current session). It may be well outside the range of what's feasible, but if it's relatively easy to implement, I'd encourage adding it. [Seth McGinnis, United States of America]	Rejected. This has been considered but there was no easy way to implement this functionality, so we prioritized other tasks.
69059	0	0	0	0	IA: Overall, the Interactive Atlas is an amazing achievement. The design is sound, and it provides information that can be of use to policy makers, even at the local scale. (For example: a city manager might want to know the increase in number of days with max temperature above some threshold at mid-century to inform infrastructure investments. It takes a bit of fiddling and experimentation to extract that information from the IA, so it's not utterly trivial to do, but it is leaps and bounds easier than the tools that have been previously available.) I have made many comments about improvements to be made to the IA, but that should not detract from the fact that this is a huge step forward. Congratulations to the developers! [Seth McGinnis, United States of America]	Noted. Thank you for all the constructive comments provided. They are of much help.
69061	0	0	0	0	IA: There are many derived variables (ETCCDI indexes like Frost Days, PR99, etc) that are only available for the CMIP5 and CMIP6 datasets. I assume that that's because they are still being prepared, and that they will be included in the final version of the IA. These are some of the most valuable information for impacts users, so I recommend giving that data preparation work a high priority. [Seth McGinnis, United States of America]	Accepted. Most indices are now displayed for all the suitable datasets (including CORDEX) in the final version.

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85191	0	0	0	0	I only had a quick look at this but it was not obvious to me how to change the colour scale on contour plots, which would seem a useful functionality (although obviously technically more challenging) [Patrick Hyder, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Colour scales can be changed by the users in he final version.
105137	0	0	0	0	the atlas coud contain a figure figures showing paleoclimatic changes on the same scale as future changes, at least for the global maps. This would be giving an illustrative context to the projections which are the core of the Atlas. Paleoclimatic results from PMIP would also strengthen relationships such as shown on Figure Atlas.20 [Masa KAGEYAMA, France]	Accepted. Paleoclimate periods have been added to the final version.
106457	0	0	0	0	First off, excellent chapter. Congratulations to the chapter team! [Lennard Christopher, South Africa]	Noted. Thank you.
110931	0	0	0	0	On the order of the Regions in Chapter 5. It would make more sense to have North America follow the other Americas, and not have Europe awkwardly between them.. Particularly since they are physically connected, and in this case split Mexico (according to coloring in figure 1, and discussion of overlapping regions between chapters). Therefore, I suggest changing the order of these sections. [Melissa Bukovsky, United States of America]	Rejected. The regions are ordered alphabetically to be consistent with Ch 12 and the relevant WG II chapters to ensure consistency across the report and WGs.
45085	0	0	200	70	GUIDANCE: The use of the interactive Atlas is thoroughly described in section 7, however, the description is not reader- and user-friendly. As many users will not be scientists, a more compact and vivid guidance would be useful. All the other criteria are well-addressed, save for DESIGN. [Christophe Deissenberg, Luxembourg]	Accepted. A new section "user guidance" has been introduced in the Interactive Atlas application to properly describe the use and limitations of the interactive Atlas. A guided tour has been also implemented.
45087	0	0	200	70	DESIGN: I fear that many potential users will not make the effort needed to understand the unnecessarily complicated and confusing interface, which does not follow principles of good and efficient design. [Christophe Deissenberg, Luxembourg]	Noted. A new section "user guidance" has been introduced in the Interactive Atlas application to properly describe the use and limitations of the interactive Atlas. A guided tour has been also implemented.
64675	0	0	300	70	Followinf on the paleoclimate figure comments, the author could consider adding the major simulated paleoclimate periodes in the atlas. It is not of direct use for most stakeholders, but help people to realise that projected changes are very large in most regions and even larger than past climates. It is also a way to better understand the connexion between climate and environemental changes and put into context the current changes rate. [Pascale Braconnot, France]	Accepted. Paleoclimate periods have been added to the final version.
55417	0		0		We have some concerns about the detailed level of review that the Atlas will receive. Our internal government process did not generate expert comments on the Atlas. This may in part be a result of the perception that the Atlas is, like in the AR5, an Annex rather than the equivalent of a chapter. We would therefore urge that the WG-I Bureau and TSU insure that sufficient internal expert review is performed on the Atlas content prior to finalization. [Nancy Hamzawi, Canada]	Taken into account. All Atlas section authors were actively involved in cross-chapter teams ensuring consistent, coherent and complementary assessment of regional changes and close scrutiny applied by the TSU and Bureau and as part of the internal review of FGD chapters.
17159	0				Does the Atlas wish to include local sea-level rise and extreme sea level projections from chapter 9? [Robert Kopp, United States of America]	Taken into account. Information on sea level has been included in the FGD version.
24447	0				In many places, one sentence is appended with many references. As this is not a review, cite the most important rfeferences that are needed for assessment, such as maximum 3 references for each statement. [Akio Kitoh, Japan]	Taken into account. The regional assessments has been streamlined and focused to ensure clear assessment statements with confidence language backed up by relevant literature.

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32225	0				IA: We believe that the Interactive Atlas is an innovative product, which can be very useful in disseminating and sharing IPCC data to as many people as possible. Although there is still room for improvement, we believe it will be a useful product with relevant content (data and metadata). Nevertheless, we do not think that this Interactive Atlas is sufficiently user-friendly at the moment. We hope that it is not only intended for professionals, but that it can be used and understood by a large audience, including policy makers. For the moment, the lack of clarity and information does not allow anyone to understand this tool. We believe that anyone who has not read the detailed chapters should be able to use this tool and understand the data presented. [Eric Brun, France]	Noted. The new version of the Interactive Atlas includes now includes two levels of information: 1) regional information with observed and model data, 2) regional synthesis, with synthesis information for the different regions. This new structure facilitates users to access the relevant information depending on their interests.
32227	0				IA: We suggest adding an “i” in an informative box next to each big parameters to get a direct link until an explanation of what is moving under the different options. This would be useful especially for users (students, journalists, many of us, etc.) who need to quickly know the inputs of theirs results. For example in “DATASET”, a small box next to “MODEL PROJECTIONS” which explain briefly what are “CMIP5”, “CMIP6”, etc., their differences and a link “to get more detailed”. [Eric Brun, France]	Taken into account. This has been implemented for some of the elements (e.g. variables).
32229	0				IA: The current division of Europe into domains is not satisfactory, especially for the "Central Europe" domain. Indeed, it covers a domain with completely different climates. We strongly recommend to choose a new division which makes it possible to separate the Western part of Europe, which has a maritime climate, from the Eastern part which has a continental climate. If it is not the case, all graphs below the map, such as time series, referring to the current "Central Europe" would be completely meaningless and useless for France. We recommend to adopt in the Atlas the division mentioned in the first paragraph of 12.4.5. [Eric Brun, France]	Taken into account. The name of the Central European region is changed to Western and Central Europe to clarify the parts that it encompasses. In terms of the climate of the region there is a transition from a more maritime to a more continental climate but there is no clear boundary separating two sub-regions with completely different climate. Also, there are north-south gradients which need representing in the reference regions, and in this WCE is a transition region from a clear signal of projected precipitation decrease to the south and increase to the north. Further decomposition to include all of these details and other relevant details would result in regions too small to be adequately resolved in GCMs. Note also with respect to France, part of it is included, as would be expected, in the MED region. Finally, the text in 12.4.5 is no longer providing regional definitions.
32231	0				IA: Considering the innovative nature of this very useful product and that it is expected to evolve significantly, we recommend that this interactive atlas be subject to a second review. [Eric Brun, France]	Noted. The Interactive Atlas team (which is formed by Atlas authors and members of the TSU) has released an FGD version of the IA which has been made available during the review of the SPM, including also a survey to gain feedback.
32233	0				IA: When we log in to the website, the preselected dataset used is the CMIP5. It would be more appropriate to preselect the CMIP6 dataset. [Eric Brun, France]	Accepted. This has been changed in the final version
32235	0				IA: When we log in to the website, the preselected baseline is the one of the AR5 (1986-2005). It would be more appropriate to preselect the one of the AR6 (1995-2014). [Eric Brun, France]	Accepted. This has been changed in the final version

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32237	0				IA: When a region is selected and the time series appears, the map should be miniaturized. It should be centered and zoomed in the upper window as the user chose it before selecting. In particular, the caption of the map has to be visible even if the time series appears, and if the lower window is resized. [Eric Brun, France]	Noted. The caption is visible when dividing the window to include regional information. The information in the global map panel is maintained to facilitate the navigation from a to regional information.
32239	0				IA: On the time series plot, a line should be drawn in the current year, for more visibility. [Eric Brun, France]	Rejected. That would increase the complexity of the plots (since we currently display the reference periods and/or baselines); this information is already available in the x-axis.
32241	0				IA: The Annual Cycle plot should precise which year is presented, and the user should be able to choose the year he wants to see. [Eric Brun, France]	Rejected. The Interactive Atlas does not provide information on single years, but for climatic period (20- or 30- years)
32243	0				IA: A basic caption should appear in the Stripes plot, showing that the abscissae are the years and the ordinates are the models. [Eric Brun, France]	Noted. This has been fixed in the final version.
32245	0				IA: When we try to Export to PDF a screen, the document downloaded is a “*.pdf.png”. It should be corrected. [Eric Brun, France]	Noted. This has been fixed in the final version.
32247	0				IA: When we want to export a screen, only the plot is exported. The user should be able to choose between exporting the plot or exporting the map and the plot together. [Eric Brun, France]	Not applicable. Each panel has its own exporting options (maps and regional information) so there is no option to export the screen (or the whole window).
32249	0				IA: The user should be able to the map when the screen is duplicated. [Eric Brun, France]	Not applicable. No information on the required change is provided.
32251	0				IA: When we select two or more regions, it seems that the time series plotted is the average of the time series of the regions. It is not clear and should be mentioned. The method used for averaging should be mentioned, esp. if regions have different weights. [Eric Brun, France]	Noted. This has been fixed in the final version.
32253	0				IA: On the scatter plot, when we click on “Land mask”, an error occurs. [Eric Brun, France]	Noted. This has been fixed in the final version.
32255	0				IA: On the scatter plot, when we try to set the Y Axis Variable to an Ocean value (“Oxygen”, “Surface Temperature” or “PH”) an error occurs. [Eric Brun, France]	Noted. This has been fixed in the final version.
32257	0				IA: On the scatter plot, the Y Axis Magnitude cannot be changed. [Eric Brun, France]	Taken into account. It has been fixed in the FGD version (the review code is disabled).
32261	0				IA: When we go on the “Climatic Impact Drivers” window, there’s a typo in all the words “confidence” (5 times). [Eric Brun, France]	Editorial – copyedit has been completed.
38989	0				The borders of the continents are hard to see, particularly with the colormaps used for precipitation. I think it would be good to make them a bit thicker and/or darker. [Clemens Schwingshackl, Norway]	Noted. The borders of the continents have been made more prominent (using different colours when hard to see)
38991	0				I would find it helpful if the Stripes would also contain a time axis. [Clemens Schwingshackl, Norway]	Accepted. A time axis has been added to the strip plots
38993	0				In the "About", "Instructions", "License"… tabs it would be helpful to have a direct link back to the ATLAS (bringing you back to the last selected plot). [Clemens Schwingshackl, Norway]	Accepted. This now opens in different tabs/windows.
39001	0				When the time series, annual cycle, scatter plot,… window opens, it hides the colorbar of the map. Maybe the colorbar could be shifted to some other place when clicking to get detailed information about a region? [Clemens Schwingshackl, Norway]	Rejected. When consulting regional information visuals, the window is split in two resizable parts and therefore it is difficult to dynamically redistribute elements.

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44115	0				Following is the excerpt from https://link.springer.com/chapter/10.1007/978-3-319-92288-1_10 explaining the impacts of air pollution for the HKH region which should be reflected in the text: “The levels of PM are very high in many cities in the region for which data exists, including Islamabad, Pakistan (Parekh et al. 2001) and Delhi and Kolkata, India (Gurjar et al. 2016). A large population in the region is exposed to air pollution that is higher than the WHO annual standard of 20 µg/m3 for PM10 and 10 µg/m3 for PM2.5 (WHO 2005). Putero et al. (2015) reported annual PM10 concentration of 169 ± 113 µg/m3 for Kathmandu during the year 2013. Kathmandu, Nepal has annual average PM2.5 concentrations of 49 µg/m3 in 2013, exceeding Nepal’s own 24-h ambient standard of 40 µg/m3 (http://www.who.int/phe/health_topics/outdoorair/databases/cities/en/).” [Lamin Mai Touray, Gambia]	Noted. This material is relevant to Ch 5 and has been passed to relevant Ch 5 authors for consideration.
44117	0				In terms of writing style, the paragraphs often constitute a bulky collection of findings from individual studies, from which it is difficult to extract the most important conclusions. We therefore recommend to adjust the structure of the Sections, for example by adding more subsections or paragraphs corresponding to each subregion within each region, in order to increase the readability and hence the usefulness of the Atlas. A more general problem of the Atlas is that findings are not compared enough to results of the other studies that are cited in the assessment. Finally, the use of confidence statements is missing for some regions; this should be revised so that their useage becomes consistent across the sections corresponding to the various regions. [Lamin Mai Touray, Gambia]	Taken into account. The regional assessments has been streamlined and focused to ensure clear assessment statements with confidence language backed up by relevant literature. Where relevant, more sub-division of the text and sections have been added to aid readability. Cross-chapter coordination has been undertaken to ensure consistency and coherence of regional findings across the report.
52611	0				IA: Fantastic tool, I think it is a great addition to the report [Gema Martínez-Méndez, Germany]	Noted. Thank you
70089	0				Because of the complexity of the definition of global average temperature and its dependency on several choices that can be made (e.g. GMST vs GSAT, blending of absolute temperatures vs anomalies, etc), it might be valuable for the Atlas to provide time series of Tglob using dfiferent estimates (GMST, GSAT; based on different model choices; including reanalyses; etc.). Note that an upcoming CA on our chapter and on the CC Box on this topic in ch2 (L. Beusch) could provide support for such analyses. [Sonia Seneviratne, Switzerland]	Rejected. We found it difficult to integrate this analysis with the existing functionalities in a way that provides added value with regards the current information in Chapter 2.
71599	0				The focus of this Chapter should be clarified in order to avoid redundancies with other Chapters. Some of the results are partially described in previous Chapters, so it is difficult to identify the added value of the results described in this Chapter and, in addition, the deep analysis included in this Chapter obscures the description, functionalities, motivation and objective of the interactive Atlas. [Sixto Herrera, Spain]	Noted. Chapter 10 (the first regional chapter) has included a description of the regional chapters and their scopes and links. This was agreed in the regional pre-LAM workshop.

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82391	0				At various points in the chapter, observed and projected trends of warming are compared with the global mean. Since land is warming/is projected to warm faster than ocean, it's likely that most land areas will warm faster than the global mean; it may be useful, if possible, also to compare warming in particular (land) regions with the global mean for land areas. [Blair Trewin, Australia]	Rejected. In the Atlas we follow the same analysis on climate dimensions as done in other chapters, so global warming levels are defined consistently with other chapters.
82475	0				Something of a gap in the assessment of observed temperature change is reporting of changes in region-wide averages. Numerous sections report published studies for individual parts (often individual countries) in their regions, but there is no systematic attempt to, for example, assess changes in regional mean temperatures over a set period using established global data sets (which should have sufficient spatial scale for this purpose). This could usefully be an additional table or similar. The major 'conventional' data sets should have sufifcient data to do this in most regions (albeit sometimes with large uncertainties) from the early 20th century to the present. [Blair Trewin, Australia]	Accepted. A summary of regional changes from global and relevant regional datasets where available is included in the regional sections.
84069	0				It would be helpefull for the reader to mention Chapter 2, when talking about modes of variability throuout the chapter [Marco Tulio Cabral, Brazil]	Noted. Information on modes of variability has been included and cross-references added in the Atlas where appropriate (including to the Technical Annex on MOV).
93811	0				IA: The About page only describes some functionalities and variables, but does not serve as a guide for users; a more concrete user guide, such as walk-through tutorial or video, can be used to let users know how to get the results they want and interpret them. Guidance on the interpretability should include warnings on issues that are discussed in the report, such as biases in the representation of some climate impact drivers or climate variables, limited coverage of observational datasets and their implications, but also the high ECS of some CMIP6 models. [Quentin Lejeune, Germany]	Noted. A new section "user guidance" has been introduced to properly describe the use and limitations of the interactive Atlas. Moreover, a guided tutorial has been included.
93813	0				IA: Overall, the concept of interactive atlas is very useful for climate scientists, policymakers and the wider audience, and generally those who want to easily access data or information about the IPCC report without having to read through the hefty report. [Quentin Lejeune, Germany]	Noted. A new section "user guidance" has been introduced to properly describe the use and limitations of the interactive Atlas. Moreover, a guided tutorial has been included.
93815	0				IA: A more detailed methodology section is missing; the method should be detailed for certain users like scientists, etc. [Quentin Lejeune, Germany]	Noted. Methodological information have been included in the "about" information. A new "documentation" section has been implemented to include links to methodological information provided in the chapters.
93817	0				IA: For different models, scenarios, and other climate science jargon, there needs to be links to the glossary where the terms are explained in more detail. [Quentin Lejeune, Germany]	Noted. When the report is published the online glossary will be linked to the Interactive Atlas.
93819	0				IA: Adding SSP1 1.9 scenarios shall prove very policy-relevant. [Quentin Lejeune, Germany]	Rejected. SSP1-1.9 is not included in the final version. The results can be viewed for different global warming levels (e.g. +1.5, +2) providing policy-relevant information.
93821	0				IA: The option to select and de-select certain models will be valuable. It should be accompanied with short explanations about the individual models, their respective characteristics and biases, in order to guide the user through the portal and help them best interpret the results. [Quentin Lejeune, Germany]	Rejected. The Interactive Atlas does not provide functionalities to represent sub-ensembles because this is not supported by the assessment done in the chapters.

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93823	0				IA: In addition to model/scenario selection option, some CIMIP6 scenarios with higher sensitivity should be marked or flagged with explanation. [Quentin Lejeune, Germany]	Noted. The Interactive Atlas allows identifying each particular model. Context information on different sensitivities is provided in the chapters.
93825	0				IA: Typo ("high confdence of increase") in the left bottom legend bar for the climate impact drivers tool. [Quentin Lejeune, Germany]	Editorial – copyedit has been completed prior to publication
93827	0				IA: No button to directly go back to the impact tool (landing page) from the climate impact drivers page. [Quentin Lejeune, Germany]	Noted. This has been redesigned in the FGD version.
93829	0				IA: Having it available in other languages than English can be useful. [Quentin Lejeune, Germany]	Noted. This possibility has been included in the design of the Interactive Atlas and the actual implementation would align with the translation timeline for the WGI report.
93831	0				IA: The climate impact drivers page needs a guide on how to intrepret the results. [Quentin Lejeune, Germany]	Noted. Guidance has been included.
93833	0				IA: Specfically, having both the AR5 and AR6 data present and comparable is very valuable. [Quentin Lejeune, Germany]	Noted. Thank you.
93835	0				IA: The climate impact drivers page can be extended with more information on drivers. [Quentin Lejeune, Germany]	Noted. This has been revised and extended in the final version.
102351	0				Interactive Atlas: Legend needs to be clearer providing details and explanations on the variables and the colour coding. [Philippe Tulkens, Belgium]	Noted. This has been revised in the final version.
102353	0				Interactive Atlas: The Atlas is user friendly, however, it could be improved by providing brief explanations for the datasets and model projections, scenarios available and variables. Many policy makers would not be familiar with model projections and differences between CMIP5 and CMIP6, perhaps not even familiar with the difference between models and observations, nor the definition of some of the variables. [Philippe Tulkens, Belgium]	Noted. A new section "documentation" has been included in the Interactive Atlas to provide information for users.
102355	0				Interactive Atlas: It could be helpful to include a bookmarking feature to compare and share views and avoid having to start again when trying to get to a certain view. (I didn’t find the feature). [Philippe Tulkens, Belgium]	Noted. The review code provides a permalink and a similar functionality has been included in the final version
102357	0				Interactive Atlas: The order of the “options” could be altered to show first variables and periods, as these will probably matter more to policy makers than the datasets. Datasets can come later with an explanation as to why there are a variety of dataset to choose from. [Philippe Tulkens, Belgium]	Rejected. We considered changing the navigation using variables in the first step but this implied a major redesign of the data model and was discarded. For instance, periods depends on the dataset (they are not the same for paleoclimate, observations and projections).
110275	0				The ES in many places feels like it oversteps into repeating substantive assessment findings made by many of the 12 underlying chapters and to muddy things further the statements often use a distinct uncertainty / likelihood language choice. The risk of vested interests playing spot the differnec is substantial. Repetition should be minised to the extent possible and where unavoidable strict comparability will need to be assured to avoid potential issues. [Peter Thorne, Ireland]	Taken into account. ES statements are now distinct from those in other chapters or consistent with them in the case of any necessary repetition.
110305	0				In general table and figure captions are far too detail light. The captions need to fully decsribe all critical aspects of the figure. Often things like references to sources or the long handing of acronyms is avoided. This reduces accessability. [Peter Thorne, Ireland]	Noted. Figures and tables have been updated and revised in the final version, together with captions.

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110307	0				As noted under separate cover the CRUTS product needs to be subsampled to only regions with an observational constraint. Other locations default to an annually repeating climatology which will cause significant biases. This is reflected in the CRU TS dataset paper. Similar caveats may pertain to GPCC. In addition CRUTS input station data are not necessarilly homogeneous which may negatively impact trend estimates (the same applies to GPCC) [Peter Thorne, Ireland]	Noted. The use of global observational datasets has been coordinated with Chapter 2, using the same masks for blanking data scarcity.
110309	0				In general there are insufficient specific throwbacks to relevant sections in earlier chapters where a reader amy find out more. As the Atlas builds upon the preceding chapters it should cite them far more and with greater sub-section level specificity so the interested reader can go and find out more much more easily than is presently the case. [Peter Thorne, Ireland]	Accepted. Links to preceding chapters have been include to provide links to information relevant to regions
110313	0				Atlas like a couple of earlier chapters habitually has a : after figure citations in very many places. Either all chapters or none should follow this convention. Personally I find such a convention off-putting. [Peter Thorne, Ireland]	Editorial – copyedit has been completed prior to publication
110317	0				How are warming levels relative to pre-industrial calculated and do they make use of the updated observational estimates arising from chapter 2? It seems like you should be explicit as to the methodology you have employed to determine the warming levels realisations here for reproducibility and traceability of teh assessment. [Peter Thorne, Ireland]	Noted. The calculation of warming levels have been coordinated with other chapters for the final version and details for reproducibility are included in the GitHub repository.
110323	0				Overall section Atlas 5 struggles to clearly differentiate itself from chapters 10 through 12 and could likely be shortened considerably with a greater reliance upon the underlying regional chapters to undertake the substantive assessment. I feel like I am reading the same thing with a slightly different taken often for the third or fourth time. It feels like analysis of observations, attribution etc. is not really what an Atlas should be doing and many of those aspects were already covered in 10-11-12 [Peter Thorne, Ireland]	Taken into account. Atlas is assessing changes in mean climate characteristics, while 10-12 are assessing extremes and CIDs. Coordination across the chapter teams has been set up to reduce duplication to a minimum
110327	0				Embedding of regional executive summaries within the text is not in keeping with other regional chapters that put all ES material up front. The treatment of regional summary material at ES level should be consistent aross the report as a whole. [Peter Thorne, Ireland]	Accepted. All ES material has been moved up front.
110335	0				In the regional sections previous findings from IPCC assessments segments should be expanded to also incorporate key findings from the underlying chapters which may help to reduce propensity for redundant assessment activity being performed and better integrate material. It also avoids giving the impression that the prior assessments form the starting point for your assessment. Your assessment should start from the basis of prior reports combined with key new knowledge assessments arising from the assessments performed in all 12 underlying chapters after all. [Peter Thorne, Ireland]	Taken into account. Previous findings section focused on the agreed remit of the Atlas assessment of mean climate change in the regions and consistency with other chapters ensured via engagement in the cross-chapter regional teams.

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110343	0				In the regional section there is an alatrming tendancy to undertaking very superficial analyses that are given definitively (as fact) and risk undermining not just the other regional chapters but several of the key findings arising from chapters 2 through 9. I started out calling some individually but this seems to be a feature and not a bug so to speak. The statements made in Atlas.5 need the same rigor as those in the underlying assessment and in many cases this isn't the case as the material is covered at a very high level and over-simplification is frequent. It is better to say nothing than to say too little I suspect in such cases. [Peter Thorne, Ireland]	Taken into account. Revised regional assessment sections contain clear assessment statements built on relevant literature and consistent with the findings of global and other regional chapters.
110353	0				There is a general issue arising in the regional analysis over the use of published studies that applies across all aspects but is particularly acute for the projection aspect. Without specificity as to which observations or models and what methods were used it is impossible to ascertain whether differences arise due to the models (or observations) used, true regional variations or differences in methodology. The risk is that this undermines the whole raison d'etre of the Atlas which is to provide a consistent set of materials for public and policymakers. This may be too radical a suggestion but I would completely dispense with trying to undertake an assessment of literature and rather focus upon what the Atlas presented observations, models and tools show here to support the provision of this information in a consistent form. I find the recourse to the literature which will use distinct sources of observations, models and methods actually to be unhelpful to the core aim of the Atlas here. [Peter Thorne, Ireland]	Rejected. It was agreed with the other regional chapters that the Atlas would include an assessment of mean climate change and model evaluation relevant to the regions.
110387	0				The Atlas has a tendancy to report precipitation trends in mm/decade - does that mean that they are providing decadal mean precipitation totals? If so that is an odd choice. If not then presumably these are decadal trends in monthly, seasonal or annual means in which case units require cahnging throughout accordingly to e.g. mm/yr/decade [Peter Thorne, Ireland]	Noted. The units, masks and results of observations have been aligned with those included in Chapter 2
110417	0				Why is the Atlas using EWEMBI which is some merge of station and reanalysis taht is esoteric, rarely used, and of unknown quality when it could instead use either ERA5 or ERA5-land which would be updated through present and is arguably higher quality and of far higher provenance and relevance to users / policymakers. ERA5 will be available in addition back to 1950 on the timeframe of redrafting. Use of ERA5 would be preferable in my view. [Peter Thorne, Ireland]	Noted. ERA5 and ERA5 bias adjusted (WFDE5) have been included in the FGD. The latter dataset is the new version of EWEMBI (bias adjusted ERA-Interim) and is used in the ISI-MIP initiative as observational reference. The use of this dataset is a valuable resource for the Atlas since it will facilitate handshaking with WGII.
110443	0				Mexico appears to be double counted. It shouldn't be covered in two regions and it’s the whole country being counted twice. This absolutely needs to be fixed. Climatically it probably makes more sense in the central America part. [Peter Thorne, Ireland]	Taken into account. Assessment of changes in Mexico reported in the Central America sub-section and Mexico only referred to in the N American section in the case of those climatic features (e.g. the N American monsoon) which also involve the US.
110485	0				Atlas tends to use GCM whereas most prior chapters use ESM. It would be good to standardise. [Peter Thorne, Ireland]	Taken into account. GCMs used where relevant (not all are ESMs).

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110489	0				The carribean is also double counted between central America and small island nations [Peter Thorne, Ireland]	Taken into account. The Caribbean changes assessed in the Small Islands section and relevant cross-references added in the Central America section.
110493	0				Why does 5.8 omit model assessment? [Peter Thorne, Ireland]	Taken into account. Model assessment added in FGD.
110495	0				North America and North Asia both have redundancies with the Artcic sector analysis at least as outlined. The Atlas needs to ensure that each region is only assessed once. [Peter Thorne, Ireland]	Taken into account. Redundancy in assessment avoided with Russian Arctic changes assessed in the Arctic section and not N Asia and changes in polar sections of N America assessed in the Arctic section and not in N America.
110527	0				Please ensure all figures are self describing (Titles, legends, axes, font sizes etc.) such that they could e lifted and used in an outreach or education setting. Many figures do not meet that need presently and thus require attention. [Peter Thorne, Ireland]	Noted. Figures have been updated and revised.
114749	0				In the reporting from the BOG during the closing plenary 5 june it was said that the Atlas could contain information about socio economic variables in the scenarios. That is an interesting option, and I suggest the authors contat the xWG scenario team members to discuss this. [Jan Fuglestvedt, Norway]	Noted. Socio economic data (population density and GHG concentrations) have been included in the FGD.
131323	0				IA. In the 'About' page, there is a link to the paper on Metaclip - it might be more pactical to link it to the actual tool (or provide both links). Otherwise, one might find a longer road towards it. [Hans Poertner and WGII TSU, Germany]	Noted. This has been fixed in the final version.
131325	0				The section on North America referes to the Köppen-Geiger classification system. It is somehow odd that this is the only region where this is used to describe key features. How useful/applicablel is this for other regions? For consistency and comparability, you might consider extending this to others, or not using it at all. [Hans Poertner and WGII TSU, Germany]	Noted. Providing context for the key climate features description was left to the discretion of the authors as there was no clear consistent approach appropriate relevant to all regional sections.
131327	0				IA. The Interactive Atlas is a great achievement and will surely prove very useful for many users, presumably mostly non-modeler scientists/scholars. In tune with the messages from section 6 on climate change communication, it may be good to start the text on the 'About' page, by making it clear who the targe audience of this tool actually is. [Hans Poertner and WGII TSU, Germany]	Accepted. The target audience of the Interactive Atlas is described in the documentation section of the Interactive Atlas.
131329	0				Section 6.1.6 provides arguments for expert elicitation processes in modeling. It would be relevant to provide an indication of where in the Atlas this has been applied. [Hans Poertner and WGII TSU, Germany]	Not applicable. This section has been removed
131331	0				IA. The graphs on (warming) stripes need some sort of legend to allow interpretation. [Hans Poertner and WGII TSU, Germany]	Taken into account. A legend has been included and the user guidance includes a description of this.
131333	0				IA. The Landmask button is a convenient feature to have around. But it is only visiible when opening the graph window, and it seems to be deactivated because after cliking it, the land mask remains after. [Hans Poertner and WGII TSU, Germany]	Noted. An explanation on this feature has been included in the FGD version (it uses only land gridboxes to compute the regional aggregated values).
131335	0				IA. IAf9mOuP When exporting the GeoTiff format, the system is giving me a file wih a png extension. When I manually change the extenssion to tiff, it works fine. The same applies to all other map views I tried. [Hans Poertner and WGII TSU, Germany]	Taken into account. This has been fixed in the FGD version.

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131337	0				IA. When exporting a GeoTiff, it would be better if the system atomaticaly exported two files, the regular one that is being exported now, plus a second one with the agreement/disagreement layers. Otherwise, reproducibility is not straight forward. [Hans Poertner and WGII TSU, Germany]	Noted. Export options have been revised.
131339	0				Minor suggestion. In all executive summaries, the first four statement paragraphs are currently presented in the order: warming (observed), precipitation (observed), warming (projected), precipitation (projected). A better flow may be achieved by presenting both aspects of warming first, and then both aspects of precipitation together. [Hans Poertner and WGII TSU, Germany]	Noted. The new executive summaries have been organized by variable as mentioned in the comment.
131341	0				Some of the excecutive summary statements end with references to maps. It is odd that within the Atlas chapter itself, this is not the norm across excecutive sumarries. Moreover, regional sections such as the one on Small Islands, dont have any map associated to it throughout the whole section. Authors are encouraged to further develop this connection, in consideration of the relevant arguments clearly laid down in section 6.1.5 on storylines and narratives. [Hans Poertner and WGII TSU, Germany]	Taken into account. Reference to maps included in ES statements where applicable and a relevant figure included in the Small Islands section (and its related cross-chapter box).
131343	0				IA. The Interactive Atlas is presented within the chapter as complementary tool, which feaures some, but not all content of the WGI Atlas - it may be convenient to add somewhere within the first lines of the 'About' page, a link to the final Atlas chapter (naturally, once published) for users to be made aware of and benefit form the full scope. [Hans Poertner and WGII TSU, Germany]	Noted: The links and references between the Atlas and the Interactive Atlas have been strengthened in the FGD.
132343	0				The Atlas and Chapter 12 should consider in more depth the work of the "Expert team on sector-specific indices" (ET-SCI, https://climpact-sci.org/about/project/), a WMO activity. It would be highly valuable if the Atlas could provide observed trends and projections of these sector-specific indices (https://climpact-sci.org/indices/), which could then inform the chapter 12 assessment. [Sonia Seneviratne, Switzerland]	Noted. The Interactive Atlas includes sector-specific indices assessed in Chapter 12.
132353	0				When first seeing the AR6 WG1 outline, I did not expect to see any assessments in the Atlas section. I also expected that observed and projected mean regional changes would be assessed in Chapter 10. Since the present scope was agreed by Chapter 10 and the Atlas, I have no problem with it, but it would be useful to start the Atlas' ES by explaining what its scope and role exactly is. For instance: "The Atlas documents observed and projected changes in climate indicators, in coordination with other chapters (chapters 4, 10, 11, 12, ..). In particular, it provides analyses and assessments of regional changes in mean climate. [...]" [Sonia Seneviratne, Switzerland]	Taken into account. The remits of the regional chapters have been discussed during the pre-LAM meetings and it has been agreed with regional chapters that the Atlas assesses changes in mean values. Chapter 10 includes a figure and description explaining the role of the regional chapters. We have also included an explanation of this in the Introduction of the Atlas chapter.

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132359	0				There was not enough time to coordinate the work of the Atlas and the Chapter 11 assessments. The Atlas could more strongly support the Chapter 11 assessment by providing analyses targeted at extremes assessed in Chapter 11 (e.g. expanding the scope of existing analyses and studies). However, we would expect such material to be in the form of maps in the Atlas and the text to be mostly located in Chapter 11. Cross-chapter teams on specific extremes including Atlas contributors will be built by chapter 11 to inform its assessment on observed and projected changes in extremes. [Sonia Seneviratne, Switzerland]	Taken into account. The remits of the regional chapters have been discussed during the pre-LAM meetings and it has been agreed with regional chapters that the Atlas assesses changes in mean values. Assessment material on extremes and CIDs has been moved to other chapters as part of the activities of the cross-chapter coordination teams.
132363	0				It seems that the Atlas is including a lot of valuable information on model evaluation, in particular at regional scale for mean climate. Could this information be summarized in the Atlas' ES? [Sonia Seneviratne, Switzerland]	Taken into account. The new ESSs include information on regional model evaluation.
130583	1	0	251	0	I only give one general comment here. Please more foucs on Atlas, not too ambious on assessment of regional changes. The delayed draft contents could not have chance for extensive review. Also, I notice we are still lack of high quality observation datasets. [Panmao Zhai, China]	Taken into account. The rationale for the regional sections to assess mean climate change and model evaluation over the regions was agreed in LAM2 as this material required inclusion in the report and no other chapter was prepared to take on a comprehensive region by region assessment of mean changes and model evaluation. That said, the Atlas text has been streamlined and focused on this core assessment role. Finally, observed datasets have been added to the Atlas.
29443	1	1	1	1	IA: I got various problems to get back to the standard WGS84/mercator projection [Joachim Fallmann, Germany]	Noted. Projections have been revised and checked.
29445	1	1	1	1	IA: The warming stripes function is nice and timely, however the export to png/pdf does not work. [Joachim Fallmann, Germany]	Noted. This has been fixed in the final version.
29447	1	1	1	1	a general short users guide would be helpful. Sometimes it it is hard to figure out which parameter you have selected an the system sometimes does not apply selections/goes back to previous results [Joachim Fallmann, Germany]	Accepted. User guide has been included together with a guided tour.
29449	1	1	1	1	The 'compare' tool is nice both a bit confusing to navigate. Something like a 'Home' button is missing [Joachim Fallmann, Germany]	Not applicable. It is not clear from the comment what change is required.
29451	1	1	1	1	The section 'climatic impact drivers' can not be reviewed [Joachim Fallmann, Germany]	Not applicable. Comments for the CID section can be also reported.
29453	1	1	1	1	CORDEX 0.11° are mentioned in the description. This should allow for a more regional picture on climate change impact. However this aspect can not be assessed in the current version I think. [Joachim Fallmann, Germany]	Not applicable. It is not clear from the comment what change is required. The 0.11 resolution is used for Europe in the final version, aligned with Ch12.
31839	1	1	1	1	The chapter is compreensive and informative. [Izidine Pinto, South Africa]	Many thanks.

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71223	1	1	1	44	Throughout AR6 there are many instances where paleo model results are used. Many of these are CMIP6 model simulations carried out in the framework of PMIP (in particular, the mid-Holocene, 6000 years ago, the Last Glacial Maximum, 21,000 years ago, and the Pliocene, 3 million years ago). These simulations underpin several statements made in the report, including some Executive Summary Statements. It would be nice if there was a place in the Atlas for some of these simulations, and, ideally, one or two of the key paleo databases from the Paleoclimate Annex of AR6. If you think this would be possible, please contact Dan Lunt (Chapter 7; PMIP models) and/or Darrell Kaufman (Chapter 2; paleo data and paleo Annex). Many thanks! [Daniel Lunt, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Paleoclimate information has been included.
32817	1	1	200	50	in south central Iran (persian gulf basin) the temprature increase under 3 senarios including B1,A1B,and A2 respectively2.3,3.1,and 3.5 C precipitation: (a)decrease in the north of bushehr province between 14 and 24%, and in the southern area between 5 and 13% by the year 2009; decrease in A2 and A1B senarios will be more several (42%decrease in the northern half of the province) [sadegh zeyaeyan, Iran]	Noted. No reference provided but relevant literature cited in the SW Asia section Atlas.5.5.4 and projections summarised in Figure Atlas.17.
33147	1	1	200	50	in south central Iran (persian gulf basin) the temprature increase under 3 senarios including B1,A1B,and A2 respectively2.3,3.1,and 3.5 C precipitation: (a)decrease in the north of bushehr province between 14 and 24%, and in the southern area between 5 and 13% by the year 2009; decrease in A2 and A1B senarios will be more several (42%decrease in the northern half of the province) [Sahar Tajbakhsh Mosalman, Iran]	Noted. No reference provided but relevant literature cited in the SW Asia section Atlas.5.5.4 and projections summarised in Figure Atlas.17.
83385	1	1	251	6	Again and for sea ice, there is an in-depth focus on Arctic sea ice and its snow cover, but virtually no discussion on or coverage of Antarctic sea ice. This is a major discrepancy and a major deficiency. [Robert Massom, Australia]	Reference to Southern Ocean sea ice simulation included but this topic is covered in Ch 9, main focus in Atlas is on Antarctica land regions surface variables.
66043	1	1	251	7	Suggest that, on the whole, the Atlas and accompanying chapter could be more coherently aligned with the relevant chapters in the WG1 report, and Chapter 12 'Regional Impacts' in particular, and ideally should be reviewed along with Chapter 12. [Kushla Munro, Australia]	Taken into account. All Atlas section authors were actively involved in cross-chapter teams ensuring consistent, coherent and complementary assessment of regional changes and consistency of datasets being used.
66045	1	1	251	7	Suggest addressing the repeated use of multiple baselines. Scientists and experienced users of IPCC reports understand the reasons for these and why by necessity their use persists in climate science. However the multiple baselines have the potential to cause significant confusion for many users of the Atlas and readers of the accompanying chapter. There are numerous examples, a few highlighted in our subsequent comments. Suggest choosing a baseline, or at least adding text (a box possibly) in the chapter explaining the reasons for the multiple baselines and the implications of choosing different baselines. [Kushla Munro, Australia]	Noted. Multiple baselines are useful for comparison with previous reports and for impacts studies which often use 30-year (non-WG I) baselines. This reasoning is covered in the introduction section.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66169	1	1			We thank the authors for their work on the Atlas chapter and the Interactive Atlas. We believe this is a very useful product for providing regional information to policy makers in a clear global context. The design of the Interactive Atlas is good and largely intuitive, we recommend accessibility can be further improved with the inclusion of simple instructions or a user guide. [Kushla Munro, Australia]	Many thanks - and a documentation section has been included.
66959	1	1			My congratulations and appreciation to the authors and the IPCC for developing the Atlas. I think this is an amazing resource. Hard to cover all this ground (metaphorically and literally) in terms of both space and expertise. Especially given that it relies so much on the rest of the report, I wonder if next time around, the Atlas should be its own separate activity, like a special report. [Mathew Barlow, United States of America]	Many thanks - and suggestion passed to TSU.
69957	1	10	1	10	Please change country name from "South Korea" to "Republic of Korea" to keep consistency of naming in other chapter. [Young-Hwa BYUN, Republic of Korea]	Accepted.
86531	1		251		The introduction of the "Atlas" chapter to combine regional information from the individual chapters is very much appreciated. This innovative approach including the online tool can greatly help to make the assessment report more useful for the daily work of practioners. However, it is recommended that greatest care is taken that the information in the "Atlas(es)" is fully consistent with the underlying chapters. Currently it is not clear that they draw on the same soources and come to the same conclusions. It could damage the good reputation of IPCC if contradicting results were presented in the atlases and the "technical" chapters. The authors should also check that also the information in the atlases is qualified using IPCC uncertainty language. [Jochen Harnisch, Germany]	Taken into account. All Atlas section authors were actively involved in cross-chapter teams ensuring consistent, coherent and complementary assessment of regional changes and consistency of datasets being used. Uncertainty language will be used appropriately throughout the chapter. The relevant figures in all chapters have been checked for consistency with the results of the final version of the Atlas.
66093	1				If IT resourcing allows, suggest enhancing the Interactive Atlas user interface by including a function which enables popup content on an item when selected, which details important content on the specific item. This would be a useful function for users wanting the details of particular items without the need to view other reference materials. For instance, when considering the Period, Scenario (e.g. RCP2.6), this function would allow the user to click a small icon next to the scenario, which then opens a small popup box which explains the full parameters of the specific Scenario. [Kushla Munro, Australia]	Noted. Online guidance material has been implemented (tooltips and a guided tour).

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66095	1				If IT resourcing allows, suggest creating a more user-friendly way to view regional information on the Atlas Map: Currently, the + and - zoom in/zoom out function is interactive, but not intuitive. For instance, if you select a sub-region and zoom in, it will not zoom in on your selected sub-region, you also need to pan the Map, adjust the zoom, etc. until you achieve the desired frame (this makes it a multi-step process when it could be a single step). Enhancing the viewing functions would also be useful when filtering the various Datasets to view regional information (such as CORDEX Africa et. al.), and aligns with the core rationale of the Interactive Atlas. When these individual regional Datasets are selected, other regions are not shaded. While this is useful, it could be improved. Suggest these regions be automatically viewed as individual regions, zoomed to an appropriate level, without the remaining un-selected datasets in the image. Suggest also placing limits on the zoom out function to prevent the Map becoming too small (which accidentally happened to me when I scrolled my mouse and it zoomed out to an extreme). Suggest also placing boundaries on panning the Map, especially when viewing the entire globe. Currently, you click, drag and pan the entire view off your screen (which occasionally happens when you are not using a particularly fast computer, or click and drag multiple times due to computer lag). [Kushla Munro, Australia]	Noted. We have prioritised developments that help to support assessment done in the report. However, the tack pad controls have been revised so some of the requested functionalities have been improved.
66097	1				If IT resourcing allows, suggest including regional maps in the Interactive Atlas Map that correspond to the different regional syntheses and case studies as per the Atlas Chapter. Currently, there are only CORDEX regions in the Atlas Map as Datasets, and if the user wants to consider the Regions as per the Chapter, they must select the multiple sub-regions manually and zoom to an appropriate scale. Suggest that this function be maintained, however, an additional function could be included that pre-groups the particular sub-regions together to correspond with those regions specifically discussed in the Chapter (as per Atlas.5). [Kushla Munro, Australia]	Accepted. The Interactive Atlas has been redesigned and the new landing page includes regional information and regional synthesis (CIDs in the SOD version) which provide the regionally synthesized information supporting the TS and the SPM.
66099	1				We appreciate the simple and easy export function buttons to convert PDF and PNG Files located along the bottom of the screen. [Kushla Munro, Australia]	Noted. Thank you.
66101	1				If IT resourcing allows, suggest inserting a single 'refresh' button to return the Atlas Map to its default screen and setting. Suggest this be placed away from other buttons to prevent accidental selection, such as the top left of the page next to IPCC logo. [Kushla Munro, Australia]	Noted. A home button has been added.

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66103	1				If IT resourcing allows, suggest including a reference or link to any interactive Atlas training materials, detailed user-guides, or online e-Learning platforms that are being developed (if they are being developed). Currently, there doesn't appear to be anything mentioned in the Atlas Chapter about 'training' or 'learning'. Suggest this would be useful, given the desire to prevent misuse of the tool. Suggest authors consider the CSIRO's 'Australian Climate Futures' online platform as a resource describing CSIRO's online training module for users, which features a video tutorial. See: https://www.climatechangeinaustralia.gov.au/en/climate-projections/climate-futures-tool/introduction-climate-futures/ [Kushla Munro, Australia]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
66105	1				If IT resourcing allows, suggest consideration of a Zoom in function similar to the Australian Bureau of Meteorology's interactive climate data tool. See: http://www.bom.gov.au/climate/data/ The platform includes text at the bottom of the screen describing its use: "Tip: Hold down the Shift key and drag your mouse to zoom in to an area ...". This allows the user to create a 'box' on the map which will be zoomed in to. Additionally, suggest consideration of panning arrows, similar to the BOM tool, so that panning the Atlas Map does not solely rely on clicking and dragging the map into the desired view. [Kushla Munro, Australia]	Noted. We have prioritised developments that help to support assessment done in the report. However, the tack pad controls have been revised so some of the requested functionalities have been improved.
66107	1				If IT resourcing allows, suggest incorporating a 'more information' tab or button which, once parameters are plotted on the Interactive Atlas, shows all of the details of the Map. We appreciate that the Map will be accompanied by a document, but adding this function would prevent the user having to go back and forth between two screens, and having to locate the relevant details in the reference document. [Kushla Munro, Australia]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
66109	1				If IT resourcing allows, suggest including the AR6 Index and list of definitions etc. as a link at the very bottom of the Interactive Atlas. This would allow users the option to have these reference materials one-click away. There is a lot of information in the Interactive atlas, as such, if users are guided on important points with descriptions/definitions this could help them to make sense of all the different variables available to them. [Kushla Munro, Australia]	Accepted. A tooltip "?" for additional information has been included in the menu of variables to provide further explanation.
66111	1				Suggest clarification. Currently it is not clear whether the climate impact drivers are observations of projections, or what time period they cover (the "climate impact drivers" do not offer a review code). [Kushla Munro, Australia]	Taken into account. It has been clarified.
68931	1				Thank you to Svatlana for her interest in the PaleoBOG. We are excited about including global maps depicting climate variables during paleo reference periods based on CMIP6 model output. We look forward to discussing next steps. [Darrell Kaufman, United States of America]	Accepted. Paleoclimate information has been included in the final version of the interactive Atlas.

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112259	1				Would it be possible to produce a short video that introcudes the functionality of the ATLAS and, examplarily, what kinds of analyses can be undertaken with it? [Helge F. Goessling, Germany]	Accepted. Videos are being included in the "documentation" section.
20295	2	5	5	21	The WG1 outline, as adopted by the Panel at the 46th Session of the IPCC, includes no "Atlas" chapter; under the "ANNEXES" headlines we only find: "options for cross-WG integration including Regional Atlas". However, this table of content shows that the WG1 SOD includes a chapter named "Atlas", while the interactive atlas is not mentioned in annexes. According to the present reader, the Panel was wise and this chapter is not a positive addition to the WG1 report. Throughout comments to come, some indications will be proposed as to passages which are relevant to be parts of an Annex dedicated to the atlas. Other parts of the present chapter can be relocated in existing chapters without major difficulty; this may further contribute to save some room [philippe waldteufel, France]	Noted. Following the adoption of the outline at an IPCC meeting (IPCC Expert Meeting on Assessing Climate Information for Regions Trieste, Italy, 16-18 May 2018) a possible remit for the WG I Atlas and a possible online "Interactive Atlas" were discussed. In subsequent lead author meetings the role was confirmed of the Atlas chapter to assess mean climate change and model evaluation for regions and the Interactive Atlas to enable exploration of some of the datasets underpinning the assessment findings. These developments have been widely welcomed.
32835	5	5	5	5	Add "IRAN plateau" (0/5-0/9) According to I. R. of Iran Meteorological Organization reports http://irimo.ir/eng/wd/600-IRIMO.html, Climatology Research Institute reports https://cri.ac.ir/index.php/fa/, National Drought Warning and Monitoring Center (NDWMC) reports http://ndc.irimo.ir/eng/index.php and a lot of papers .. [sadegh zeyaeyan, Iran]	Noted. Assessment of changes over the Iranian Plateau included in Atlas.5.5.
33165	5	5	5	5	Add "IRAN plateau" (0/5-0/9) According to I. R. of Iran Meteorological Organization reports http://irimo.ir/eng/wd/600-IRIMO.html, Climatology Research Institute reports https://cri.ac.ir/index.php/fa/, National Drought Warning and Monitoring Center (NDWMC) reports http://ndc.irimo.ir/eng/index.php and a lot of papers .. [Sahar Tajbakhsh Mosalman, Iran]	Noted. Assessment of changes over the Iranian Plateau included in Atlas.5.5.
11129	5	8	5	10	The purpose of the Atlas is " to provide summaries of observed and relevant regional/local climate phenomena, historical simulations and projected future climate change across different scales", but the text in this chpater also provides some detailed information about changes and projections about diferrent climate components for each region. Overall, there are some overlaps with Chpater 12. [Wen Wang, China]	Taken into account. The rationale for the regional sections to assess mean climate change and model evaluation over the regions was agreed in LAM2 as this material required inclusion in the report and no other chapter was prepared to take on a comprehensive region by region assessment of mean changes and model evaluation. All Atlas section authors were actively involved in cross-chapter teams ensuring consistent, coherent and complementary assessment of regional changes.
31635	6	1	6	1	The report includes statements on sea-level rise in several places, but maps of sea-level rise produced by Ch 9 are not shown. It would be useful to show and incorporate this dataset on the Atlas if possible. [Gonéri Le Cozannet, France]	Accepted. Sea-level rise maps added to the Interactive Atlas
21013	6	1	6	55	I thought the executive Summary should provide a brief description and rationale for the ATLA. Unfortunate it is missing. I do not know why is it called ATLAS. I thought I will find Mainly maps providing description of issues. [Ladislaus Chang'a, United Republic of Tanzania]	Taken into account. A brief description and rationale added to the ES.

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66047	6	1	7	1	Suggest minimising duplication with other parts of WGI in this Executive Summary, particularly in the first three paragraphs. In particular, overlaps and duplication between the Atlas chapter and Chapter 12 (regional impacts) may create editorial problems in tracking changes across the chapters and captions. [Kushla Munro, Australia]	Taken into account. All Atlas section authors were actively involved in cross-chapter teams ensuring consistent, coherent and complementary assessment of regional changes.
124873	6	1	7	1	The Executive Summary should include line of sight and cross-references to relevant chapters. [Trigg Talley, United States of America]	Taken into account. Traceable accounts added for all ES statements.
131345	6	1	7	1	Where are the traceable accounts for all these Executive Summary statement? [Hans Poertner and WGII TSU, Germany]	Taken into account. Traceable accounts added for all ES statements.
44957	6	3	6	3	Science communication concern: Anytime you lead with a statement like "It is very likely…" you will lose all the climate deniers before the sentence is even over. Please consider revising to something more certain-sounding or move this statement lower. Starting with the paragraph that begins on line 18 would be more effective. [Catherine Linsky, United States of America]	Taken into account. Clear statements of findings precede likelihood language wherever possible.
110683	6	3	6	9	Given Ch1's revised global warming from 0.85 to 1.1, does this need some recognition in the Atlas? More specifically, should the Atlas give some consideration of what this means at the regional scale. [Bruce HEWITSON, South Africa]	Taken into account. Information on observed regional warming added.
78233	6	3	6	38	There a three paragraphs about temperature and two about precipitation. I would suggest to move them more logically, first three temperature and then the paragraphs about precipitation, That would make it easier to read and understand. [Dagmar Nadja Henner, Austria]	Noted. A logical ordering of the paragraphs in the ES implemented.
87757	6	4	6	6	Some names of regions are not following the AR6 regions name [Wafae BADI, Morocco]	Taken into account. Consistency of region naming implemented.
132357	6	7	6	9	Such assessments would need to be carefully coordinated with Chapter 11. Would seem to be better located in chapter 11 than the Atlas since the Atlas is not doing any formal attribution of trends (in particular in extremes) [Sonia Seneviratne, Switzerland]	Accepted. Statements on extremes moved to Ch 11.
24519	6	9	6	9	Page 6, Line 9: It is not clear if there is high confidence in attributing hot extremes to anthropogenic activities only in Europe or globally. In Ch 11 executive summary, it is mentioned medium confidence. [Subimal Ghosh, India]	Accepted. Statements on extremes moved to Ch 11.
24521	6	10	6	16	Few lines are needed on precipitation extremes and flooding [Subimal Ghosh, India]	Rejected. The remit of the Atlas does not include making statements on extremes (which appear in Ch 11).
3689	6	11	6	11	"no locally signficiant trends over land" I find this a strange statement, perhaps it would be better to say there "Over land, there are few signficant trends..". I couldn't see a figure to back this up, maybe it's detailed more in the text. At the very least the years over which this conclusion is drawn need to be included in the sentence. [Declan Finney, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Statements rephrased and time periods added.
82365	6	11	6	11	It should be stated that this finding is for the 1980-2014 period assessed in the chapter. Significant trends may well exist for other periods (e.g. 1901-2018 as reported in Figure 2.14 of Chapter 2). [Blair Trewin, Australia]	Accepted. Statements rephrased and time periods added.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
124875	6	11	6	11	The main message of the Atlas regarding observed precipitation trends (page 6, line 11) is inconsistent with Chapter 10 (page 8, line 52). The Atlas emphasizes a general lack of significant trends while Chapter 10 highlights multidecadal precipitation changes. While the statements are not exclusive, the reader is left unsure of what the key takeaway is. [Trigg Talley, United States of America]	Accepted. Statements rephrased to provide detail on regions with trends and to be consistent with Ch 10.
72267	6	11	6	13	Atlas should note the long-term increase in annual precipitation observed in north Central North America and attributed to climate change. See Knutson and Zeng , 2018: Model Assessment of Observed Precipitation Trends over Land Regions: Detectable Human Influences and Possible Low Bias in Model Trends. Journal of Climate. https://doi.org/10.1175/JCLI-D-17-0672.1 [Hunter Cutting, United States of America]	Accepted. CNA precip trends assessed in Atlas.9.2.
124877	6	11	6	13	The authors should clarify in which regions there is high confidence of observed increases in precipitation and in which regions there is medium confidence. [Trigg Talley, United States of America]	Accepted. Statements rephrased.
15053	6	11	6	16	In this ES it is not clear what the refrnce period is. Significant trends in precipitation can be either posotove or negative depending on the period chosen. Over Southern Africa, for instance, many studies indicate a positive (or at lest not significantly negative) trend in precipitation from e.g. 1980s. (see also my comment below). Also Atlas figures 13 and 14 show significant increse in precipitation over (Wesrerb) South Africa. [Alessandro Dosio, Italy]	Accepted. Statements rephrased and time periods added.
78231	6	11	6	16	I suggest to make the difference between most regions show no significant trends and the examples of areas where there are significant trends more clear. [Dagmar Nadja Henner, Austria]	Accepted. Statements rephrased.
84291	6	11	6	16	it would be useful to include the values/numbers of the annual mean positive/negative trends for the regions highlighted [Annalisa Cherchi, Italy]	Accepted. Information on observed trends added.
110271	6	11	6	16	Given the spatial correlation scales of this variable this statement seems overly optimistic given the availability of long-term guaged records. Interpolated products should be used with extreme caution and this may alter in important ways the message here. As noted directly there is an issue with CRUTS but I suspect taht the use of GPCC is also suspect. Only with satellite-based measuring with GPCP can a global picture emerge so the global aspect should be caveated with very low confidence prior to this. [Peter Thorne, Ireland]	Accepted. Statements rephrased.
31837	6	12	6	13	Suggest change "positive trend" by "upward trend " and "negative trend" by "downward trend". And elsewhere in the chapter [Izidine Pinto, South Africa]	Rejected. Consensus in the chapter was to retain positive/negative.
87759	6	15	6	16	Increase in heavy precipitations are also observed over WAF, SEAF and SWAF please refer to table 11.4 [Wafae BADI, Morocco]	Noted. The remit of the Atlas does not include making statements on extremes (which appear in Ch 11) but reference to this information be added in the preamble of each regional section.
110269	6	18	6	22	This lacks a counter-narrative of a low emissions scenario which would be necessary to make this actionable information and to avoid accusations of alarmism. [Peter Thorne, Ireland]	Accepted. Information now provided with respect to global warming levels.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
106459	6	19	6	22	Using RCP85 for this ES statement if fine but I think given the extremely unlikely probability of following this trajectory should be balanced by a RCP45 or RCP6 scenario. Also explicitly mention this (I assume) is an end of century scenario. [Lennard Christopher, South Africa]	Accepted. Information now provided with respect to global warming levels.
84293	6	20	6	20	I would change "future" with "scenario" [Annalisa Cherchi, Italy]	Accepted.
66049	6	24	6	24	Suggest defining "precipitation climatology" for readers who may encounter the phrase for the first time in this chapter. Or did the authors simply mean "average precipitation" or similar? [Kushla Munro, Australia]	Accepted. Statement rephrased.
84295	6	24	6	30	it would be useful to have numbers of projected changes in precipitation in the areas highlighted [Annalisa Cherchi, Italy]	Accepted. Cross-reference to this information in the Interactive Atlas added.
124879	6	25	6	30	The main message of the Atlas regarding projected precipitation trends (page 6, line 25-30) is inconsistent with Chapter 12 (page 7, line 38-40) because Chapter 12 addresses extremes rather than shifts in mean. The Atlas does acknowledge this in the statement "There is also high confidence that precipitation intensity and extremes will increase in many areas including in some where annual mean reductions are likely (e.g. Southern Africa)"; however, Chapter 12 is not referenced resulting in a loss of context and meaning. [Trigg Talley, United States of America]	Noted. Reference to changes in extremes removed as this is not in the remit of the Atlas.
11131	6	26	6	26	a typo, "were" should be "where". [Wen Wang, China]	Accepted.
80547	6	27	6	29	The projected decrease in the Sahel appears to contradict the findings of Chapter 8. For example, see the West Africa monsoon domain of Fig. 8.22 in which the median of all scenarios/time horizons is positive. This should be checked for consistency. See also the Chapter 8 ES statement (p7, lines 8-9) that, "increased monsoon rainfall is projected over... West Africa (medium confidence)" Also, replace "were mean rainfall" with "where mean rainfall" [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Statements checked to be consistent with Ch 8.
81673	6	27	6	30	Southwest Australia should be added to the list of places where precipitation is likely to decrease [Michael Grose, Australia]	Accepted. Information added.
32837	6	28	6	28	add "as well as in "Iran Plateau" after Arabian peninsula [sadegh zeyaeyan, Iran]	Rejected. No clear assessment of these changes in Atlas.5.4.4 to support this addition.
33167	6	28	6	28	add "as well as in "Iran Plateau" after Arabian peninsula [Sahar Tajbakhsh Mosalman, Iran]	Rejected. No clear assessment of these changes in Atlas.5.4.4 to support this addition.
78315	6	28	6	28	Typo. First word should be "where", not "were" [Leonie Lee, Singapore]	Accepted
108319	6	28	6	28	were' should be where [Nana Klutse, Ghana]	Accepted.
15055	6	29	6	29	The future projection of precipitation over the Sahel is uncertain to me. To my understanding, most GCMs project increase in precipitation over (Eastern) Sahel. Also figures Atlas and do not show decresing precipitation over the Sahel. [Alessandro Dosio, Italy]	Agreed. Statement deleted.
84297	6	30	6	30	changes in monsoons: why is it only specified what is projected to happen in northern China? [Annalisa Cherchi, Italy]	Noted. Text changed to East Asia consistent with Atlas.5.1.
93545	6	30	6	43	Please cite WMO literature on climate normal [Omar Chafki, Morocco]	Rejected. It is not appropriate to cite literature in the ES but this literature is cited in the introduction where time periods are defined.
108321	6	33	6	33	insert 'regions' after 'including in some' to read 'including in some regions where annual mean...' [Nana Klutse, Ghana]	Accepted.
14159	6	35	6	35	SOD must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Noted. Acronym deleted.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
11133	6	35	6	36	SOD project is not a meaningfule expression for the public. [Wen Wang, China]	Noted. Acronym deleted.
84299	6	35	6	38	probably it should be mentioned how much CMIP6 are warmer than CMIP5. Also not clear to what period (historical or projections) does this statement refer to [Annalisa Cherchi, Italy]	Accepted. Statements rephrased and referenced to global warming levels.
66051	6	40	6	41	Suggest changing "recent past" to a more precise timeframe to enhance clarity and prevent misunderstanding. Or include the specifics, as discussed elsewhere in the Chapter. For instance: - On Page 21, Line 46 - the "recent past" has been described as 1980-2014. - On Page 93, Line 42 - it is described as 1971-1999; and - On Page 94, Line 8 - it is described as 1976-2005 Suggest also reconsidering the term "mid-century", which only sometimes includes a precise timeframe, or could mean exactly 2050. [Kushla Munro, Australia]	Rejected. The phrase is used to encompass findings covering several time periods. Mid-century is defined where it is first used to provide the global context on temperature changes in Figure Atlas.12.
91063	6	40	6	49	This paragraph is not helpful. The first sentence doesn't say anything and is ambiguous (change can + or -, e.g. Antarctic sea ice). It's hard to follow and really understand what the take home message(s) are. Why just the HKH for glacier mass loss under RCPs 4.5 and 8.5. This is also true for other tropical glaciers, New Zealand, Scandinavia etc... (see Fig 9.22) Needs a rewrite and clarity. In addition, it starts off talking avout the cryosphere but then only discusses land ice and briefly snow. Nothing on sea ice, permafrost etc. [Jonathan Bamber, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The purpose here is to provide some overall context about the widespread regional changes in the cryosphere (first sentence) and then summarise specific regional findings from the Atlas assessment which is limited to specific aspects of the cryosphere. More comprehensive information is found in Ch 9.
124881	6	40	6	49	This section lists an assortment of cryosphere spatial and temporal trends that are also covered in the cryosphere section of Chapter 2 (e.g., surface mass balance, snow cover). While messages for land regions are indeed not covered in detail in other chapters, the cryosphere is covered elsewhere, so here it would be appropriate just to reference back to Chapter 2. If there are specific pieces of information in the Atlas text that are not covered in Chapter 2, it might make sense to move them to Chapter 2 so that they are consolidated into one place. [Trigg Talley, United States of America]	Noted. The remit of CH 2 (and 9) are to provide a global overview of changes. The purpose here is to provide some overall context about the widespread regional changes in the cryosphere and then summarise specific regional findings from the Atlas assessment which is limited to specific aspects of the cryosphere.
66053	6	41	6	42	Suggest clarification of the statement: "West Antarctica likely experienced an increase in surface mass balance mostly seen over the Antarctic Peninsula and the east part of West Antarctica". This may be misunderstood as IPCC stating there has been an increase in mass balance overall (not the case). Is the intent here (and on p.96) to express that West Antarctica experienced in precipitation minus surface seasonal melting? If so, suggest including a brief definition of 'surface mass balance'. [Kushla Munro, Australia]	Accepted. The statement now clarifies that it is about precipitation and surface mass balance ("Antarctic precipitation and surface mass balance showed a significant positive trend over the 20th century, while strong interannual variability masks any existing trend over recent decades (medium confidence)."). The focus of the Atlas is on temperature and precipitation/SMB changes, and the total mass balance changes with relevant components are provided in the Chapter 9 ES.
68175	6	41	6	42	missing information for what period this increase in surface mass balance has been experienced [Guðfinna Aðalgeirsdóttir, Iceland]	Accepted. Statements rephrased and time periods added.
110273	6	41	6	42	Really? This is completely different to what chapter 2 and 9 found which was increased losses. I suspect there is the word loss missing here? [Peter Thorne, Ireland]	Noted. Our statement refers to surface mass balance increase, driven by precipitation, not the total mass balance

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
98529	6	44	6	46	It is very good to see a statement on expected glacier mass loss in the Hindu Kush Himalaya in the ExecSum, but this requires more precision. By when will the 50% decrease occur (presumably 2100)? I would argue that it is very likely instead of likely, and the 50% is under RCP4.5 while under RCP8.5 the projected decrease is 66%. The statement is too vague and requires more precision. [Philippus Wester, Nepal]	Noted. This statement is to provide a general overview of either observed or projected changes in the cryosphere across the regions which limits the amount of information that can be provided. More detail is available on this specific topic in the HKH box in Chapter 10.
20821	6	51	6	53	The first sentence here is quite plausible. It can be criticized however, on the ground that we are reading a part of the chapter called "executive summary". Now a summary is expected by definition to summarize elements which preexist in detail in the text to be summarized. Looking through the chapter Atlas, it turns out that neither a discussion about several groups of people understanding differently climate change information, nor examples, nor references, can be found. Hence there is no point in summarizing something which does not exist [philippe waldteufel, France]	Accepted. Text deleted.
110685	6	51	6	53	Is it not also virtually certain that complex climate information is constructed differently by different groups of people and leading to contrasting messages? I would argue that this is so, and is as significant an issue as the point made in this paragraph, and should probably be addressed in the core text of the Atlas as well. In fact the very construction of the Atlas itself is a strongly conditioned product of the IPCC culture and constraints. [Bruce HEWITSON, South Africa]	Not applicable. Text deleted.
100891	6	51	7	1	The last item of the ES seems to be in fact part of the previous one. In fact, this last item cannot be understood alone, without the previous item. Therefore, I recommend to merge the last two items together into a single one. [Sergio Henrique Faria, Spain]	Not applicable. Text deleted.
131347	6	51	7	1	These statements are quite trivial and should not be included as statements in the ES [Hans Poertner and WGII TSU, Germany]	Accepted. Text deleted.
100889	6		6		The ES is excellent! Concise and very interesting. Well done! [Sergio Henrique Faria, Spain]	Many thanks.
20823	7	6	7	8	Do we have one or several purposes? [philippe waldteufel, France]	Noted. "Purposes" deleted.
86649	7	6	8	34	The first sections (1.1, 1.2 and 2) could do with some restructuring. Much of the purpose behind the chapter is actually in section 1.2 on Context and framing as opposed to 1.1 on Purpose. As it stands, 1.1 on Purpose leaves multiple questions unanswered and is not very useful. Moreover, the first paragraph of section 2 also includes information that relates to the purpose of the chapter and could be moved to section 1.1. Please better integrate elements from these three sections. [Oyvind Christophersen, Norway]	Accepted. Text now streamlined and more logical.
20825	7	8	7	18	These lines illustrate (excepting what concerns directly the interactive atlas) the repetition mechanisms which result into this SOD being such an enormous document. This reader is aware that this comment is not a pleasant one to receive; nor is it pleasant to issue. [philippe waldteufel, France]	Accepted. Underlying text has been streamlined and better integrated with other chapters and the introduction now reflects this.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
78235	7	8	8	22	The introduction sets the scene and context very well. You way want to include the connection with ecosystem services. [Dagmar Nadja Henner, Austria]	Accepted.
89575	7	11	7	13	I think this will need to be updated to indicate the updated scope of the Atlas (including assessment on the mean climate (temperature, rainfall)). [Faye Abigail Cruz, Philippines]	Accepted. Underlying text has been streamlined and better integrated with other chapters and the introduction now reflects this.
54519	7	31	8	21	This section is entirely missing references (e.g. for CORDEX, SREX report, CMIP5 and CMIP6), please add. [Veronika Eyring, Germany]	Accepted.
66251	7	33	8	14	Atlas 1.2 overlaps with CH12 12.1. Both paragraphs claim to do the same thing. Example page Atlas 8, line 11-14. [Erika Coppola, Italy]	Noted. Consistency with 12.1 implemented.
110277	7	34	7	36	Really odd to base this on consensus. You could make a much stronger statement. Given that AR5 concluded that historical changes were unequivocal, that human influences were clear and that our collective choices matter, poliy makers … that way you are appealing to the scientific rigor rather than the consensus process which just leaves this text open. [Peter Thorne, Ireland]	Rejected. The additional detail and appeal to "scientific rigour" is not required and potentially distracting. The consensus goes way beyond the science which motivates the need for a broad range of responses, many of which need additional detailed information.
20297	7	35	7	35	The implications which requires? [philippe waldteufel, France]	Noted. Text rephrased.
124883	7	35	7	38	[ACCESSIBILITY] A reader would expect and look for a comparison of CMIP5 and CMIP6 results in Chapters 3 and 4, where there is in fact extensive discussion of modeling methodology (Chapter 4) and results (Chapters 3 and 4). While a comparison between CMIP5 and CMIP6 is relevant for the Atlas, it is no more relevant than most of the rest of the report as well. It is not practical or advisable to reproduce the entire report in the Atlas, so suggest that the Atlas merely refer back to particularly relevant chapters and sections. In this case, the second sentence of the paragraph seems to be a better general statement with which to insert a reference to Chapters 3 and 4. In contrast, the first sentence is fairly detailed and the rationale for the choice to highlight this finding is unclear, especially because the discussion of CMIP5 vs. CMIP6 elsewhere does not emphasize it. Comparisons between CMIP5 and CMIP6 for specific regions are appropriate to retain in regional sections of the Atlas. [Trigg Talley, United States of America]	Not applicable. Comment does not appear to refer to the line numbers stated (e.g. no mention of CMIP5/6 in the text).
20827	7	36	7	46	While these historical remarks may be of interest to IPCC historians, teams and authors, this is not necessarily the case for readers who will consult this report and be more interested in information available in 2021 than in history of information [philippe waldteufel, France]	Accepted. Reference to previous IPCC activities are included only as relevant context.
5057	7	42	7	46	As the Atlas is to display results from different chapters and from all three parts of the AR6 the coordination on region coverage and methodology needs to be addressed to avoid user confusion. [Martina Stockhause, Germany]	All Atlas section authors were actively involved in cross-chapter teams ensuring consistent and coherent treatment of regions and methodology.
20299	7	45	7	45	: Is "'Atlas" here referring to the "Atlas' chapter or to the Atlas? Possibly the structure of AR5 was not perfect, but the choice of Atlas for naming a chapter in AR6 has considerable potential for confusing the readers [philippe waldteufel, France]	Noted. It is the Atlas chapter that is being referred to and introductory text in CHs 1 and 10 clarifies the remit of the Atlas to avoid confusion.
95919	7	48	7	48	Ch11: Pg7: Line 48: "...clear requirement". I think "need" is much better term. [Joseph Mutemi, Kenya]	Rejected. "Clear requirement" is stronger.
95921	7	48	7	48	"...clear requirement". I think "need" is much better term. [Joseph Mutemi, Kenya]	Rejected. "Clear requirement" is stronger.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
98531	8	10	8	10	The WGII AR6 report does not contain thematic chapters but rather sectorial chapters. [Philippus Wester, Nepal]	Noted.
15057	8	24	8	24	Atlas.2 Please check consistency with Ch10.1 where temporal and spatial scales are also defined. [Alessandro Dosio, Italy]	Noted. Consistency has been checked.
98533	8	24	8	24	The use of the word "domains" requires careful consideration. In the text "domains" and "regions" are used interchangeably and without clear distinction. In many instances the use of regions would be preferable. [Philippus Wester, Nepal]	Accepted. Regions is used as the preferred term.
110703	8	38	8	39	The choice to use GWL has of course the classic implications (relating to models reaching this at different times and associated issues of differential lead/lag responses in global processes, versus using a time window with its own complications of differing model sensitivities, etc., etc). Perhaps some amplification for using this approach is needed here in the text beyond simply citing SR1.5. [Bruce HEWITSON, South Africa]	Accepted. Links to relevant sections in other chapters have been introduced, providing appropriate context for GWL
100893	8	41	8	41	Was the acronym FAIR introduced elsewhere? If not, it should be introduced. [Sergio Henrique Faria, Spain]	Accepted. FAIR practices have been introduced and properly referred in this section.
100895	8	47	8	48	Wrong section cross-reference: Section 1.5.3 has been moved to Sect.1.4.1. Please correct it. [Sergio Henrique Faria, Spain]	Accepted. The cross-reference has been corrected.
20301	8	48	8	48	Is this the Atlas chapter which is referred to? [philippe waldteufel, France]	Noted. Yes, "Atlas chapter" has been included for clarification
14161	8	50	8	50	WMO must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted.
34169	8	50			Describe abbrevation as first cited: WMO. [Guiomar Rotllant, Spain]	Accepted.
27437	8	53	8	54	A 30-year baseline is not even sufficient to compute robustly the mean on many regions of the world because of internal decadal to multi-decadal variations, let alone changes in statistics other than the mean. [Eric Brun, France]	Noted. 30-year baseline is the standard defined by WMO. We have included also the 50-years preindustrial period (1850-1900) in the new version.
95923	9	7	9	7	"allows users to test the implications ....". Probably a better use of the interactive atlas is users exploring, investigating and verifying certain details to help them in applying the climate change information. I think this will be better context of this statement. [Joseph Mutemi, Kenya]	See #106527
106527	9	7	9	7	"... allows users to test the implications ....". Probably a better use of the interactive atlas is users exploring, investigating and verifying certain details to help them in applying the climate change information. I think this will be better context of this statement. [Joseph Mutemi, Kenya]	Accepted. This has been rephrased.
89577	9	12	9	12	Currently this time period (1961-1990) is not available in the Interactive Atlas. Will this still be added in the final version? [Faye Abigail Cruz, Philippines]	Accepted. The period is available in the new version.
84301	9	29	9	29	it could be specified whether or not these periods are consistent with those defined and used in chapter 4 [Annalisa Cherchi, Italy]	Noted. The periods are consistently used through the report. A reference to Cross-Chapter Box 1.4 has been included to clarify this.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20829	9	29	9	41	On lines 29-32, this section defines global warming as an increase in "global mean surface temperature (GMST)", referring to the ST1.5 report. On lines 37-41 however, in order to compute global warming levels, one considers the change of the global near surface air temperature (GSAT). If WG1 authors really wish to keep both metrics in the present chapter, it is necessary to refer to cross-chapter box (2.3) (which ultimately recommends to shift to GSAT) and to motivate the choices. As it is, it has sizable potential for confusing the reader. [philippe waldteufel, France]	Accepted. This has been clarified in the new version avoiding confusion on the use of GMST and GSAT.
82333	9	33	9	47	Flagging an issue here: assessment of GWLs will be influenced by whether temperature is defined as land + SST (GMST) or land + air temperature over oceans (GSAT) (see cross-chapter box 2.3), so Atlas needs to be involved in these discussions. [Blair Trewin, Australia]	Accepted. The calculation of GWL has been coordinated with other chapters and now the Atlas uses the same approach, based on GSAT.
110279	9	37	9	47	It is important that 4,11 and Atlas all use the same definition. The headline year of crossing statements arise in 4. Is it using the same metric as 11 and Atlas? [Peter Thorne, Ireland]	Noted. This has been coordinated among the three chapters (4, 11, and Atlas).
84303	9	38	9	38	is the definition different from other chapters? Adopted only in ch 11? [Annalisa Cherchi, Italy]	Accepted. The calculation of GWL has been coordinated with other chapters and now the Atlas uses the same approach.
31841	9	40	9	40	"…future projections assuming RCP 8.5 emissions…" should it also include RCP4.5 and SSPs? [Izidine Pinto, South Africa]	Noted. GWL have been computed for the different scenarios.
14163	9	43	9	43	GCM must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. GCM has been expanded the first time it is used.
34171	9	43			Describe abbrevation as first cited: GCM. [Guiomar Rotllant, Spain]	Accepted. GCM has been expanded the first time it is used.
14165	9	47	9	47	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
110281	9	50	10	4	This feels a little dangerous without at a minimum pointing the reader to the primary assessment in chapter 4 but I wondder whether this risks undermining that assessment and whether this should be covered at all here. If so should it not be the CMIP6 models split out per model that informed the chapter 4 assessed numbers? And should the two tables not be explicitly linked? The present approach using a generation old models runs the risk of vested interests calling out an inconsistency. I feel this should be avoided at all costs. [Peter Thorne, Ireland]	Noted. The table has been dropped and the calculation of GWLs is now aligned among all chapters (in particular Atlas, 4 and 11).
132361	9	50	10	5	Note that chapter 11 and chapter 4 have coordinated a similar computation of the timing of reaching given global warming levels (computed by Mathias Hauser in Chapter 11 and Erich Fischer in Chapter 4). This would need to be carefully cross-checked and harmonized. [Sonia Seneviratne, Switzerland]	Accepted. The calculation of GWL has been coordinated with other chapters and now the Atlas uses the same approach.
54521	9	52	10	2	Could point to Table AIII.4 for details on the models [Veronika Eyring, Germany]	Not applicable. This table has been dropped
14167	10	2	10	2	Table must explain N/A [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. This table has been dropped
20831	11	14	11	16	This is believed to apply to climate as well, even in case climate does not change [philippe waldteufel, France]	Noted. The sentence has been rephrased.
95925	11	48	11	50	Not all CMIP6 models are finer resolution. [Joseph Mutemi, Kenya]	Accepted. This has been clarified.
14169	11	50	11	50	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66245	11	52	11	52	Figure Atlas 3 it would be good to add also a CORDEX example here since the Atlas state that the 3 dataset will be used. [Erika Coppola, Italy]	Rejected. Adding an additional panel complicates the figure unnecessarily since the intent is to show that the new regions are acceptable when increasing the resolution from 2 to 1 degrees.
82335	12	3	12	8	Suggest clarifying in the caption of figure 3, or elsewhere, how a land grid box is defined in this context (is there a % area of gridbox threshold?) [Blair Trewin, Australia]	Accepted. A link to the GitHub repository including all the details has been included.
66055	12	13	12	18	Suggest clarification: "AR6 WGI (land and open ocean) reference regions are used in the Interactive Atlas as the default regionalization for atmospheric variables. However, these regions are not optimum for the analysis of oceanic variables since, for instance, the five upwelling regions (Canary, California, Peru, Benguela and Somali) are mostly included in 'land' boxes. Therefore, the alternative set of oceanic regions defined by their biological activity (Figure Atlas.4:) is used in the Interactive Atlas for the regional analysis of oceanic variables." Suggest clarification here since the ocean regions delineated in the interactive Atlas appear to be the AR6-WG1 reference regions. [Kushla Munro, Australia]	Noted. The interactive Atlas supports alternative sets of regions. Reference regions are used by default for atmospheric variables whereas ocean biomes are used as default for oceanic ones.
80343	12	16	12	17	References to support these oceanic regions (biological activity) should be given at this point. [Paola Arias, Colombia]	Accepted. Further details and references have been included.
14171	12	17	12	17	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
39069	12	17	12	17	A more complete definition of these regions, including their names, could help the reader at this point (no details provided in Fig 4 caption either) [Federico Serva, Italy]	Accepted. The regions are now included in Figure Atlas.4 which includes a link to a GitHub repository providing all the details.
84305	12	21	12	26	names of the regions are missing in Fig Atlas.4 [Annalisa Cherchi, Italy]	Rejected. The figure includes the acronyms which are described in the figure caption.
109249	12	23	12	32	Alternative oceanic regions are used in Interactive Atlas which is different from AR6 regions based on the biological activities of ocean. Chapter 12 presents regional climate information for impact and risks assessment usin the AR6 regions (defined in Chapter 1) . Is it possible to establish a link between AI regions used for ocean based on the ocean biological activities and AR6 regions for ocean to show projected changes in climate impact drivers (CIDs) for the open and deep oceans. [A.K.M Saiful Islam, Bangladesh]	Noted. The Interactive Atlas includes regions defined and used in the chapters; the ocean biomes regions are defined in global chapters and the Atlas relies in the assessment and description done there.
106121	12	23		24	I suggest to add a region for the Mediterranean Sea [Piero Lionello, Italy]	Accepted. The Mediterranean is now both land and ocean region.
34177	12	29	12	32	I guess a better explanation about oceanic areas should be included although I understand that the idea of doing an Atlas is the simplification. Nevertheless, it would be a good opportunity to homogenise nomenclature for future studies. Whether not possible, the paragraph should explain the problematic. Paragraph is confusing. Please, re-write. [Guiomar Rotllant, Spain]	Accepted. This paragraph has been rephrased.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
71581	12	29	12	32	I would rewrite the paragraph avoiding one of the “However”: “Due to the many potential definitions of the regions relevant for WGI and WGII, it is important to keep some flexibility in the definition of regions in the Interactive Atlas, so new regions (e.g., typological domains) could be added. However, it should be noted that the Atlas should be a useful instrument for AR6, and not necessarily cover all particular regions relevant to specific chapters.”. [Sixto Herrera, Spain]	Accepted. This has been rephrased.
100897	12	29	12	32	Too many "however" in the same paragraph. [Sergio Henrique Faria, Spain]	Accepted. This has been rephrased.
20833	12	31	12	32	This sentence is somewhat enigmatic; it will have to be rewritten more clearly [philippe waldteufel, France]	Accepted. This has been rephrased.
40591	12	37	12	46	Note that the glossary has the following definition for 'typological regions': "Regions of the Earth that share one or more specific features (known as 'typologies'), such as geographic location (e.g., coastal), physical processes (e.g., monsoons), and biological (e.g., coral reefs, tropical forests), geological (e.g., mountains) or anthropogenic (e.g., megacities) formation, and for which it is useful to consider the common climate features. Typological regions are smaller than climatic zones (e.g., a mountain region) and can be discontinuous (e.g., a group of megacities affected by the urban heat island effect, or monsoon regions)." [TSU WGI, France]	Noted. The term typological region is used in the final version.
98535	12	41	12	41	AR6 WGII contains cross-chapter papers and not cross-chapter working papers. Delete "working". [Philippus Wester, Nepal]	Accepted. Deleted
98537	12	44	12	44	Reference is made to "typological domains" rather than "typological regions". A clearer definition needs to be given of "typological regions" and the use of "domains" needs to be reconsidered. A domain suggests a governance structure while a region is more neutral. The use of "domains" and "regions" interchangably is confusing and conceptually unclear. Suggest to uniformally use "regions" and clearly define what this means. [Philippus Wester, Nepal]	Noted. The term typological region is used in the final version.
14173	12	45	12	45	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
84307	12	49	12	55	regions in fig Atlas.5 have differences with monsoon regions in ch 8 (fig 8.12a). We need to coordinate on this and agree on common regions [Annalisa Cherchi, Italy]	Noted. This has been coordinated and the agreed monsoon regions are used in the final version
45165	12	51	12	53	The acronyms of monsoon typological regions needs to be consistent with the definitions in Chapter 8 (SAsiaM, EAsiaM, WAfriM, NAmerM, SAMerM, AusMCM). [Krishnan Raghavan, India]	Noted. This has been coordinated and the agreed monsoon regions are used in the final version
81993	12	51	12	53	Figure Atlas.5. and IA 'About' section 'Regions': (Content) It may not be solvable, but it is irritating that North America and North Amarica Monsoon are both abbreviated as NAM (also SAM) or WAM is not dissolved as West African Monsoon (also SASM, EAM, AUSMC) [Swantje Preuschmann, Germany]	Noted. This has been coordinated and the agreed monsoon regions are used in the final version
80345	12	51	12	54	The acronyms for the different monsoons are not the same used in CH8 [Paola Arias, Colombia]	Noted. This has been coordinated and the agreed monsoon regions are used in the final version
89579	13	1	13	6	Consider possible cross-reference to Chapters 10, 12 on discussion on the value of higher resolution for climate information in this sub-section [Faye Abigail Cruz, Philippines]	Not applicable. This section has been removed

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
27439	13	8	13	8	We suggest using the term "evaluated" rather than "validated" as generally acknowledged. It is important for the IPCC report to use the good terminology. Oreskes N. Evaluation (not validation) of quantitative models. Environ Health Perspect. 1998;106 Suppl 6(Suppl 6):1453–1460. doi:10.1289/ehp.98106s61453 [Eric Brun, France]	Not applicable. This section has been removed
14175	13	9	13	9	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. This section has been removed
89581	13	11	13	13	Consider this publication as a potential reference: Matsumoto, J., Olaguera, L.M., Dzung, N-L., Villafuerte, M.Q. 2020. Climatological seasonal changes of wind and rainfall in the Philippines. International Journal of Climatology, 1–15. doi: 10.1002/joc.6492 [Faye Abigail Cruz, Philippines]	Not applicable. This section has been removed
82339	13	13	13	14	This is a bit of an oversimplification of the situation in Vietnam - summer peaks occur in both the north and south, the winter peak (more Oct-Dec) occurs in places (especially central) with strong exposure to the NE monsoon. Could probably get rid of this sentence altogether - the Philippines example is enough to make the point. [Blair Trewin, Australia]	Not applicable. This section has been removed
89583	13	13	13	14	It would be good to include a reference paper that describes this spatial pattern of the seasonal rainfall in Vietnam. [Faye Abigail Cruz, Philippines]	Not applicable. This section has been removed
15059	13	26	13	26	Atlas.3 Please check consistency with Ch10.2 whee observations (including reanalyses) at regional scale are assessed [Alessandro Dosio, Italy]	Noted. Consistency has been checked.
80347	13	32	13	34	MIP and CORDEX acronyms are used before but only defined here. They should be defined when first used [Paola Arias, Colombia]	Noted. The acronyms have been expanded the first time they are used.
86651	13	34	13	37	Please briefly explain why combining information from these multiple data sources is a significant challenge, or provide an example. [Oyvind Christophersen, Norway]	Noted. Specific cross-references to Chapter 10 (10.5) have been included.
105987	13	35	13	35	Specifically, should direct the reader to 10.5 [William Gutowski, United States of America]	Noted. Specific cross-references to Chapter 10 (10.5) have been included.
84309	13	35	13	36	include reference of specific section of chapter 10 [Annalisa Cherchi, Italy]	Noted. Specific cross-references to Chapter 10 (10.5) have been included.
124885	13	42	14	7	[ACCESSIBILITY] What is the rationale for using the EWEMBI dataset in the Atlas and interactive feature? If it is not extensively discussed in the other WGI chapters, does it still makes sense to feature in the interactive atlas? While the text of the Atlas should not duplicate information elsewhere in the report, the Atlas text and interactive feature should likewise stick to data that has been rigorously assessed and reviewed in accordance with IPCC procedures. The Atlas should establish that the observational and modeling datasets were assessed in the text of the report, including review in accordance with IPCC procedures, and provide links to such discussions. While innovative and valuable, the Atlas must ensure that it does not muddy information or produce outputs without a clear provenance. [Trigg Talley, United States of America]	Noted. EWEMBI is the ISIMIP official observational reference dataset as was used in the Atlas for bias adjustment (to facilitate handshaking with WGII). The final version the Interactive Atlas includes both ERA5 and WFDE5 (the update of EWEMBI) since both are used in the report (the later again for bias adjustment).
110283	13	44	13	45	This characterisation risks undermining huge swathes of the report and requires changing to be around strengths and weaknesses and no one product beimg adequate for all applications. [Peter Thorne, Ireland]	Noted. The sentence has been rephrased.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
84311	13	44	13	51	include reference of specific section of chapter 10 [Annalisa Cherchi, Italy]	Accepted. A reference has been included.
82341	13	53	14	7	Something which doesn't come out in the text here is the issue of spatial resolution versus homogeneity. Of the temperature data sets listed, only one (Berkeley Earth) is homogenised and used for global temperature monitoring in Chapter 2 - indeed, the Harris et al 2014 paper for CRU TS explicitly recommends against using the data set for climate change assessment, and EWEMBI is not a conventional station-based dataset (see separate comment). On the other hand, data sets such as HadCRUT lack the spatial resolution for many regional-scale applications. This conflict between spatial resolution and long-term homogeneity should be addressed more specifically than it is at present. In particular, there seems little justification for not using the long-term global data sets in global products such as Figure Atlas.13. [Blair Trewin, Australia]	Noted. The observations in the Atlas have been aligned with those used in Chapter 2, including some additional regional datasets used in the regional chapters.
110287	13	53	14	7	This needs to be made clearer that many estimates are interpolated estimates often from very distant observations. [Peter Thorne, Ireland]	Noted. References to Chapter 2 have been included for the assessment of key global datasets
20835	13	53	14	11	There is no discussion that these datasets differ in many ways. We are not told however to which extent they are independent. Hence, when later on our attention is drawn to agreement among them (P21 L53-55), it is difficult for us to assess the strength of such an agreement. [philippe waldteufel, France]	Noted. This section is aligned with Chapter 2 which provides the main assessment of observations.
84313	13	53	14	11	are these datasets different from those defined and listed in Annex I? [Annalisa Cherchi, Italy]	Noted. A reference to Annex 1 has been included.
15061	14	1	14	1	If the BEST obesrvational dataset has been referd s BERKELEY, please be sue that the same acronym is used through the entire WG1 report. [Alessandro Dosio, Italy]	Noted. This has been harmonized.
82361	14	1	14	1	EWEMBI is a data set whose temperature analyses are based on the ERA-Interim reanalysis, so it is not appropriately categorised as an observational data set if reanalyses are being separated out as a different category in section 3.2. [Blair Trewin, Australia]	Noted. This is now included in the reanalysis section.
110285	14	9	14	9	HadSST3 has been replaced with HadSSTv4 and the atlas eeds to be updated accordingly as chapter 2 assesses HadSST4 [Peter Thorne, Ireland]	Noted. HadSST4 is used in the final version
82349	14	9	14	11	It may be worth mentioning that HadSST4 has now been released but has not (yet) been available for long enough to be used in many published studies to date. [Blair Trewin, Australia]	Noted. HadSST4 is used in the final version
14177	14	13	14	13	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
82343	14	13	14	16	It would be interesting if this decline also holds as strongly for GPCC - my experience in other contexts is that GPCC are usually reasonably effective at tracking down data (and, because they release data only as gridded products, don't face as many data policy barriers in obtaining data from national meteorological services as some other data providers do). [Blair Trewin, Australia]	Noted. These two datasets are used for illustrative purposes. The results for GPCC exhibit a similar temporal pattern.
20837	14	13	14	27	The dominant feature on this figure .7, from top to bottom, is certainly the major improvement of spatial coverage for SST observations on the right side (due to the development of the ARGO network). In case WG1 authors decide to ignore this, they had better remove the r.h.s. of the figure. [philippe waldteufel, France]	Taken into account. This is a prominent feature emerging from the figure which is not ignored.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110289	14	13	14	27	This reflects primarily data latencies and even failure of some products to use all available repositories that could be used. It does not necessarilly imply a dimunition in availability of / taking of observations yet this would be implied. In fact regular reporting to GCOS and WIGOS suggests that observations are more available, not less. Furthermore, this does not reflect on the substantive progress made since AR5 on data repositories (Freeman et al., 2017; Rennie et al., 2014; Thorne et al., 2017). This storyline of diminishing data availability needs to be far more nuanced as noted to chapter 10 in my review thereof. [Peter Thorne, Ireland]	Noted. The paragraph has been expanded including information on the masking applied to the observational data to avoid artefacts from temporal heterogeneity.
82347	14	16	14	16	Is there text missing here? The reference to HadSST3 seems out of place, and implies that SST data coverage is declining, which is clearly not the case. [Blair Trewin, Australia]	Noted. This paragraph has been updated and rephrased.
20839	14	32	14	33	Satge et al. indeed report that comparisons revealed very high discrepancies among satellite-based precipitation products (SPP). Yet they further report that in 9 out of 10 of the cases studied, streamflow was more realistically simulated when SPPs were used as forcing precipitation data rather than precipitation derived from the available precipitation gauge networks. Inevitably, the reader's overall opinion will depend highly upon the way information elements are selected in the literature. This is a responsibility. [philippe waldteufel, France]	Not Applicable. There is no information about the specific changes requested.
71583	14	33	14	34	Is there any reference supporting this affirmation? “Another recent development has been on gridded dataset for climate extremes based on surface stations.”. [Sixto Herrera, Spain]	Noted. We have included a reference to a particular dataset in this category which is used in other chapters of the report.
84315	14	33	14	34	and what else could be said about these gridded datasets for climate extremes? [Annalisa Cherchi, Italy]	Noted. We have included a reference to a particular dataset in this category which is used in other chapters of the report.
89585	14	33	14	34	Useful to expound on this further and give some examples and references. I suggest to check this reference if applicable: van den Besselaar, E.J.M. et al. 2017. SA-OBS: A Daily Gridded Surface Temperature and Precipitation Dataset for Southeast Asia. J. Climate, 30, 5151-5165. doi.org/10.1175/JCLI-D-16-0575.1 [Faye Abigail Cruz, Philippines]	Noted. We have included a reference to a particular dataset in this category which is used in other chapters of the report.
110291	14	33	14	34	Such datasets are not a recent development. HadEX was produced in 2001. That is not recent by any reasonable interpretation. They need more than 1 line if they are used in the Atlas. Suggest ask Lisa Alexander to provide a more meaningful paragraph. [Peter Thorne, Ireland]	Note. This has been revised including a cross-reference to Chapter 11 where these datasets are used.
82351	14	34	14	34	Would read better as 'in gridded datasets'. Assuming this is a reference to HadEX and GHCNDEX, it would be worth citing these specifically. (There is a new HadEX3, covered by a Robert Dunn et al paper currently in review - the citation is in the Chapter 11 SOD). [Blair Trewin, Australia]	Note. This has been revised including the mentioned reference and a cross-reference to Chapter 11.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
71585	14	37	15	28	The two paragraphs are redundant and there is not any link between them. They seem to be written independently to describe the same concepts, so I would unify both in a unique paragraph introducing the main ideas and the two examples described in the current version based on the works done by Indasi, 2019 and Sylla et al. 2013. [Sixto Herrera, Spain]	Accepted. These two paragraphs have been condensed and rephrased.
89587	14	37			It's good to see a discussion here on observational uncertainty and other issues with observation data, which also limits evaluation of climate models. Could this be included in the section on "Limits to the assessment"? I'm hoping this will emphasize the importance of improving observation networks. [Faye Abigail Cruz, Philippines]	Accepted. This has been mentioned in the final remarks.
110293	14	39	14	39	I'm not sure two examples suffice here. There are a huge number of comparisons across a huge range of diagnostics and products and some better spread of examples is likely required. [Peter Thorne, Ireland]	Noted. The aim is not providing an assessment of this topic but just illustrating the relevance of considering observational uncertainty in the assessment.
15063	14	43	14	43	To my understanding Indasi et al., (2019) is still under review. It should be at least be referred as (submitted) and you need to check for its eventual final date of publication before the FGD submission. [Alessandro Dosio, Italy]	Not Applicable. This reference has been removed.
66247	14	43	14	44	Two other good examples of observational uncertainty are Prein and Gobiet (2017), Impacts of uncertainties in European gridded precipitationobservations on regional climate analysis, Int. Journ. of Clim. DOI: 10.1002/joc.4706 and Fantini A, et al., (2016) Assessment of multiple daily precipitation statistics in era-interim driven Med-CORDEX and Euro-CORDEX experiments against high resolution observations. Clim Dyn. https://doi.org/10.1007/s00382-016-3453-4 [Erika Coppola, Italy]	Noted. We have included Kotlarski et al., 2019 which cites these papers and discuss their results.
14179	14	44	14	44	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
20303	14	44	14	47	Who is "they"? [philippe waldteufel, France]	Not Applicable. This sentence has been rephrased.
106461	14	48	14	48	Excellent point to raise! If there is other literature that expounds the benefits of free access to met data this would be really useful to cite, it speaks strongly to establisging a robust baseline from which departures are compared. I'm sorry that I don't have suggestions for you. [Lennard Christopher, South Africa]	Noted.
110295	14	50	14	52	It means regional and national products remain vital not that they have become more important as implied. There is not a move toward feudalism over data. Rather there is a move across many regions of the globe toward more open data policies and greater sharing and global repositories have improved. This text as written implies the exact opposite to be the case. It may well be so for the specific example but an extrapolation to the global situation would paint a picture which is demonstrably false and ignores much good work by parties to improve data openness and data sharing since AR5. [Peter Thorne, Ireland]	Accepted. This sentence has been rephrased to avoid giving the impression that not sharing climate data is positive.
15065	15	1	15	1	If Indasi et al (submitted) is not accepted in time this table and relatd text have to be removed [Alessandro Dosio, Italy]	Not applicable. This table has been removed.
110297	15	3	15	5	The table caption is grossly insufficient in neither outlining the datasets or what the station sets consist of and why they exist. GHCN is not sufficiently specific - is this GHCND or GHCNM? [Peter Thorne, Ireland]	Not applicable. This table has been removed.
34183	15	3			Table Atlas.2. Abbreviations could be described. [Guiomar Rotllant, Spain]	Not applicable. This table has been removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20841	15	9	15	15	What is the purpose of this figure .8? According to the text the main issue here has to do with restrictions to free access; this figure tells us nothing at all about this topic. [philippe waldteufel, France]	Not applicable. This figure has been removed.
20305	15	18	15	21	While admittedly issues have often to be addressed in several chapters, there has to be a logical repartition that can be understood by the readers. In the present case there is nothing to indicate what the repartition is. The ways to deal with uncertainties in chapters 10 and Atlas seem strictly similar. Along which lines does the Atlas chapter" expand, complement" the discussions on discrepancies/conflicts? Why were these discussions left unfinished in chapter 10? Similarly, why were the cases of some regions illustrated in chapter 10 while some others were left aside? [philippe waldteufel, France]	Noted. Cross-references with Chapter 10 have been included.
84317	15	20	15	20	include reference of specific section of chapter 10 [Annalisa Cherchi, Italy]	Noted. Cross-references with Chapter 10 have been included.
15067	15	21	15	21	There are many papers that analized several observational datasets over Africa, more recent than the (only) one cited here. Focusing on pan-Africa only, Nikulin et al, 2013 JoC, Panitz et al, et al (2014) ClimDyn, , Maidment at al, (2015), GRL, Nicholson et al (2018) https://doi.org/10.1016/j.gloplacha.2017.12.014 and Harrisonn et al (2019), ERL are worth assessing, at lest. [Alessandro Dosio, Italy]	Not applicable. This figure has been removed.
24523	15	24	15	25	a very important statement on uncertainty is made and needs to be supported with a few literature [Subimal Ghosh, India]	Not applicable. The paragraph has been revised and reduced.
34187	15	26			“FEWS”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Not applicable. The paragraph has been revised and reduced.
14181	15	27	15	27	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
14183	15	28	15	28	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
20307	15	39	16	2	Concerning the acronyms printed in the subplots of figure .10, RMSD is not to be found in annex 1; in addition, ERAINT should be explained is a short for ERAinterim. Is not it the purpose of legends to provide this kind of information whenever necessary? [philippe waldteufel, France]	Not applicable. This figure has been removed.
20309	16	5	16	5	"reanalyses" [philippe waldteufel, France]	Editorial – copyedit has been completed prior to publication
110299	16	5			This section needs to cross-refence and then build upon the section in chapter 1. [Peter Thorne, Ireland]	Accepted. References have been included.
34193	16	7	16	17	Describe abbreviations: CR, ERA & JRA. [Guiomar Rotllant, Spain]	Rejected. This level of detail is given in the cited references. We include the name of the datasets.
20311	16	8	16	9	"The Atlas will show and intercompare"? Where? Please stipulate the sections in the Atlas chapter [philippe waldteufel, France]	Not applicable. This sentence has been removed.
71587	16	12	16	13	A verb has been missed for the subordinated sentence. [Sixto Herrera, Spain]	Accepted.
20313	16	12	16	15	A verb is missing before "surface" in line 12; in line 15 "covers" needs no fnal "s" [philippe waldteufel, France]	Accepted.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
6827	16	14	16	15	I suggest deleteing ERA-Interim here. ERA5, the replacement for ERA-Interim, has much higher horizontal resolution than both ERA-Interim and ERA-20C, and higher vertical and temporal resolution also. The increase in horizontal resolution of ERA-Interim compared with ERA-20C is more modest. ERA-20C also has higher vertical resolution than ERA-Interim. [Adrian Simmons, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. ERA5 is used in the final version.
82357	16	15	16	15	Should read "most reanalysis datasets…" [Blair Trewin, Australia]	Accepted.
104801	16	16	16	17	A reference to Section Atlas.5.6.2 is made with the statement that regional reanalysis (e.g. for Europe) is explained there. However, section 5.6.2 only discusses gridded datasets, but the methodology or any references to regional reanalysis are not provided. References for Europe could be: https://doi.org/10.1002/qj.2486 or https://doi.org/10.1088/2515-7620/ab2ec3 [Frank Kaspar, Germany]	Accepted. A reference to regional reanalysis products including the references provided is included
54527	16	20	16	35	Would be good to refer to Flato et al. (2013, AR5 Chapter 9) for the evaluation of CMIP5 models and to Chapter 3 of this report for the evaluation of large-scale indicators of climate change in this section. [Veronika Eyring, Germany]	Accepted. References have been included.
105989	16	20	17	12	You might want to refer to Section 10.3.3.3, which assess the general capability of GCMs and RCMs to produce climate output for regions. [William Gutowski, United States of America]	Accepted. Cross-reference to Chapter 10 has been included.
110301	16	25	16	29	The implication here is that these scenarios are directly equivalent but earlier chapters, particularly chapter 4 highlighted that they are not directly equivalent. This assessment should be discussed and cited here as it provides necessary context. [Peter Thorne, Ireland]	Accepted. The different scenarios are now properly introduced with context information on their differences.
14185	16	27	16	27	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
80433	16	31	16	32	It should be "Climatic Impact Drivers" instead of "Climate Impact Drivers". This applies for several lines within the text [Paola Arias, Colombia]	Accepted. Climatic Impact Drivers is used now consistently in the chapter
54523	16	41	16	41	Please replace "historical scenario" with "historical simulation" and specify whether CO2 emission- or concentration-driven [Veronika Eyring, Germany]	Not applicable. This table has been dropped
54525	16	42	16	42	Suggest replacing " inventory of models" with "set of models" [Veronika Eyring, Germany]	Not applicable. This table has been dropped
14187	16	44	16	45	Check the acronyms for the variables for the table mean normally is Tas maximun is Tx … [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. This table has been dropped
110303	16	49	17	1	This information would be more actionable if lineages could be indicated. Many of the models are version increments upon each other and this is unclear. Lining up models from the same lineage horizontally in excahnge for little white space would increase accessability and value of this information and highlight also any new modelling groups submitting to CMIP6 for the first time. With a little effort this table can be made a lot more informative and useful to the reader. [Peter Thorne, Ireland]	Not applicable. The table has been removed including links to Annex II.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
106463	17	14	17	15	Suggest changing "Global model data, as generated by the CMIP ensembles, are available everywhere, but their spatial resolution is limited limited for reproducing certain processes and phenomena relevant for regional analysis" to "Global model data, as generated by the CMIP ensembles, although available globally, have spatial resolutions that are limited limited for reproducing certain processes and phenomena relevant for regional analysis " [Lennard Christopher, South Africa]	Accepted. Changed by "Global model data, as generated by the CMIP ensembles, although available globally, have spatial resolutions that are limited for reproducing certain processes and phenomena relevant for regional analysis"
14189	17	18	17	18	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
84319	17	20	17	21	would it be possible to provide here general estimates? i.e. how many models for one or two specific variables just to give an idea of the diversity [Annalisa Cherchi, Italy]	Noted. specific information is available in the Annex II, Tables AII.1 and AII.2 referenced in the final version
90673	17	20	17	22	The following paper investigated how the GCM simulations used for CORDEX cover the uncertainty ranges of the CMIP5 ensemble for each regions. Ito R., H. Shiogama, T. Nakaegawa, I. Takayabu (2020) Uncertainties in climate change projections covered by the ISIMIP and CORDEX model subsets from CMIP5. Geoscientific Model Development, 13, 859–872 https://doi.org/10.5194/gmd-13-859-2020 [HIDEO SHIOGAMA, Japan]	Taken into account. The paper has been included in the discussion of CORDEX representativeness.
106465	17	22	17	22	Suggest chaiging "level of analysis and assessment that can be done using CORDEX data in some regions" to "level of analysis and assessment that can be performed using CORDEX data in some regions" [Lennard Christopher, South Africa]	Accepted. Done
20843	18	7	18	11	What is the purpose of showing the topography on figure .11? Also the limits of CORDEX domains almost never coincide with constant latitude or longitude; they may be sinuous (see e.g. region 3). Please explain why [philippe waldteufel, France]	Rejected. CORDEX projections are curvilinear. The topography is shown to illustrate domain boundaries. Further description has been included to the caption.
71589	18	21	18	34	The sentence “used for validation purposes”, or equivalent formulations, is continuously repeated when the evaluation experiment is named. [Sixto Herrera, Spain]	Accepted. This has been rephrased and evaluation is used as the preferred term.
14193	18	30	18	30	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14195	18	32	18	32	RCM must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Acronyms are expanded the first time they are used.
14191	19	4	19	4	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
14197	19	14	19	14	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
15069	19	19	19	19	Although I am not against the particular choice of indices used, I am wonering why the more traditional ETCCDI indices have not been used instead. [Alessandro Dosio, Italy]	Not applicable. This table has been removed.
14199	20	1	20	1	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
27441	20	4	20	4	As said in a previous comment, we think it would be better to use "evaluation" rather than "validation". Oreskes N. Evaluation (not validation) of quantitative models. Environ Health Perspect. 1998;106 Suppl 6(Suppl 6):1453–1460. doi:10.1289/ehp.98106s61453 [Eric Brun, France]	See #27439
34195	20	6			Describe abbreviations: DJF and JJA. [Guiomar Rotllant, Spain]	Accepted. These are described in the figure caption.
66249	20	13	20	14	this example refers only to mean climate and it would be worth mentioning the several ANOVA methods for example the paper just published by Christensen, et al. (2020) that shows how the mean climate signal is mainly driven by the GCM and this is what the figure show in most of the cases. Christensen, O.B., Kjellström, E. Partitioning uncertainty components of mean climate and climate change in a large ensemble of European regional climate model projections. Clim Dyn (2020). https://doi.org/10.1007/s00382-020-05229-y [Erika Coppola, Italy]	Not applicable. This example has been removed.
14201	20	14	20	14	NEU and CEU must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Acronyms are expanded the first time they are used.
84321	20	22	20	29	why fig Atlas.12 is for Europe and table Atlas.4 for South Asia? Having table and figure for the same region (i.e. Europe) would made the narrative more straightforward to understand specific issues assesed, related to the availability of models/experiments and to the results shown [Annalisa Cherchi, Italy]	Not applicable. The table has been removed.
14203	20	23	20	23	MED must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Acronyms are expanded the first time they are used.
14205	20	44	20	44	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
110933	20	47	20	48	The "(using MIROC5,...)" part of this sentence is awkward and a bit unclear. I think it would be better as its own sentence, but minimally, it needs the word "respectively" at the end of the bit in the parentheses. [Melissa Bukovsky, United States of America]	Noted. The paragraph has been rephrased.
34197	20	54			« CORDEX-CORE », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. Acronyms are expanded the first time they are used.
14207	21	6	21	6	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
20845	21	27	26	39	This section .4 appears as a useful introduction to the interactive Atlas: it should be associated with section .7 in an annex describing the Atlas and illustrating how to use it. [philippe waldteufel, France]	Taken into account. Section 7 in the SOD is the new section 2 now followed by this section.
124887	21	41	25	4	[ACCESSIBILITY] Given the great length of the WGI report, suggest a minimum of derivative content in the text of the Atlas chapter. For example, Section 4.1 concerns "Observed changes in these variables over land." Could this section be consolidated with 2.3.1.1.3 "Temperatures during the instrumental period – surface" or 2.3.1.1.4 "Overall assessment of surface temperature"? It would be helpful for content on this topic to be in the same place so that readers do not miss it. [Trigg Talley, United States of America]	Taken into account. Section streamlined to ensure minimum necessary content and appropriate references to other chapters added and text clarified.
89589	21	41			Since this section covers global-scale changes, I suggest to check potential cross-references with Chapter 4 to ensure consistency in the message/findings and figures. [Faye Abigail Cruz, Philippines]	Taken into account. Appropriate references to chapter 4 added.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20847	21	46	21	55	It seems difficult to assess the significance of agreements and discrepancies among these data bases, because (as stated on page 14 lines 4-7 and commented upon earlier) they are not fully independent, and conversely because possible differences may have been created by different ways of creating the gridded product [philippe waldteufel, France]	Noted. The intention was not to make this assessment but to illustrate observational uncertainty.
14209	21	47	21	47	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
14211	21	48	21	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
14213	21	53	21	53	remove : [Maria Amparo Martinez Arroyo, Mexico]	Not applicable. No information on the required change is provided.
15071	22	15	22	15	Please check consistency between the text regarding past observd trends at regional scale and Figure 13 and 14. As noted in my comment for the ES, sometimes thee are inconsitencies between what written and what shown. If the peiods used for the analysis (text vs figure) are not the same, this must be clearly indicated to avoid confusion. [Alessandro Dosio, Italy]	Taken into account. Consistency ensured and time periods clearly indicated.
80357	22	15	22	19	Berkeley dataset should be named BEST, which is the name shown in Figure Atlas.13 [Paola Arias, Colombia]	Noted. Text/figure revised to ensure consistency including with Chapter 2.
14215	22	24	22	24	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
110311	22	24	22	28	This really should reference relevant sections in chapter 4 and note their assessment findings. [Peter Thorne, Ireland]	Taken into account. Appropriate references to chapter 4 added.
80359	22	27	22	28	This sentence should include the link to the sections where this higher ECS in CMIP6 is discussed by other chapters [Paola Arias, Colombia]	Taken into account. Appropriate references to other chapters added and text clarified.
14217	22	46	22	46	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
66057	22	52	23	3	Suggest clarification or simply choose one baseline: "Note that the future period warmings are calculated against a baseline period of 1986–2005 whereas the global mean warming level is defined with respect to a ‘pre-industrial’ baseline of 1861–1890." [Kushla Munro, Australia]	Rejected. Figure used to illustrate the use of different baselines which is common throughout the report.
84323	22	54	23	5	for the final draft would it be possible to have fig. Atlas.16 with CMIP6 outputs? Or better comparing CMIP5 and CMIP6? [Annalisa Cherchi, Italy]	Accepted. CMIP 6 used (and comparison with CMIP5 available in the Interactive Atlas).
14219	23	8	23	8	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14221	23	11	23	11	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14223	23	14	23	14	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
84325	23	19	23	24	for the final draft would it be possible to have fig. Atlas.17 with CMIP6 outputs? Or better comparing CMIP5 and CMIP6? [Annalisa Cherchi, Italy]	Accepted. CMIP 6 used (and comparison with CMIP5 available in the Interactive Atlas).
110315	23	27	23	31	This paragraph is not on the face of it internally consistent and requires redrafting for clarity of intent. [Peter Thorne, Ireland]	Accepted. Text revised.
14225	23	29	23	29	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14227	23	38	23	38	Check date 20160 change to 2060) and add bracket [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Text revised.
82369	23	38	23	38	Should this read 2041-2060? [Blair Trewin, Australia]	Accepted. Text revised.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
14229	23	48	23	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14231	23	50	23	50	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14233	23	53	23	53	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14235	24	15	24	15	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
66059	24	15	24	18	Suggest clarification or simply choose one baseline: "Figure Atlas.20: showing a range of projected changes compared to the recent historical baseline period of 1995-2014. The first four panels show: (a) the additional warming to reach global warming levels (with respect to the pre-industrial baseline period of 1851-1900) of 1.5°C and 2°C" . [Kushla Munro, Australia]	Rejected. Figure used to illustrate the use of different baselines which is common throughout the report.
110319	24	16	24	23	This feels like figure caption material and not assessment text material. [Peter Thorne, Ireland]	Accepted. Text revised.
20315	24	26	24	44	Concerning the bottom charts of figure .20, it is recommended to keep the same horizontal scale for land and ocean. While that may be aesthetically less pleasant, it is believed to carry more efficiently the information. Note this is only a personal opinion: the opinion of a panel of users might be useful in this case. [philippe waldteufel, France]	Accepted. Figure revised.
110321	24	47	25	4	This paragraph should reference the annex on modes of variability [Peter Thorne, Ireland]	Accepted. Text revised.
100851	24	54	25	4	The Annex VI on Modes of variability where all the modes are defined and introduced should be referred here and in figure Atlas.21 caption. [Corti Susanna, Italy]	Accepted. Text revised.
89591	25	18			Suggest coordination with Chapter 9 and possible cross-referencing [Faye Abigail Cruz, Philippines]	Taken into account. Material coordinated with Ch 9 and appropriate references added.
80367	25	20	25	28	This should also mention SROCC. [Paola Arias, Colombia]	Taken into account. Material coordinated with Ch 9 e and relevant references included.
91065	25	22	25	24	The qunatities included in this list are strange and not the best to use. Why isn't SSH anomalies in there? It is the one that will have the biggest impact on coastal environments and socio-economic impacts. Should have a figure that show the regional anomalies (with the global mean removed). [Jonathan Bamber, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Text and figures revised.
14237	25	32	25	32	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
18075	25	39	25	39	Here, the meaning of 'ocean pH' is quite unclear. Does 'ocean pH' mean that of sea surface, or that of water-column average? Similarly, the meaning of 'dissolved oxygen' is unclear. [Tsuneo Ono, Japan]	Not applicable. Figure now includes SST and SSH.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
18077	25	39	25	39	Sea-surface temperature and sea-surface pH are proper valuables to represent global ocean heat change and ocean acidification, as these signals are largest in sea surface. However, signal of ocean deoxynation usually show its maximum at ocean interior (ca. several hundret meters in depth) and hence change in surface-water oxygen concentration is not appropriate representative of this fennomena. If 'dissolved oxygen' in this atlas means that of seasurface, I recommend to change this to that of 'clolumn inventory from 0m to 1000m.' [Tsuneo Ono, Japan]	Not applicable. Figure now includes SST and SSH.
89593	25	48			Section 12.5 in Chapter 12 provides a global perspective for climatic impact drivers. Suggest to coordinate with Chapter 12 for potential cross-referencing [Faye Abigail Cruz, Philippines]	Not applicable. Section removed.
80369	25	50	25	51	This sentence, and many others in the Atlas, should contain links to the sections in other chapters where these topics are discussed. The Atlas needs a stronger link throughout the document connecting with other chapters [Paola Arias, Colombia]	Accepted. More comprehensive cross-referencing to other chapters included.
66253	25	50	26	39	Section Atlas 4.3 on Extreme is overlapping with CH11 and CH12 when projections are shown like for example for figure Atlas23 that is the same as CH12 Figure 12.4. It would be good for the Atlas to keep validation mandate and show a validation for extreme and CID too. [Erika Coppola, Italy]	Accepted. Section removed.
20849	25	53	26	1	Since the results shown in Chapter 11 and 12 need to be completed, what is missing in them? Assuming that in the present chapter aims at highlighting the risks angle, it seems that a relevant metrics, rather than the number of days with maximum temperature exceeding 35°C, would be the number of CONSECUTIVE days with MINIMUM temperature in exceed of 25°C or so. Certainly opinions of a panel of users and of public healtrh authorities would be useful. [philippe waldteufel, France]	Not applicable. Section removed.
14239	26	3	26	3	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
105991	26	7	26	7	Discussion of bias adjustment should refer to Cross-Chapter Box 10.2 - Issues in bias adjustment [William Gutowski, United States of America]	Not applicable. Section removed.
82371	26	8	26	9	It may be worth noting that increases are particularly large in many tropical areas, where temperature vairability is low and there are already large numbers of days in the 30-35 C range. [Blair Trewin, Australia]	Not applicable. Section removed.
71591	26	26	26	39	In this Chapter two Bias Adjustment (BA) methods are mentioned, but a single one is used in the Interactive Atlas (and different from the one described in TA VII). A discussion on adjusting threshold-dependent indices would be needed here. A paper currently under revision could be relevant for this discussion (2020_Iturbide_underReview, https://github.com/SantanderMetGroup/notebooks) [Sixto Herrera, Spain]	Not applicable. Section removed.
80373	26	26	26	39	Links to other chapters where bias adjustment is addressed should be included [Paola Arias, Colombia]	Not applicable. Section removed.
14241	26	27	26	27	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14243	26	35	26	35	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82031	26	38	26	38	Please reconsider the term 'bias correction'. Better use 'bias adjustment'. Check also in IA [Swantje Preuschmann, Germany]	Not applicable. Section removed.
89595	26	39	26	39	There seems to be only one bias adjustment technique discussed in Technical Annex AVII.5. Is the other bias adjustment technique referring to the Empirical Quantile Mapping in Atlas.7.2 ? [Faye Abigail Cruz, Philippines]	Not applicable. Section removed.
71593	26	45	26	46	Use the same approach when referring to different Working Groups. Here, WGII and III is used but previously it has been used WG II and WG III or WGII and WGIII. [Sixto Herrera, Spain]	Editorial – copyedit has been completed prior to publication
14245	26	47	26	47	change WG II to WGII [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
24437	26		116		In some sub-regions of Atlas.5 (such as in Middle East Asia), length of sub-section in Key features of the regional climate and previous findings from IPCC assessments is too long. Include only relevant items. [Akio Kitoh, Japan]	Accepted. Text revised.
71595	27	4	27	21	As has been reflected for Section Atlas 3.1.1 both paragraphs are redundant. In this particular case, they are contradictory as the first consider projections of CMIP5, CMIP6 and CORDEX while the second paragraph makes reference to the CMIP5 and CMIP6 projections. [Sixto Herrera, Spain]	Taken into account. Text revised to ensure internal consistency and consistency with introductory material in section 1.
110325	27	4	27	21	This information is already all given or implied by prior sections. Is such link text really required here? I don't feel like this sub-section is telling me anything new. [Peter Thorne, Ireland]	Taken into account. Section removed and relevant text included in section 1.
124889	27	4	110	17	[ENSEMBLES] Regional Figures 24, 25, 27, 29, 30, 33, 34, 37, 39, 40, 42, 48, 48, 49 are generated from CMIP5 and 6 data via a script. However, the degree of discussion of CMIP6 results varies significantly by region in the corresponding text so it is debatable whether these figures could be described as an assessment of published literature. Recognizing that these sections may be updated in the upcoming draft, regional literature on CMIP6 should be cited to provide context, including simulation strengths and weaknesses. At least a statement should be included like the one in the AR5 WGI Annex 1: "Sections ... contain relevant information regarding the evaluation of models in this region, the model spread in the context of other methods of projecting changes and the role of modes of variability and other climate phenomena." Section 5.1 could include more explicit explanation of the status of CMIP6 data and literature relative to the figures included in the Atlas. [Trigg Talley, United States of America]	Accepted. Regional sections now assess literature on CMIP6 model performance.
80375	27	4	117	8	There are substantial overlaps between CH8, CH10 and Atlas regarding regional changes of precipitation (both chapters) and temperature (CH10) (observed, attributed and projected). Also, there is a lot of review-like text that does not convey to an assessment [Paola Arias, Colombia]	Taken into account. All Atlas section authors were actively involved in cross-chapter teams ensuring consistent, coherent and complementary assessment of regional changes and consistency of datasets being used. Atlas text thus streamlined and focused on its core assessment responsibilities of mean climate change and model evaluation over the regions.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20851	27	4	117	15	Unlike section .4, this large section is not strongly linked to the atlas. It ought to be combined with section 12.4. Somebody interested in a particular region/continent should be allowed to learn about these complementary view angles without having to shift to sections 150 pages apart. [philippe waldteufel, France]	Rejected. The remit of the Atlas includes providing an assessment of changes in selected mean climate variables across the regions.
15073	27	9	27	9	Methodologies to construct climate information and messages are assessed in Ch10.5 not 10.6 [Alessandro Dosio, Italy]	Taken into account. Section removed and relevant text included in section 1.
105993	27	9	27	9	The reference should be to section 10.3.1, which assesses different methodologies for producing regional climate data. [William Gutowski, United States of America]	Taken into account. Section removed and relevant text included in section 1.
89597	27	9	27	11	May need to be reviewed considering updates to the scope of the regional assessment in the Atlas [Faye Abigail Cruz, Philippines]	Taken into account. Section removed and relevant text included in section 1.
84327	27	18	27	18	CORDEX not mentioned here [Annalisa Cherchi, Italy]	Taken into account. Section removed and relevant text included in section 1.
106467	27	18	27	18	"Future projection information is taken from the CMIP5 and CMIP6 ensembles". Is CORDEX missing? [Lennard Christopher, South Africa]	Taken into account. Section removed and relevant text included in section 1.
106773	27	24	31	31	This section expands more on West, East and South Africa (which are common regions since AR5) neglecting others sub-regions as Central Africa. This region is defined in Figure Atlas.2:b but assessment of observed trend and projected climate is missing. Central Africa is recognised as the least studied over the continent and it is challenging to assess past trend. However, in the litterature there are some assessment of past trend of Central African climate. Some papers: Recent trend Nicholson SE et al. 2018. New rainfall datasets for the Congo basin and surrounding regions. J Hydrometeorol. 19:1379–96. Cook, K.H. et al 2020. Congo Basin drying associated with poleward shifts of the African thermal lows. Clim Dyn 54, 863–883 Future changes Fotso-Nguemo et al. 2017. Assessment of simulated rainfall and temperature from the regional climate model REMO and future changes over Central Africa. Climate Dynamics, 48(11-12), pp.3685-3705. Alain T. Tamoffo, et al. 2019. Process-oriented assessment of RCA4 regional climate model projections over the Congo Basin under 1.5C and 2C global warming levels: influence of regional moisture fluxes. Clim Dyn [Wilfried Pokam, Cameroon]	Assessment of Central Africa is now included. Thanks for the references.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
44119	27	24	32	7	This is a very useful section for the African countries. It already contains a substantial amount of spatially detailed information, and we thank the authors very much for drafting it. Nevertheless, as a general comment on this section, we suggest that the presented results should be harmonised and streamlined in order to draw clearer conclusions from the multiple lines of provided evidence. In particular, in the current draft it is hard to understand the logical structure within the subsections: are the reported findings listed region by region, or indicator by indicator? Moreover, the results shown by Fig. 24 are not systematically described and compared to other lines of evidence, which also adds some confusion. Another issue is the absence of confidence or agreement assessments regarding the results that were not included in previous IPCC publications, which casts doubt on the validity of those provided in the regional executive summary. We ask the authors to please include such assessments in the next draft. [Lamin Mai Touray, Gambia]	Findings are reported region by region. Figure 24 is referenced appropriately this time. Results from previous IPCC reports are referenced in this assessment.
108951	27	24	32	7	The report devotes less than 2% of the report to Africa. This is suprising considering that Africa is likely to be one of the most affected affected by climate change. There is very little granularity in the analysis, which is what is required for decision makers to make informed CC related decisions. Instutions such as CSAG (at UCT), CSIR, University of Pretoria, and GCI (at Wits University) - all in South Africa, have done extensive analysis on climate related data analysis and projections. These should be inlcuded in the analysis. Research from African institutions should be treated as credible, especially since it's done by world renowed researcers. One example of such research is http://www.csag.uct.ac.za/cordex-africa/cordex-africa-publications/ [Siyasanga Sauka, South Africa]	Noted. Thank you for the references. Key findings from various literature has been assessed and reported. An attention has been paid to analysis over South Africa and research reports from institutions has been considered.
45197	27	24	117	50	Sections 5.2 to 5.10 are spread over 91 pages, which is extremely long. The assessment in many places reads more like review, This sections need to be considerably shortened and include concise assessments for the different regions. [Krishnan Raghavan, India]	Accepted. Regional assessment has been undertaken and streamlined.
20317	27	26	27	26	Why "executive"? What is called executive summary is usually the summary of a business plan, strongly oriented toward economics and financial matters rather than knowledge [philippe waldteufel, France]	Well noted
20853	27	28	27	28	Reading this line leads one to wonder what is the purpose of a "regional" summary. Is comparison with what happens in other regions of the planet the most relevant regional information? Actually, the information given in this line mainly participates of global information. [philippe waldteufel, France]	Accepted. The summary has been revised accordingly.
14247	27	30	27	31	Change phrase Since 1980, mean temperature over East Africa has shown an increasing trend but showed a decreasing trend in the past not clear [Maria Amparo Martinez Arroyo, Mexico]	Noted. The statement is rewritten 'From 1930 to1969, mean temperature over East Africa showed a decreasing trend but from 1970 to 2014 an increasing trend is observed'
84329	27	31	27	31	what "past"? Better to include period [Annalisa Cherchi, Italy]	Noted. The statement is rewritten 'From 1930 to1969, mean temperature over East Africa showed a decreasing trend but from 1970 to 2014 an increasing trend is observed'

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
108323	27	32	27	32	northern Africa' should be changed to North Africa for consistency with chapter 11 [Nana Klutse, Ghana]	accepted
45167	27	34	27	37	High confidence has been assigned to attribution of the drying trend of long rains over the Horn of Africa in recent decades to oceanic influence. However, this is inconsistent with the attributions in Chapter 3 and Chapter 8. [Krishnan Raghavan, India]	Noted. Confidence statement is reviewed accordingly.
15075	27	34	27	41	Assessing trends in precipitation without specifying the period they refer to is rather confusing to me. For instance, the Sahel has witnessed a significant and well documente recover in precipitation since the 1980s. If the statement refers to longer (or earlier) periods, this should be clearly indicatd. Also, as indicated in a previous comment, many studies show an icrese in precipitation over Southern Africa in the last decaes by means of several observational datasets including Harrison et al 2018 and Maidment et al 2015. Your statement seems also in contraddiction with Atlas Figures 13 and 14. [Alessandro Dosio, Italy]	Noted. Periods of drying and recovery of rainfall have been added.
44121	27	34	27	41	The level of spatial detail that is given in these sentences is useful. However, from the content of Section 5.2, it seems that these sentences don't reflect a comprehensive summary of the reported findings on drying trends. For example, could the "other parts" of Africa that are also experiencing a drying trend be listed as well? Moreover, the reason why the Horn of Africa is specifically highlighted in the bold statement is unclear, as Section 5.2 doesn't seem to make the point that the drying trend in this subregion has been particularly important or documented. Similarly, these sentences need to be reformulated in order to clarify the contribution of anthropogenic activities in the mentioned trends. Specifically, it can be deduced that the increased South Atlantic SSTs that have led to a drying trend in the Sahel are primarily due to human activities, but this should be made clearer if this is the case. [Lamin Mai Touray, Gambia]	Noted. Other parts of Africa experiencing the drying trend like the Sahel and southern Africa is already listed together with the attribution of the drying.
110329	27	34	27	41	But this issue was the subject of a case study already under chapter 10. Why is this being redundantly assessed here and why is this substantive analysis not being cross-referenced? [Peter Thorne, Ireland]	Noted. The text is cross referenced now.
84331	27	40	27	40	"last two decades" better to specify the years' interval [Annalisa Cherchi, Italy]	Accepted. The interval has been specified
20855	27	43	27	44	The first part of this sentence calls for the same comment as line 28 higher. [philippe waldteufel, France]	Accepted. The summary has been revised accordingly.
110331	27	43	27	45	Lacks a critical counter-narrative for a lower, less extreme, emissions future [Peter Thorne, Ireland]	Accepted. Emphasis is placed on worse case scenario for policy makers but information on changes at warming levels also included.
124891	27	43	27	48	This section highlights only results from RCP8.5 without discussing how sensitive projections are to emissions levels and scenarios. It would be more helpful for policymakers if the text were to report findings for at least two contrasting RCPs. [Trigg Talley, United States of America]	Accepted. Emphasis is placed on worse case scenario for policy makers but information on changes at warming levels also included.
84333	27	45	27	45	in the final draft would it be possible to update this information with results from CMIP6 scenarios? [Annalisa Cherchi, Italy]	Accepted. The report has been updated with Information from CMIP6 scenarios.
93793	27	50	27	52	Please check the formulation of this sentence. [Quentin Lejeune, Germany]	Noted. The sentence is revised.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
124893	27	50	28	4	The text should specify the time period used for the projection and which RCP(s). [Trigg Talley, United States of America]	Noted. The period is till end of the century and under RCP8.5
106469	27	54	28	2	I don't think this statement is supported in the text. I think it is correct but lacking the tracability. Please see my comment to Page 31, line 22 concerning this. [Lennard Christopher, South Africa]	Noted. The text is updated to reflect the statement in the executive summary.
84335	28	3	28	4	I would move this sentence at page 27 line 54 where there are other information about South Africa [Annalisa Cherchi, Italy]	Accepted. The sentence is moved and revised.
20857	28	9	28	14	This passage explains to the reader that a "regional climate" for Africa does not exist. Climate sceptics will be happy to use it for belittling IPCC literature [philippe waldteufel, France]	Taken into account. Text has been rephrased noting "Africa has many varied climates".
87751	28	11	28	14	North Africa region missing in the description of Africans regions.I suggest to add North Africa in this sentence, ‘’dry/wet season regime in the northern and southern African region and each climate region has its local variations resulting in very high spatial and temporal variations…’’ [Wafae BADI, Morocco]	Accepted. Northern Africa is added.
110333	28	11	28	14	Omission of Namibian desert feels odd here [Peter Thorne, Ireland]	Accepted. Namibian desert is added
82373	28	16	28	43	When projection assessment findings from previous IPCC reports are discussed, the past tense should be used to make it clear to readers that these are historical findings. Time periods such as "last 3 decades" (line 34) should also be made specific as their end points will be at some stage before the present. These points also apply elsewhere where past IPCC findings are being reported (e.g. page 33 line 3) [Blair Trewin, Australia]	Noted. The text is revised. Thank you.
85897	28	21	28	21	0.5˚C relative to? It is much higher compared to pre-industrial. [Debra Roberts and the Durban WGII TSU, South Africa]	Noted. The text is revised
41123	28	23	28	25	under which RCP? The 2℃ warming is for Africa or global mean? Some places show 4℃ warming for Africa. Needs clarification. [TSU WGI, France]	Accepted. The text is revised accordingly.
68177	28	29	28	31	note that Ch9 will show assessement of projections for glaciers, based on GlacierMIP2 (Marzeion et al., 2020), the regions don't match exactly the regions in Atlas and elsewhere in AR6, but the RGI regions, see ch9, RGI region 16: Low Latitudes will include Africa [Guðfinna Aðalgeirsdóttir, Iceland]	Accepted. Addressed with reference to Ch9.
15077	28	34	28	34	over the last three decdaes' Does it mean 1991-2020 or 1981-2010? Given the context of the paragraph I assume 1981-2010, but at the time of the publication of this report, 1981-2010 won't be considered 'last three decades' generating confusion. [Alessandro Dosio, Italy]	Accepted. This has been revised with specific decades.
84337	28	34	28	34	"last 20 years" and "over the last 3 decades", better to specify the years' intervals [Annalisa Cherchi, Italy]	Accepted. Years have been a specifically provided.
124895	28	48	29	13	It would help to include the rationale to focus on 1981-2014 observations in Figure 24 rather than the longer dataset. Perhaps the presatellite data are not reliable enough? [Trigg Talley, United States of America]	Taken into account. Rationale provided in Atlas.1 and in Atlas.3 where the figure is placed.
106775	28	48	30	2	It is worth considering the spatial heterogeneity of past trend of climate over East Africa. For instance Nicholson (2017) present recent trend while tacking into acoount this spatial heterogeneity. Nicholson, S. E. (2017), Climate and climatic variability of rainfall over eastern Africa, Rev. Geophys., 55, 590– 635, doi:10.1002/2016RG000544. [Wilfried Pokam, Cameroon]	Noted. Presenting Africa in sub-regions allows for this. It has been considered

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
14249	28	52	28	52	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
82375	29	1	29	13	Many of the findings in this paragraph are quite old, and some may not necessarily hold if extended to the present day - e.g. it would not surprise me if the decreased diurnal temperature range trend reported by New et al 2006 has reversed, given the predominance of drought in southern Africa since 2014. There may not be a lot that can be done without specific literature, though. [Blair Trewin, Australia]	Accepted. References have been updated
106471	29	10	29	11	On the significant cooling trend of Tmin this is now uncertain, please see AC Kruger, M Nxumalo 2017. From the abstract: "The central interior, which exhibited significant cooling in previous analyses, now shows non-significant or similar trends when compared to the other parts of South Africa. " Kruger, A.C. and Nxumalo, M., 2017. Surface temperature trends from homogenized time series in South Africa: 1931–2015. International Journal of Climatology, 37(5), pp.2364-2377. [Lennard Christopher, South Africa]	Accepted. The sentence has been revised with the suggested reference.
84339	29	11	29	12	this information is already included in the lines just before [Annalisa Cherchi, Italy]	Noted. Thank you. The text has been updated.
84341	29	12	29	12	specify to what "recent years" refer to [Annalisa Cherchi, Italy]	Accepted. 1979-2015 has been specified.
15079	29	15	29	15	...general decrese... since when? Over what period? [Alessandro Dosio, Italy]	Noted. This sentence has been revised
82377	29	15	29	15	The wording implies that the finding applies to all of Africa but the Mouhamed et al 2013 reference only discusses the West African Sahel - are there other references to support this statement for other regions? The time period also needs to be stated (1960-2010 for Mouhamed et al). If the result only holds for the West African Sahel then this sentence would be better moved later in the paragraph with other regional findings. (Sahel rainfall changes are complex and sensitive to the time periods used, and it would be useful to extend this analysis to cover the relatively wet 2010s if possible - the recent partial recovery of monsoon precipitation in the West African Sahel is covered, for example, in the Technical Summary (P105 L5)). [Blair Trewin, Australia]	Accepted. Thank you. The text has been updated with information from the sub-regions
87753	29	15	29	15	Mouhamed et al .2013 shouldn’t be used only for an overall statement over African. It ‘s is focusing only West Africa not on all Africa [Wafae BADI, Morocco]	Noted
82383	29	15	29	17	Lack of observations is a problem for temperature too so you may want to consider discussing this issue at the start of the section, although precipitation analyses are more badly affected because temperature trends are more consistent and temperature has longer length scales than precipitation, so a smaller network is needed to detect temperature change than for precipitation. [Blair Trewin, Australia]	Accepted. The paragraph has been reworked.
15081	29	15	29	30	Please consider additional references (already listed in a previous comment) about obsreved prcipitation over Africa that somehow are in contrast with your findings. Also be consistent with Atlas figure 13 and 14 or explain the diffeences. Finally, at line 30, '1980-2010' cannot be consided 'last two decaeds' [Alessandro Dosio, Italy]	Accepted. The text has been updated and with additional references.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
93795	29	15	29	30	Could you please comment on the findings from Fig 24b, and especially the significant precipitation increases shown for the Sahel and the western part of Southern Africa? [Quentin Lejeune, Germany]	Accepted. The text has been updated with references to the figure.
85899	29	17	29	17	Re differences between data sets: are these differences between weather stations due to high local rainfall variation as in local thunder storms, which is the main form of rainfall over vast areas, or what is being referred to here? [Debra Roberts and the Durban WGII TSU, South Africa]	Noted. Sylla et al 2013 intercompared FEWS (Famine Early Warning System), GPCP (Global Precipitation Climatology Project) and TRMM (Tropical Rainfall Measuring Mission)
108325	29	17	29	17	Southern Africa' should be 'southern Africa' throughout the document [Nana Klutse, Ghana]	Accepted.
84343	29	18	29	18	with references in parenthesis, the term "according to" is useless [Annalisa Cherchi, Italy]	Accepted. "according to" is removed
106473	29	18	29	21	This statement needs to be updated with new information from Kruger, A.C. and Nxumalo, M.P., 2017. Historical rainfall trends in South Africa: 1921–2015. Water SA, 43(2), pp.285-297. [Lennard Christopher, South Africa]	The reference is updated as well as the text.
85901	29	27	29	27	“more intense” – is that heavier rain, over shorter times, and with longer dry days in between? Please be specific. Also please discuss if shifts in rainy seasons have been observed, length, onset, end, length of dry spells, etc. These have major implications on the ground. It gets mentioned in line 46 but without specifying if rains come earlier or later. Is it possible to show an Africa map of start and end of rainy season as well as change in timing? [Debra Roberts and the Durban WGII TSU, South Africa]	Accepted. "more" has been removed. The shift in rainy season has been discussed now.
14251	29	28	29	28	change to rainy season instead of raining season [Maria Amparo Martinez Arroyo, Mexico]	Accepted.
93797	29	34	2	36	It is unclear whether it is referred to absolute temperature increases or if these increases are assessed in comparison to the natural climate variability. [Quentin Lejeune, Germany]	Noted. both minimum and maximum temperatures are increasing
82379	29	34	29	34	"higher temperature increases" doesn't seem right in the context of this paragraph - is a higher confidence of attribution meant? (since less internal variability would imply a higher degree of confidence for attribution of a temperature increase of X). [Blair Trewin, Australia]	Accepted. The sentence has been revised
110339	29	34	29	36	This makes no sense. What you presumably mean is that low variance makes signal detection easier. But if so where is the link to the time of emergence analysis in chapter 1? [Peter Thorne, Ireland]	Accepted. This is not clear. The paragraph has been revised.
82381	29	36	29	37	This is not really an accurate characterisation of the Barkhordarian et al 2012 findings - they find that area-wide warming was very likely to be attributable to anthropogenic forcing, but that natural variability was primarily responsible for the spatial deviation of warming amounts from the area-wide mean. [Blair Trewin, Australia]	Accepted. The statement has been corrected.
87761	29	36	29	37	I think this statement is contradictory with the funding of (Barkhordarian et al., 2012),Indeed the authors argue that anthropogic forcing is a plausible explanation for the observed mediterranean warming [Wafae BADI, Morocco]	Accepted. The statement has been corrected.
93543	29	36	29	38	Warming over North Africa is attributed to natural variability only based on one paper in 2012 and is linked to NAO based on one old paper. There are several new papers for these aspects. Recent studies show the effect of the historical climate forcing on warming in North-west Africa (i.e Diffenbaugh et al., (2017). [Omar Chafki, Morocco]	Accepted. Recent references have been added and the sentence corrected

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110341	29	36	29	38	This is far too over-simplified and this statement is really undermining multiple aspects of the preceding assessment. Better to say nothing at all than to give such an over-simplified assessment particularly shorn of confidence / likelihood language. There is attributable global warming which is virtually certain. Starting to call out regions and say this is variability etc. etc. is undermining that assessment implicitly. You must be more careful not just here but throughout the Atlas text in this regard. [Peter Thorne, Ireland]	Accepted. The statement has been corrected.
61173	29	36	38		Page 29 (L36 toL38) The warming over North Africa is attributed to internal variability only. New literature shows effect of human activities [Khalid EL RHAZ, Morocco]	Accepted. The statement has been corrected.
87763	29	37	29	38	Knippertz et al,2003 is too old please use Diffenbaugh et al. 2017 [Wafae BADI, Morocco]	Accepted. The reference has been changed.
84345	29	39	29	43	not clear what "in parts of Africa during each monsoon season" means. It would be better to specify monsoon regions and seasons of interest. Also the references in these lines are quite old, likely already part of the AR5 assessment [Annalisa Cherchi, Italy]	Accepted. Monsoon seasons. have been specified. References have been updated.
15083	29	45	29	45	Again; last two decades since when? 2001-2020? [Alessandro Dosio, Italy]	Accepted. specific years have been provided
110345	29	45	29	46	Rainfall in the sahel was the subject of a several page case study in chapter 10. This oversimplification without reference to that case study is thus in need of a complete revision. [Peter Thorne, Ireland]	Accepted. References have been provided.
110347	29	47	29	47	Timing and onset of what? [Peter Thorne, Ireland]	Noted. of rainfall has been inserted
108327	29	48	29	55	East Africa drying associated to anthropogenic influences inconsistent with Chapter 11 page 85 line 47-48 [Nana Klutse, Ghana]	Noted. non anthropogenic in chapter 11 was attributed to only 2010 drying trend
84347	29	55	30	2	this could be moved to line 48 where shift of rainband and Saharan heat low have been already mentioned [Annalisa Cherchi, Italy]	The sentence has been shifted
3695	30	5	30	5	There has been a enormous effort undertaken to produce a convection-permitting projection for Africa that will provide insights not possible with this list of data sources. It would seem appropriate to acknowledge its potential to complement CMIP and CORDEX here? I list the future projection papers, but there are also a number of evaluation papers. https://journals.ametsoc.org/doi/10.1175/JCLI-D-17-0503.1 https://www.nature.com/articles/s41467-019-09776-9 https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/2019GL083544 https://journals.ametsoc.org/doi/full/10.1175/JCLI-D-19-0328.1 https://journals.ametsoc.org/doi/full/10.1175/JCLI-D-19-0380.1?af=R&mobileUi=0 [Declan Finney, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Thank you. Acknowledgement is duly given
20859	30	7	30	10	Why these lines present a caricatural view of the study by James et al. is a mystery [philippe waldteufel, France]	Noted. James et al 2018 discussed the 'one size fit all' approach.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110349	30	7	30	12	What possible benefit does such a statement here serve? You are assessing model performance over Africa not critiquing whether there is an African hosted suite of climate modelling centres. This has no place in WG1 surely? The only germane aspect here is taht Africa has not been a priority for model development and even that is an arguable point in that several modelling groups have been prioritising Africa such as the UK Met Office to support startegic national development partnership priorities. I would delete the entire paragraph. [Peter Thorne, Ireland]	Accepted. A reference to the statement is provided. Acknowledgement is given to some studies.
15087	30	14	30	25	In the RCM paragraph I think there are many papers missing evaluating RCMs over Africa. A recent list can be found in e.g. Dosio et al (2019) https://link.springer.com/article/10.1007/s00382-019-04900-3. From the text it is also not clear whether the studies assessed the performances of RCMs driven by renalysis or by GCMs. The distinction is important and should be explicitely stated. [Alessandro Dosio, Italy]	Accepted. Thank you. Studies with RCMs driven by GCMs are specified in the CMIP project description. More papers have been added in the reference list.
15085	30	14	30	33	I would personally describe GCM rsults before the RCMs ones. [Alessandro Dosio, Italy]	Accepted. This has been done
34199	30	14			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	The full meaning of CORDEX is provided at the beginning of the sentence
34201	30	16			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. The full meaning of CORDEX is provided at the beginning of the sentence
82385	30	19	30	21	It needs to be made clear here that the -0.013 number is for a single model simulation for the 1979-2010 period, which most observational data sets do not show a significant signal for - but probably a more important finding in the Jury 2013 paper (and the one I'd probably use instead of what is quoted now) is that observational trends for most variables in southern Africa are consistently weaker than the model simulations evaluated. (The way the abstract of the Jury 2013 paper is written is unhelpful - this is one where you really need to look at the full text). [Blair Trewin, Australia]	Accepted. This has been revised
34203	30	20	30	21	Check unit format: “xx mm/day”. [Guiomar Rotllant, Spain]	Accepted. This has been revised
15089	30	21	30	21	Are the results by Jury 2013 based on observations or model? And if the latter, GCMs or RCMs? I don't think this sentence fits here. [Alessandro Dosio, Italy]	Noted. This has been revised
14253	30	25	30	25	change to rainy instead of rains [Maria Amparo Martinez Arroyo, Mexico]	Accepted.
124897	30	27	30	27	The statement "The CMIP project has not resulted in improved performance for Africa" is fairly strong in questioning the validity of simulation results for Africa. In order for this regional section to be meaningful, the reader assumes that CORDEX results are more reliable than GCMs for Africa. Is this in fact true? For clarity, it would be helpful to state so. [Trigg Talley, United States of America]	Noted. The paragraph has been reworked. Africa is presented in sub-regions for detailed assessment.
15091	30	28	30	28	It is not clear why projections uncertainties are discussed here (it would fit better in the next subsection). The impact of sampling the model ensemble (GCM-RCM) on future projections is discusse also in Dosio et al (2019) https://doi.org/10.1007/s00382-019-04900-3 [Alessandro Dosio, Italy]	Noted. This has been considered. Thank you.
84349	30	30	30	33	sentence seems incomplete [Annalisa Cherchi, Italy]	Noted. The sentence is revised

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
40805	30	31	30	33	some literature about CMIP6 are listed, but no assessment on these CMIP6 results. [TSU WGI, France]	Accepted. Information on CMIP6 has been updated in the text
124899	30	36	31	31	In Figure 24, it appears that areas of statistically significant precipitation trends in CMIP6 are much more extensive than in CMIP5, where they are limited. It would be worth highlighting in the text and discussing what contributed to the change. How does the statement "The CMIP project has not resulted in improved performance for Africa" relate to this? [Trigg Talley, United States of America]	Accepted. The paragraph has been reworked on with updated information from CMIP6.
124901	30	36	31	31	[PROGRESS] Section 5.4.2 focuses on CMIP5 results. Are these new since AR5? Will the section be updated with CMIP6 results when available as stated in other regional sections? Figure 24 includes results from CMIP6: Have they then been previously published? No study is cited here for CMIP6 results in Figure 24. [Trigg Talley, United States of America]	Accepted. The paragraph has been updated.
106475	30	38	30	41	I'm not sure of the message in this sentence. I think it is trying to say that although climate research over Africa has improved (however that is quantified), and some infomration is available both pan-Africa'ly and regionally, it is still difficult to make robust assessments of regional climate change projetcions (compard to?) because there is still not enough information in specific areas (I assume sub regions. If what I have written above is correct I suggest teh following: Although climate research over Africa has improved since AR5, [if possible quantify improvement - number of papers?] and the SR1.5 has synthesised new information for the continent, it is still difficult to provide robust assessments of regional climate change projetcions (compard to?) because there is still not enough information in specific regions." Or somethign like that. [Lennard Christopher, South Africa]	Accepted. The paragraph has been reworked. Africa is presented in sub-regions for detailed assessment.
110351	30	38	30	41	Research of what? Not enough information on what? This sentence makes very little sense without a substantive amount of additional specificity. It cannot be assumed that the reader has full context knowledge here. [Peter Thorne, Ireland]	Accepted. The paragraph has been reworked.
15093	30	38	31	9	You may want to include also Dosio (2017) https://doi.org/10.1007/s00382-016-3355-5 who assessed projections of temperature over Africa by means of rhe large CORDEX ensemble and compared it to the driving GCMs [Alessandro Dosio, Italy]	Noted. All references have been removed because of a previous concern.
84351	30	38	31	9	this paragraph needs to be re-organized. Sentences are apparently randomly collected, while they should be re-ordered trying to follow a flow (i.e. by region or by time) [Annalisa Cherchi, Italy]	Accepted. The paragraph has been reworked. Africa is presented in sub-regions for detailed assessment.
93799	30	38	31	31	The usefulness and the understandability of this paragraph 5.2.4 would be enhanced if comments on the regional features revealed by the Fig 24 (c-f) would more systematically be included, so that they can be compared to the findings from the mentioned individual studies. [Quentin Lejeune, Germany]	Accepted. The paragraph has been reworked. Africa is presented in sub-regions for detailed assessment.
34205	30	45			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Noted
82387	30	47	30	47	Suggest replacing 'will' with 'is generally projected to' - 'will' implies that the outcome is certain, which is a stronger result than can be justified by the results in the paper cited. [Blair Trewin, Australia]	Accepted.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82389	30	53	30	53	Can it be defined better what a 'hotspot' is? There is a particular definition in the paper cited (although it isn't really amenable to being summarised in a single sentence). [Blair Trewin, Australia]	Accepted. Hotspot is defined
34207	31	6			“CMIP5”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
15095	31	11	31	31	My impression is that this paragraph is heavily (if not exclusively) based on RCMs projections, in contrast with the claim of using multiple lines of evidence. The assessment here should be at least compard with that of the CMIP5/6 ensemble in the previous chapters. Also, some papers are missing that may be useful. Dosio et al (2019) https://doi.org/10.1007/s00382-019-04900-3 assessed future projection of pecipitation over Africa from the large (>20) CORDEX ensemble and comparedit with the driving GCMs, identifying ares where models agree or diverge. Dosio et al (2020) https://iopscience.iop.org/article/10.1088/1748-9326/ab7fde investigatd two possible but contrasting future in projectd proecipitation over West Africa based on CORDEX RCMs. [Alessandro Dosio, Italy]	Accepted. The paragraph has been reworked. Africa is presented in sub-regions for detailed assessment.
15097	31	15	31	16	This sentence is related to model evaluation and it does not belong here. [Alessandro Dosio, Italy]	Accepted. The sentence is moved
85903	31	18	31	18	Is it possible to convert mm/day to mm/year as this is easier to visualize. With such low confidence it anyway is not helpful to report at a per day level. [Debra Roberts and the Durban WGII TSU, South Africa]	Accepted. the magnitude of 0.4 mm/day reported per year is extremely small and so it is removed from the sentence
34209	31	18			Check unit format: “xx mm/day”. [Guiomar Rotllant, Spain]	Accepted.
17699	31	19	31	20	The paragraph on southern Africa would be enhanced if it referred to work that grounds the drying trend in changes in the tropical rain band. A proposed addition between lines 19 and 20 of page 21 may be: "The projections of reduced precipitation in summer rainfall regions of southern Africa are associated with delayed wet season onset in spring (Dunning et al 2018) due to a northward shift and delayed breakdown of the Congo Air Boundary (Howard et al 2020)." References: •Dunning, C. M., Black, E. C. and Allan, R. P. (2018), `Later wet seasons with more intense rainfall over Africa under future climate change', Journal of Climate 31, 9719–9738, https://doi.org/10.1175/JCLI-D-18-0102.1 •Howard, E and Washington, R. (2020) Tracing future spring and summer drying in southern Africa to tropical lows and the Congo Air Boundary. (Accepted April 2020). https://doi.org/10.1175/JCLI-D-19-0755.1 [Emma Howard, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. The statement is included. Thank you.
106479	31	20	31	20	"likely" is calibrated IPCC language so should be in itallics or be a different word if this was not the intent. [Lennard Christopher, South Africa]	Accepted.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
15099	31	22	31	24	To my understanding West Africa precipitation is not projectd to decese consistently. Rather GCMs and RCMs project contrasting futures and the signal is rather uncertain. See for instance Dosio et al (2019 https://link.springer.com/article/10.1007/s00382-019-04900-3#citeas and Dosio et al (2020) https://iopscience.iop.org/article/10.1088/1748-9326/ab7fde [Alessandro Dosio, Italy]	Accepted. The sentence is revised accordingly.
106481	31	22	31	26	These statements have to be reconciled with Rowell et al (2015) that indicate a general projected wetting over most of the Sahel with the exception of the western parts of the region. Rowell, D.P., Senior, C.A., Vellinga, M. and Graham, R.J., 2016. Can climate projection uncertainty be constrained over Africa using metrics of contemporary performance?. Climatic Change, 134(4), pp.621-633. This messaging is captured in the Executive Summary but the text here does not support it. See also WG1 CH12 section 12.4.1.2 page 35, lines 8-13 of the SOD. [Lennard Christopher, South Africa]	Accepted. Rainfall recovery is over the central Sahel. The statements have been revised.
93801	31	22	31	27	Please check the grammar of these sentences. [Quentin Lejeune, Germany]	Accepted. Sentences have been revised
84353	31	26	31	27	is this sentence connected to the reference of the sentence just before? To adjust and made it clearer [Annalisa Cherchi, Italy]	Accepted. The sentence is revised
84355	31	28	31	31	this sentence could be moved to lines 24-26 where there are other information about the Sahel [Annalisa Cherchi, Italy]	Accepted. The sentence is moved
14255	31	30	31	30	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
106477	31	38	31	38	I was also not sure about why this citation list "Research over Africa (Druyan and Fulakeza, 2013; Hernández-Díaz et al., 2013; Panitz et al., 2014; Sarr et al., 2015; Careto et al., 2018; Sylla et al., 2018)"...there are hundreds of climate papers available for citation, what's the reason for singling out these, noting also that of 6 citations only 2 are African 1st authors. [Lennard Christopher, South Africa]	Noted. Not sure how to treat this. Over hundred of the papers cannot be cited due to limited space. Selected references have been removed.
66283	32	10	58	21	Asia regions are named differently from the AR6 regions and there are extra macro-regions used to include several AR6 regions. This is inconsistent with CH12 for example and also misleading since in the Atlas executive summary the assessment is done for the macro-regions. Example Atlas.5.3.2 Middle East Asia, Atlas.5.3.3 North Asia. It would be good to specify already in the section titles that one macro-region contains several AR6 regions and which. [Erika Coppola, Italy]	Taken into account. Atlas continental (sub-)regions and their constituent WG I reference regions introduced in each regional (sub-)section.
84373	32	12	32	12	section 5.3.1 about East Asia should include also the EAWM more than the EASM, as the latter is mostly covered in chapter 8 (and also in chapter 10 as case study) [Annalisa Cherchi, Italy]	Accepted. The EAWM was included.
84357	32	16	32	16	"East Asian areas" [Annalisa Cherchi, Italy]	Accepted. It was changed to "East Asian areas".
110355	32	16	32	17	What else could it ever be documented upon? Delete for expediency. [Peter Thorne, Ireland]	Accepted. It was deleted.
69959	32	18	32	20	I think it would be better to add some comments, such like that precipitation change may not show clear trend because East Asian Monsoon tends to show interdecadal variability, in order to clarify characteristics of observational change in precipitation. [Young-Hwa BYUN, Republic of Korea]	Not applicable. This sentence was removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110357	32	22	32	29	How can both these statements simultaneously be true? You can't have poor model performance simultaneously with a very likely projection surely? One or other of these statements must be wrong? Also the second statement gives new view as to scenario dependency. [Peter Thorne, Ireland]	Not applicable. This sentence was removed.
66273	32	31	32	34	There is an inconsistency forprojected precipitation trend in East Asia. Atlas assess high confidence in increase, CH12 has in the CID table “low confidence in direction of change”. Confirmed in page Atlas 35 line 16 [Erika Coppola, Italy]	Not applicable. This sentence was removed.
80549	32	31	32	34	Note the difference in confidence between this (high) and Chapter 8, p79, lines 28-30 (medium). Does this difference in confidence arise from subtle differences in what is being said, or should there be convergence? [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. This sentence was removed.
110359	32	31	32	34	No view is given as to scenario dependency here and use of RCP8.5 alone is problematic vis-à-vis arguments of alarmism. [Peter Thorne, Ireland]	Accepted. Other RCPs were added.
124903	32	31	32	35	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Accepted. Other RCPs were added.
84359	32	33	32	33	"monsoon circulation" for what season? East Asia has both a summer and a winter monsoon [Annalisa Cherchi, Italy]	Not applicable. This sentence was removed.
84361	32	39	32	43	I would mention about the distinction/existence here of summer and winter monsoon [Annalisa Cherchi, Italy]	Accepted. The two monsoons were distinguished.
34211	32	43			“GCMs”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. It was changed.
11135	32	44	32	44	It says "There will be an increasing trend of both surface temperature and the monsoon circulation", but the results of Liu et al. (2018) indicate that there will a weakening of east Asia summer monsoon intensity (e.g., Liu et al., Projections of East Asian summer monsoon change at global warming of 1.5 and 2 C, Earth Syst. Dynam., 9, 427–439, 2018). [Wen Wang, China]	Not applicable. The sentence was removed.
84363	32	44	32	44	last sentence is out of context here [Annalisa Cherchi, Italy]	Accepted. The sentence was deleted.
110361	32	44	32	44	What useful purpose does this final sentence play? It is a projection it is not a key feature of the regional climate. [Peter Thorne, Ireland]	Accepted. The sentence was deleted.
84365	32	53	32	55	is East Asia clearly included in these changes relative to the whole Asia? I mean, are they the same type of changes? [Annalisa Cherchi, Italy]	Yes, it is.
84367	33	3	33	5	monsoon in winter or in summer? [Annalisa Cherchi, Italy]	Not applicable. The sentence was removed.
14257	33	11	33	11	EASM must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. It was changed.
82393	33	11	33	11	As this is its first use, the definition of the EASM acronym should be moved here from line 37. [Blair Trewin, Australia]	Accepted. It was changed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
23811	33	20	33	24	As a bridge between WGI and WG2, ATLAS is important to support local users of "the Interactive Atlas". In order to provide significant regional results, it needs to include as many as national reports, because there are distinct local phenomena over East Asia. Compared to other chapters, "Atlas 5.3 East Asia" seems to be short, needs to cover more references on various features over Korea and Japan as well. Several sentences seem to be very limited, lack of national references. Then I suggest to add as following, Li et al. (2017) results 0.121oC (1900-2015) in China represents warming trends over East Asia. Park et al (2017) did similar research with the result of 1.90oC(1912-2014). I suggest Park et al(2017) results should be added as following. “Locally, warming over South Korea shows 1.4-2.6 times larger than global trends. The increment is 1.90 C (1912-2014) and 0.99C (1973-2014) (Park et al., 2017) with 25-45% of urbanization contribution ” <Reference> Park BJ, YH Kim, SK Min, MK Kim, Y Choi, KO Boo, S Shim, 2017: Long term warming trends in Korea and contribution of urbanization: An updated assessment, JGR, 10.1002/2017JD027167 [KyungOn Boo, Republic of Korea]	Accepted. The references were included.
38221	33	20	33	24	As a bridge between WGI and WG2, ATLAS is important to support local users of "the Interactive Atlas". In order to provide significant regional results, it needs to include as many as national reports, because there are distinct local phenomena over East Asia. Compared to other chapters, "Atlas 5.3 East Asia" seems to be short, needs to cover more references on various features over Korea and Japan as well. Several sentences seem to be very limited, lack of national references. Then I suggest to add as following, Li et al. (2017) results 0.121oC (1900-2015) in China represents warming trends over East Asia. Park et al (2017) did similar research with the result of 1.90oC(1912-2014). I suggest Park et al(2017) results should be added as following. “Locally, warming over South Korea shows 1.4-2.6 times larger than global trends. The increment is 1.90 C (1912-2014) and 0.99C (1973-2014) (Park et al., 2017) with 25-45% of urbanization contribution ” <Reference> Park BJ, YH Kim, SK Min, MK Kim, Y Choi, KO Boo, S Shim, 2017: Long term warming trends in Korea and contribution of urbanization: An updated assessment, JGR, 10.1002/2017JD027167 [Junhee Lee, Republic of Korea]	Accepted. The references were included.
11137	33	22	33	23	The temporal period should be given when talking about the changing rate. [Wen Wang, China]	Accepted. The temporal period "from 1960 to 2010" was added

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82395	33	22	33	23	Suggest starting this sentence "In South Korea, the annual temperature increased…" to make it clearer to readers that the cities discussed here are Korean and not Chinese. (Although I assume this will be done centrally at some point, it should also be checked whether the report is required to follow formal UN nomenclature for countries, i.e. Republic of Korea rather than South Korea). [Blair Trewin, Australia]	Accepted. It was changed.
24433	33	22	33	24	This sentence reads that larger GHG in large cities is the reason of gretaer temperature increase. I suppose urbanization effect is the reason. [Akio Kitoh, Japan]	Not applicable. The sentence was removed.
84369	33	27	33	27	better to specify the years' interval corresponding to "past few years" [Annalisa Cherchi, Italy]	Not applicable. The sentence was removed.
110363	33	37	33	53	This was the subject of a case study in chapter 10 (I think) in which case why is it being redundantly assessed here and with no effort made to cross-reference. If a substantive assessment was done in chapter 10 this should be pointed to in a simple sentence and the Atlas move on to other aspects to avoid performing a redundant assessment and potentially characterising the issue distinctly. [Peter Thorne, Ireland]	Accepted. The summer monsoon was mostly removed from Atlas.
80551	33	38			What is meant by since the 1900s? Are you referring to the first decade 1900-1909, or the whole 20th century? [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	The 1900-1909 decade.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
68645	33	46	33	49	As noted in Page 32 Line 39, the seasonal advance or retreat of the monsoon rainband is crucial to local climate. Endo (2011) investigated long-term changes in summer monsoon rainfall (Baiu rain) during past 100 years in Japan focusing on its seasonal progress, and found that the seasonal progress of Baiu rainfall (June–July) tend to be delayed in eastern and western Japan. Therefore, this paper could be cited here. According to the Lee et al. (2017)'s paper, the long-term trends which are cited in Line 46-47 are based on precipitation data observed in Korea during 1973-2015. I think the sentence in Line 46-47 should be slightly modified to avoid misunderstandings. According to the Duan et al. (2015)'s paper, the precipitation trends at both the annual and seasonal scales in Japan are not statistically significant, as shown in Table 4 of their paper. In light of these, I would like to propose the following description instead of the current version. "Mean and extreme rainfall and the number of rainy days during the Changma period from June to September have increased, and the dry spell has become shorter during 1973-2015 in Korea (Lee et al., 2017). Precipitation amounts exhibited a slight decrease at both the annual and seasonal scales in Japan for the period 1901-2012 (Duan et al., 2015), while the seasonal progress of Baiu rainfall (June–July) tend to be delayed in eastern and western Japan (Endo, 2011)." Endo, H., 2011: Long-term changes of seasonal progress in Baiu rainfall using 109 years (1901-2009) daily station data. SOLA, 7, 5-8, doi:10.2151/sola.2011-002. [Hirokazu Endo, Japan]	Accepted. The sentences were rewritten. Endo (2011) was not cited because seasonal progress of Baiu rainfall was not discussed in the Atlas.
82397	33	47	33	47	It should be clarified what is meant by "dry spell" here (as I understand it, this rainy season typically has two phases and the "dry spell" in the Lee paper refers to the interval between them). [Blair Trewin, Australia]	Not applicable. The sentence was removed.
14259	33	54	33	54	Add space between parragraphs [Maria Amparo Martinez Arroyo, Mexico]	Accepted.
82399	33	54	33	55	Is there a citation for the statement about attribution of 1958-2001 monsoon trends? [Blair Trewin, Australia]	Not applicable. The paragraph was removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
69961	33	54	34	4	I think it would be better that this paragraph is devided from the previous paragraph with blank line and to add some sentences which describes temperature changes in East Asia due to GHG and Aerosol forcing as well as precipitation. For instance, Shim et al. (2019)* shows that long-term(1901~2005) change in temperature over the East Asian Region is strongly dependent on anthropogenic forcing(GHG and Aerosol), also this paper shows that multidecadal variation-like change is related to close interaction with GHG and aerosol forcing. As another reference, Boo et al.(2015)** amphasized that considerable regional aerosol emmission is an important factor to induce multidecadal variation of North Pacific SST (PDO-like pattern) , which is related with East Asian climate, associated with the direct and indirect cooling effect. * Shim, S., J. Kim, S. S. Yum, H. Lee, K.-O. Boo, and Y.-H. Byun, 2019: Effects of Anthropogenic and Natural Forcings on the Summer Temperature Variations in East Asia during the 20th Century. Atmosphere, 10, 690; doi:10.3390/atmos10110690. ** Boo, K.-O., B. B. B. Booth, Y.-H. Byun, J. Lee, C. H. Cho, S. Shim, and K.-T. Kim, 2015: Influence of aerosols in multidecadal SST variability simulations over the North Pacific. J. Geophy. Res. Atmos., 120, 517-531, doi:10.1002/2014JD021933. [Young-Hwa BYUN, Republic of Korea]	The first reference was included. Boo et al (2015) was not cited because the attribution of summer monsoon variation was mostly removed in Atlas.
74007	33	54	34	4	Besides the GHG and anthropogenic aerosols, natural variability also contributes to the weaskening of East Asian monsoon circulation in recent decades. It is suggested to mention the role of natural forcing in the attribution section. [Haoming Chen, China]	Accepted. The summer monsoon was mostly removed from Atlas.
110365	33	54	34	4	This assessment is undertaken in chapter 8. Why are you repeating it here, especially without cross-referencing? Chapter 8 spend considerable time on this issue - far more than is done here. The Atlas needs to refer to and rely upon the earlier assessments not perform its own micro-assessments which inevitably lack the rigor and depth of those undertaken in the earlier chapters. [Peter Thorne, Ireland]	Accepted. The summer monsoon was mostly removed from Atlas.
34213	33	54			“GHG”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Not applicable. The sentence was removed.
84371	34	1	34	1	specify the section of interest in ch 8 [Annalisa Cherchi, Italy]	Accepted. It was specified.
23815	34	4	34	4	Besides Imada et al(2019), Min et al.(2020) also studied to quantify human contribution to the 2018 summer longest duration of heat wave in South Korea. They told that 2018-like heat wave intensity and duration by at least 4 times when including anthropogenic forcing. Then Min et al (2020) should be added in addition to “(Imada et al., 2019)” <Reference> Min SK, YH Kim, SM Lee, S Sparrow, S Li, FC Lott , P A Stott, 2020: Quantifying human impact on the 2018 summer longest heat wave in South Korea, BAMS, doi: 10.1175/BAMS-D-19-0151.1 [KyungOn Boo, Republic of Korea]	Not applicable. The paragraph was removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
38225	34	4	34	4	Besides Imada et al(2019), Min et al.(2020) also studied to quantify human contribution to the 2018 summer longest duration of heat wave in South Korea. They told that 2018-like heat wave intensity and duration by at least 4 times when including anthropogenic forcing. Then Min et al (2020) should be added in addition to “(Imada et al., 2019)” <Reference> Min SK, YH Kim, SM Lee, S Sparrow, S Li, FC Lott , P A Stott, 2020: Quantifying human impact on the 2018 summer longest heat wave in South Korea, BAMS, doi: 10.1175/BAMS-D-19-0151.1 [Junhee Lee, Republic of Korea]	Not applicable. The sentence was removed.
23821	34	7	34	40	“Atlas 5.3.1.3” deals with precipitation and TC activities. Temperature extremes needs to be added. “Model performance of CMIP6 is better than that of CMP5 in simulating heatwaves in Korea and the associated diagnostic indices (Kim et al. In review)” <Reference> Maeng-Ki Kim, DG Yu, JS Oh, H M Sung, YH Byun, KO Boo, IU Chung, JS Park, DS R. Park, SK Min, 2020:Performance Evaluation of CMIP5 and CMIP6 models on heatwaves in Korea (submitted) [KyungOn Boo, Republic of Korea]	Rejected. Temperature extremes was not included in Atlas.
38231	34	7	34	40	“Atlas 5.3.1.3” deals with precipitation and TC activities. Temperature extremes needs to be added. “Model performance of CMIP6 is better than that of CMP5 in simulating heatwaves in Korea and the associated diagnostic indices (Kim et al. In review)” <Reference> Maeng-Ki Kim, DG Yu, JS Oh, H M Sung, YH Byun, KO Boo, IU Chung, JS Park, DS R. Park, SK Min, 2020:Performance Evaluation of CMIP5 and CMIP6 models on heatwaves in Korea (In review) [Junhee Lee, Republic of Korea]	Rejected. Temperature extremes was not included in Atlas.
80553	34	11			Sperber et al. (2013) is another comparison for East Asia (as part of the Asian monsoon, with specific East Asia metrics) comparing CMIP3 and CMIP5. (Paper already listed in references.) [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. The references were included.
80555	34	14			"Sellar et al" is not properly referenced (missing year) [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. It was changed.
80557	34	16	34	19	Perhaps the sentence here should suggest the caveat that increasing horizontal resolution (at the typical scales used in GCMs) is not a panacea for solving model biases. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. It was changed.
34215	34	16			“AGCM”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Accepted. It was changed.
66287	34	21	40	34	Results from Gao et al., 2020" could be added as an example of added value https://doi.org/10.1007/s00382-019-05047-x [Erika Coppola, Italy]	Accepted. The references were included.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
23813	34	37	34	37	Ahead of sentences on interdecadal variation of precipitation, it seems to be natural to mention general feature such as long-term trend, first. Even though domestic report in Korean, it is reported that total precipitation over Korea changes positive long-term trend. Then, I suggest to add the following sentence in line37. “ Temperature rising over East Asia is associated with increasing precipitation. It is reported that annual precipitation over South Korea increases +16.6mm/decade(1912-2017). (Kim et al., 2019)” <Reference> Kim JW, KO Boo, JT Choi, YH Byun, 2019: Climate changes in 100 years over Korea, 31pp, National Institute of Meteorological Sciences (In Korean) . [KyungOn Boo, Republic of Korea]	Rejected. The suggested reference is not available with an English abstract and the main finding is already captured in the text with additional references.
38223	34	37	34	37	Ahead of sentences on interdecadal variation of precipitation, it seems to be natural to mention general feature such as long-term trend, first. Even though domestic report in Korean, it is reported that total precipitation over Korea changes positive long-term trend. Then, I suggest to add the following sentence in line37. “ Temperature rising over East Asia is associated with increasing precipitation. It is reported that annual precipitation over South Korea increases +16.6mm/decade(1912-2017). (Kim et al., 2019)” <Reference> Kim JW, KO Boo, JT Choi, YH Byun, 2019: Climate changes in 100 years over Korea, 31pp, National Institute of Meteorological Sciences (In Korean) . [Junhee Lee, Republic of Korea]	Rejected. The suggested reference is not available with an English abstract and the main finding is already captured in the text with additional references.
69155	34	37	34	40	By using PGW method, the intensity of TC is well estimated in the following paper: Kanada S., K. Tsuboki, H. Aiki, S. Tsujino, and I. Takayabu, 2017: Future enhancement of heavy rainfall events associated with a typhoon in the midlatitude regions, SOLA, 2017, 13, 246?251, doi:10.2151/sola.2017-045.: Kanada, S., H. Aiki, K. Tsuboki, and I. Takayabu, 2019: Future Changes in Typhoon-related Precipitation in Eastern Hokkaido, SOLA, 15, 244-249, doi:10.2151/sola.2019-044 [Kaoru Magosaki, Japan]	Rejected. The changes of TC was not included here.
74325	34	37	34	40	ð By using PGW method, the intensity of TC is well estimated in the following paper. Kanada S., K. Tsuboki, H. Aiki, S. Tsujino, and I. Takayabu, 2017: Future enhancement of heavy rainfall events associated with a typhoon in the midlatitude regions, SOLA, 2017, 13, 246?251, doi:10.2151/sola.2017-045. Kanada, S., H. Aiki, K. Tsuboki, and I. Takayabu, 2019: Future Changes in Typhoon-related Precipitation in Eastern Hokkaido, SOLA, 15, 244-249, doi:10.2151/sola.2019-044 [Izuru Takayabu, Japan]	Rejected. The changes of TC was not included here.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
74331	34	37	34	40	By using PGW (Pseudo Global Warming) method, the intensity of TC is well estimated in the following paper. Kanada S., K. Tsuboki, H. Aiki, S. Tsujino, and I. Takayabu, 2017: Future enhancement of heavy rainfall events associated with a typhoon in the midlatitude regions, SOLA, 2017, 13, 246?251, doi:10.2151/sola.2017-045. Kanada, S., H. Aiki, K. Tsuboki, and I. Takayabu, 2019: Future Changes in Typhoon-related Precipitation in Eastern Hokkaido, SOLA, 15, 244-249, doi:10.2151/sola.2019-044 [Izuru Takayabu, Japan]	Rejected. The changes of TC was not included here.
110367	34	44	34	45	This sentence makes no sense as written. Conditions at end of Century could be any number of states and certainly could not sinultaneously be 1.5 and 2C. I assume you meant to say at those states and also at end of century (presumably irrespective of scenario although then it should be a percentage and not an absolute delta which it probbably should be anyway?) [Peter Thorne, Ireland]	Accepted. It was changed.
110369	34	47	34	50	But what about the magnitudes? [Peter Thorne, Ireland]	Not applicable. The sentence was removed.
23817	34	48	34	50	In front of this sentence, it is appropriate to insert comparison of temperature change rate between cold extreme and warm extremes, reported in Lee et al (2020) “ The rising rate of future cold extremes over East Asia and Korea is faster than that of warm extremes (Lee et al, 2020)” <Reference> Lee Y, J Paek, JS Park, KO Boo, 2020: Change in temperature and rainfall extremes across East Asia in the CMIP5 ensemble, Theoretical and Applied Climatology, https://doi.org/10/1007/s00704-020-03180-w [KyungOn Boo, Republic of Korea]	Rejected. Extremes are the focus of Ch11.
38227	34	48	34	50	In front of this sentence, it is appropriate to insert comparison of temperature change rate between cold extreme and warm extremes, reported in Lee et al (2020) “ The rising rate of future cold extremes over East Asia and Korea is faster than that of warm extremes (Lee et al, 2020)” <Reference> Lee Y, J Paek, JS Park, KO Boo, 2020: Change in temperature and rainfall extremes across East Asia in the CMIP5 ensemble, Theoretical and Applied Climatology, https://doi.org/10/1007/s00704-020-03180-w [Junhee Lee, Republic of Korea]	Rejected. Extremes are the focus of Ch11.
102359	34	54	34	54	2* "8.5" [Philippe Tulkens, Belgium]	Accepted. It was changed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
72285	35	3	35	3	As commonly shown in Figure 4.28 in AR6 and Figure 12.18 in AR5, negative sea-level pressure anomaly beyond the standard deviation is cleary projected in the northern East Asian ocean in JJA. This anomaly represents a weak northward migration of the summer Pacific High in the future, meaning the weakened summer climatological circulation over the northern East Asian ocean. Japan, Korea and the surrounded region are strongly influenced by the summer monsoon over East Asian ocean. The description of summer East Asian circulation is clearly inconsistent with the above mentioned future change in the Pacific High. [Tomoaki Ose, Japan]	Not applicable. The description of East Asian summer monsoon circulation was removed.
72287	35	10	35	11	A post-AR5 study on future summer East Asian monsoon (Ose 2017) gives a good example of the high resolution AGCM experiments expressing the sensitivity of the geographical distribution of the future summer East Asian precipitation on cumulus schemes. This study indicates that the sensitivity is basically attributed to the difference in the projected summer East Asian circulation and the induced vertical motion pattern. (Reference) Ose, T., 2017: Future precipitation changes during summer in East Asia and model dependence in high-resolution MRI-AGCM experiments. Hydro. Res. Lett., 11, 168-174. doi:10.3178/hrl.11.168. [Tomoaki Ose, Japan]	Not applicable. The description of East Asian summer monsoon circulation was removed.
80559	35	10			Would "depend more" be better than "depend relatively"? [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. It was changed.
23819	35	14	35	16	Consistent result of future changes in heavy rainfall intensity has been carried out Lee et al.(2020). Then I suggest to add Lee et al(2020) as following; “The 20-year return level of maximum precipitation in the CMIP5 over East Asia by the end of 21st century ranges from 7%(RCP2.6)-35%(RCP8.5), exceeding global values.” “The CMIP5 sensitivity in maximum precipitation across East Asia is 5.5%/C, reaching locally 7.38% for the Korean peninsular (Lee et al 2020)” <Reference> Lee Y, J Paek, JS Park, KO Boo, 2020: Change in temperature and rainfall extremes across East Asia in the CMIP5 ensemble, Theoretical and Applied Climatology, https://doi.org/10/1007/s00704-020-03180-w [KyungOn Boo, Republic of Korea]	Rejected. Extremes are the focus of Ch11.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
38229	35	14	35	16	Consistent result of future changes in heavy rainfall intensity has been carried out Lee et al.(2020). Then I suggest to add Lee et al(2020) as following; “The 20-year return level of maximum precipitation in the CMIP5 over East Asia by the end of 21st century ranges from 7%(RCP2.6)-35%(RCP8.5), exceeding global values.” “The CMIP5 sensitivity in maximum precipitation across East Asia is 5.5%/C, reaching locally 7.38% for the Korean peninsular (Lee et al 2020)” <Reference> Lee Y, J Paek, JS Park, KO Boo, 2020: Change in temperature and rainfall extremes across East Asia in the CMIP5 ensemble, Theoretical and Applied Climatology, https://doi.org/10/1007/s00704-020-03180-w [Junhee Lee, Republic of Korea]	Rejected. Extremes are the focus of Ch11.
72289	35	14	35	16	The description about the future precipitation change is reasonable. As commonly shown in Figure 4.27 in AR6 and Figure 12.22 in AR5, increase in JJA mean precipitation is projected in the northern East Asia consistently among the CMIP models. However, future monthly precipitation during JJA tends to be influenced by atmospheric circulation changes. For example, a post-AR5 analysis of CMIP5 projections by Horinouchi et al (2019) showed that the northward migration of early summer East Asian rainband such as the Baiu is delayed along with that of the mid-latitude westerly jet in the future and the associated vertical motion. Ose (2019a and 2019b) indicated that the weakened summer mosoon circulations over the northern East Asian ocean induce tropospheric downward motions and tend to make relatively large uncertainty in future monthly precipitaion increase over the northern East Asian ocean. Japan, Korea and the surrounded region are strongly influenced by the summer monsoon over East Asian ocean. Besides, seasonal migratioin of precipitation displays distincitive features from month to month in summer East Asia. Therefore, the information on the future summer monthly precipitation is expected here to some extent, for example, about the effect of the weakened monsoon circulation over the northern East Asian ocean on delaying northward migration of early summer East Asian rainband and making relatively large uncertainty in future monthly precipitaion increase over East Asian ocean. (Reference) Horinouchi T., S. Matsumura, T. Ose, and Y. Takayabu (2019) Jet-precipitation relation and future change of the Mei-Yu-Baiu rainband and subtropical jet in CMIP5 coupled GCM simulations. J. Climate, 32, 2247-2259. DOI:10.1175/JCLI-D-18-0426.1 Ose, T., 2019a: Characteristics of Future Changes in Summertime East Asian Monthly Precipitation in MRI-AGCM Global Warming Experiments. J. Meteor. Soc. Japan, 97, 217-235, doi:10.2151/jmsj.2019-012	Not applicable. The summer monsoon was mostly removed from Atlas.
124905	35	18	35	23	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Accepted. More scenarios were added.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110371	35	18	35	32	Again, this passage only considers the 8.5 scenarios and gives no view as to effect of policy choices on future change. It needs to provide the context of impact of our choices through one or more additional scenarios. [Peter Thorne, Ireland]	Accepted. More scenarios were added.
34217	35	19			“CMIP5”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. It was changed.
72291	35	21	35	23	A post-AR5 study on future summer East Asian monsoon (Ose et al., 2020, accepted) is appropriate as the associated reference for the EASM index in Figure Atlas.26. They analyzed the EASM index and the sea-level pressure pattern in the future summer East Asia in the CMIP5 projections, and showed that those are determined by a subtle balance among several large-scale atmospheric responses to the land-sea warming contrast, the future tropical and sub-tropical SST patterns and the weakened vertical monsoon circulations over the Asia and Pacific region. They indicate the importance of the simulation of the present-day Asia and Pacific precipitation, which is a key to reduce the large spread of the future EASM index coming from the projection of the future weakened vertical monsoon circulations. (Reference) Ose, T., Y. Takaya, S. Maeda, and T. Nakaegawa, 2020: Resolution of Summertime East Asian Pressure Pattern and Southerly Monsoon Wind in CMIP5 Multi-Model Future Projections. J. Meteor. Soc. Japan, 98, doi:10.215/jmsj.2019-0149 (accepted). [Tomoaki Ose, Japan]	Not applicable. The EASM index was removed.
72293	35	21	35	23	The EASM indices in several reanalysis are expected for the comparison with that of the historical CMIP6 simulations in Figure Atlas 26. [Tomoaki Ose, Japan]	Not applicable. The figure was deleted since the EASM was mostly removed from Atlas.
14261	35	28	35	28	HAM is a name change to Ham [Maria Amparo Martinez Arroyo, Mexico]	Accepted. It was changed to Ham.
82401	36	20	36	20	"Middle East Asia" seems an odd description of the region here - this section reports as far east as western China whereas conventional use in English of "Middle East" extends no further east than the Arabian Peninsula and Iran. Nor does it match the defined regions in AR5 or AR6. I'd suggest "West and Central Asia and the Arabian Peninsula" would be more intuitive (if longer). [Blair Trewin, Australia]	Accepted. The title has been changed to "Southwest Asia"
66955	36	20			Section 5.3.2 seems heavily focused on the Arabian penninsula. Unless I missed or section or am misunderstanding the structure, there's a fair amount of work on West Asia that's not including, especially for Iran. A partial bibliography for the region is available at https://docs.google.com/document/d/1tmGir7E9FPOOeDo_8uRPY0iSq_WhQVrhr6kWgRJ-bhg/edit [Mathew Barlow, United States of America]	Accepted. Text has been revised with balanced attention to both regions. Thank you for the provided bibliography.
66957	36	20			The section title "Atlas.5.3.2 Middle East Asia" does not reflect the content. I had to read through a few times to figure out if this was the relevant section for West and Central Asia. Strongly suggest changing. [Mathew Barlow, United States of America]	Accepted. The title has been changed to "Southwest Asia"

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
45169	36	24	31	36	Assessing the magnitude of precipitation trends over the Arabian Peninsula can be tricky because of the low mean and high variability in precipitation. How reliable is the observational data coverage over this region? [Krishnan Raghavan, India]	Noted. The WMO standard maintained observational rainfall dataset over Saudi Arabia (80% coverage of the Arabian Peninsula) for the period 1978-2019 is used for the precipitation trend.
93803	36	24	36	27	The indicated range for the trend in precipitation is not clearly formulated because of the similarities between the minus and dash signs. Moreover, the decrease is expressed as a positive number while ist lower estimate is expressed as a negative number. [Quentin Lejeune, Germany]	Editorial. Text revised for the FGD
124907	36	50	36	52	A ±3°C temperature bias seems huge -- comparable to the magnitude of global change during the last Ice Age. Is that unusual for RCMs? With such a bias, what caveats should readers know before interpreting their results? [Trigg Talley, United States of America]	Taken into account. The RCMs bias are larger here partly due to the high orography region, scarce stations, and consequent deficiencies in reanalysis products. Text has been rewritten to indicate sources of uncertainty more clear
110373	36	54	37	4	This finding is grossly internally inconsistent as stated. It talks of a warming of almost 1C/decade which cannot then be reconciled with the scenario dependent text that follows. Furthermore the scenario dependence of that warming estimate and its uncertainty (It definitely has uncertainty) are not adequately conveyed. [Peter Thorne, Ireland]	Taken into account. The text has been revised with updated numbers from the recent literature and Interactive Atlas.
24435	36	55	36	56	I do not find "strong decrease in precipitation in the north-western part of the Arabian Peninsula" from Figure Atlas.27. [Akio Kitoh, Japan]	Accepted. Text has been revised with updated numbers.
32839	36	56	36	56	Add "but decreases in precipitation over Iran Plateau with -30% with high confidence According to I. R. of Iran Meteorological Organization reports http://irimo.ir/eng/wd/600-IRIMO.html, Climatology Research Institute reports https://cri.ac.ir/index.php/fa/, National Drought Warning and Monitoring Center (NDWMC) reports http://ndc.irimo.ir/eng/index.php and a lot of papers .. [sadegh zeyaeyan, Iran]	Taken into account. The text now includes the assessment based on the modern peer-reviewed literature over Iran Plateau
33169	36	56	36	56	Add "but decreases in precipitation over Iran Plateau with -30% with high confidence According to I. R. of Iran Meteorological Organization reports http://irimo.ir/eng/wd/600-IRIMO.html, Climatology Research Institute reports https://cri.ac.ir/index.php/fa/, National Drought Warning and Monitoring Center (NDWMC) reports http://ndc.irimo.ir/eng/index.php and a lot of papers .. [Sahar Tajbakhsh Mosalman, Iran]	Taken into account. The text now includes the assessment of modern peer-reviewed literature over Iran Plateau
34219	37	3			Is this value correct?: “precipitation is projected to change by –3% to 41% for SSP1-2.6”, should not be –3% to -41%? [Guiomar Rotllant, Spain]	Taken into account. With 30 CMIP6 models the values are projected to change in ranges from –3% to 29% for SSP1-2.6 and from 12% to 107% for SSP5-8.5.
82403	37	4	37	14	The references here to 5.3.4.4 should presumably be to 5.3.2.4. [Blair Trewin, Australia]	Editorial – copyedit to be completed prior to publication
110375	37	11	37	14	Finding lacks any scenario dependency aspect of outcomes. [Peter Thorne, Ireland]	Taken into account. Text has been revised for the FGD and includes different scenario estimations
110377	37	19	37	32	The definition of region extent isn't a key feature of the regional climate and so should be removed. As should e.g. a peninsu;a being made up of 7 countries. This granuality is not given anywhere else and the text should concentrate upon discussing the key features of regional climate per the title given. [Peter Thorne, Ireland]	Taken into account. Region description has been harmonised across the chapter.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
32833	37	26	37	26	"after to the south-25 western part of the Peninsula " add in geology , The Iranian Plateau is one of the Southwestern Asian highland regions of Western Asia. The Iranian Plateau is bounded on the north by the Turanian depression and the southern Caspian Lowland; on the east, by the plain of the Indus basin; on the south, by the garmsir, the coastal desert; and on the southwest, by the Mesopotamian lowland. It is contiguous on the west with the Armenian Highlands and on the east with the Pamir mountain region. Approximately 2.7 million sq km in area, the Iranian Plateau extends about 2,500 km from west to east and about 1,500 km from north to south. About two-thirds of the plateau belongs to Iran, while the remainder belongs mainly to Afghanistan and Pakistan. The northern edge of the plateau lies within the USSR (part of the Kopeh Dagh, which is in the Turkmeno-Khorasan mountains), while its western regions are in Iraq.(Zarubezhnaia Aziia: Fizicheskaia geografiia. Moscow, 1956. Petrov, M. P. Iran: Fiziko-geograficheskii ocherk. Moscow, 1955) [sadegh zeyaeyan, Iran]	Taken into account. Region descriptions are harmonised across the chapter.
33163	37	26	37	26	"after to the south-25 western part of the Peninsula " add in geology , The Iranian Plateau is one of the Southwestern Asian highland regions of Western Asia. The Iranian Plateau is bounded on the north by the Turanian depression and the southern Caspian Lowland; on the east, by the plain of the Indus basin; on the south, by the garmsir, the coastal desert; and on the southwest, by the Mesopotamian lowland. It is contiguous on the west with the Armenian Highlands and on the east with the Pamir mountain region. Approximately 2.7 million sq km in area, the Iranian Plateau extends about 2,500 km from west to east and about 1,500 km from north to south. About two-thirds of the plateau belongs to Iran, while the remainder belongs mainly to Afghanistan and Pakistan. The northern edge of the plateau lies within the USSR (part of the Kopeh Dagh, which is in the Turkmeno-Khorasan mountains), while its western regions are in Iraq.(Zarubezhnaia Aziia: Fizicheskaia geografiia. Moscow, 1956. Petrov, M. P. Iran: Fiziko-geograficheskii ocherk. Moscow, 1955) [Sahar Tajbakhsh Mosalman, Iran]	Taken into account. Region descriptions are harmonised across the chapter.
110383	37	34			This segment is disproportionately long and detailed compared to all similar segments elsewhere. Detail needs to be removed. [Peter Thorne, Ireland]	Accepted. Text has been revised for the FGD
82405	37	37	37	37	"strongest increase in hot extremes" - compared to what? [Blair Trewin, Australia]	Noted. Text is cited from the Special Report on 1.5C
110379	37	55	38	14	Warming and elevation effects were covered in an earlier regional chapter (I think 10) and this should be cross-referenced here and replace this redundant assessment being performed here. Only thye region specific aspects should be retained and the mechanistic aspects should refer elesewhere. [Peter Thorne, Ireland]	Taken into account. Text has been revised for the FGD and cross-referencing is added
84375	38	16	38	17	this sentence is out of context here. It refers to a paper submitted but it has been inserted in the summary of finding from previous reports [Annalisa Cherchi, Italy]	Accepted. Text revised for the FGD and the reference has been moved
34221	38	19			“CMIP5”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
84377	38	27	38	30	some repetitions in this sentence, the form needs to be adjusted [Annalisa Cherchi, Italy]	Editorial. Text has been revised for the FGD
110381	38	27	38	30	This sentence makes no sense to me as written. One or several key phrases must be missing but I am unclear what these could be. [Peter Thorne, Ireland]	Editorial. Text has been revised for the FGD
82407	39	37	39	39	The trend reported in the Attada et al paper is for the period 1961-2010 (not 1901 as stated). The large difference between trends for periods with a large overlap reported here in the two papers is interesting, and potentially indicates large differences between different data sets (and hence high structural uncertainty) - this would be worth exploring further. [Blair Trewin, Australia]	Taken into account. The time period as sated is 1901-2010 for the AP annual (see Table 1 of Attada et al. 2019) . The datasets that are used for both papers are different. Attada et al. (2019) used CRU data while Almazroui et al. (2020) used 25 stations data (1978-2019) as per WMO code and performed data quality control
110385	39	39	39	40	You already said this. Remove. [Peter Thorne, Ireland]	Editorial. Text has been revised for the FGD
66947	39	43			For the influence of ENSO, NAO, and AO on the region, the Attada reference is relevant but not representative. That region and those teleconnections are included in the review of Barlow et al: Barlow, M., B. Zaitchik, S. Paz, E. Black, J. Evans, and A. Hoell, 2016: A Review of Drought in the Middle East and Southwest Asia. J. Climate, 29, 8547–8574. [Mathew Barlow, United States of America]	Rejected. In addition a reference to Annex IV has been added where all modes of variability are presented and their regional influences are discussed in more details
82409	39	47	39	47	Check time period and citations - the quoted trend is for 1978-2018 but all of the citations are from 2014 or earlier (if this result is from a data set which has been updated from the original papers, say so and name the data set). [Blair Trewin, Australia]	Taken into account. Text and references have been revised. The trend for 1978-2019 period has been included from Almazroui M, Islam MN, Saeed S, Saeed F, Ismail M (2020) Future changes in climate over the Arabian Peninsula based on CMIP6 multimodel simulations
110389	39	50	39	50	enormously may be perceived as valu-laden here. Perhaps a substantial fraction or similar phraseology would be better [Peter Thorne, Ireland]	Editorial. Text revised for the FGD

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
32813	39	50	39	55	... over the Arabian Peninsula. Over the last 15 years (1995–2010), the annual frequency of warm days and nights has increased by 12 and 14 days/decade, respectively over Iran Plateau. The number of cold days and nights has decreased by 4 and 3 days/decade, respectively. The annual mean maximum and minimum temperatures averaged across Iran both increased by 0.031 and 0.059 °C/decade (Soltani (et al. 2016). For semi-arid Karkheh Basin (KB) (western of Iran),the PRECIS and REMO models, under A2, B2 and A1B scenarios, have been chosen as regional climate models (RCMs). These regional climate models indicate an overall warming in future in KB under various scenarios. The increase in temperature in the dry months (June, July and August) is greater than the increase in the wet months (January, February, March and April) (Solymani,2014). Balling et al. (2016) analyzed a variety of extreme temperature indices over the period 1961 to 2010 for 31 stations located throughout Iran. Trends in each index were consistent with overall warming across the country. The trends were most significant for indices associated with the daily minimum temperatures as opposed to those associated with maximum temperatures. This study showed a number of identifiable anthropogenic signals in the temperature records from Iran, but unlike most other studies, the signals are stronger with indices related to maximum, not minimum, temperatures. (Soltani, M., Laux, P., Kunstmann, H., Stan, K., Sohrabi, M. M., Molanejad, M., ... & Zawar-Reza, P. (2016). Assessment of climate variations in temperature and precipitation extreme events over Iran. Theoretical and Applied Climatology, 126(3-4), 775-795.)).(Solaymani HR, Gosain AK (2015) Assessment of climate change impacts in a semi-arid watershed in Iran using regional climate models. J. Water Clim Chang 6(1):161–180). Balling Jr, R. C., Kiany, M. S. K., & Roy, S. S. (2016). Anthropogenic signals in Iranian extreme temperature indices. Atmospheric Research, 169, 96-101.	Rejected. All extreme climate indices are relevant and appear in Ch11. Only mean temperature, precipitation and snow cover are assessed in the Atlas.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
33143	39	50	39	55	... over the Arabian Peninsula. Over the last 15 years (1995–2010), the annual frequency of warm days and nights has increased by 12 and 14 days/decade, respectively over Iran Plateau. The number of cold days and nights has decreased by 4 and 3 days/decade, respectively. The annual mean maximum and minimum temperatures averaged across Iran both increased by 0.031 and 0.059 °C/decade (Soltani (et al. 2016). For semi-arid Karkheh Basin (KB) (western of Iran),the PRECIS and REMO models, under A2, B2 and A1B scenarios, have been chosen as regional climate models (RCMs). These regional climate models indicate an overall warming in future in KB under various scenarios. The increase in temperature in the dry months (June, July and August) is greater than the increase in the wet months (January, February, March and April) (Solymani,2014). Balling et al. (2016) analyzed a variety of extreme temperature indices over the period 1961 to 2010 for 31 stations located throughout Iran. Trends in each index were consistent with overall warming across the country. The trends were most significant for indices associated with the daily minimum temperatures as opposed to those associated with maximum temperatures. This study showed a number of identifiable anthropogenic signals in the temperature records from Iran, but unlike most other studies, the signals are stronger with indices related to maximum, not minimum, temperatures. (Soltani, M., Laux, P., Kunstmann, H., Stan, K., Sohrabi, M. M., Molanejad, M., ... & Zawar-Reza, P. (2016). Assessment of climate variations in temperature and precipitation extreme events over Iran. Theoretical and Applied Climatology, 126(3-4), 775-795.)).(Solaymani HR, Gosain AK (2015) Assessment of climate change impacts in a semi-arid watershed in Iran using regional climate models. J. Water Clim Chang 6(1):161–180). Balling Jr, R. C., Kiany, M. S. K., & Roy, S. S. (2016). Anthropogenic signals in Iranian extreme temperature indices. Atmospheric Research, 169, 96-101.	Rejected. All extreme climate indices are relevant and appear in Ch11. Only mean temperature, precipitation and snow cover are assessed in the Atlas.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
106765	39	50			... over the Arabian Peninsula. Over the last 15 years (1995–2010), the annual frequency of warm days and nights has increased by 12 and 14 days/decade, respectively over Iran. The number of cold days and nights has decreased by 4 and 3 days/decade, respectively. The annual mean maximum and minimum temperatures averaged across Iran both increased by 0.031 and 0.059 °C/decade (Soltani (et al. 2016). For semi-arid Karkheh Basin (KB) (western of Iran),the PRECIS and REMO models, under A2, B2 and A1B scenarios, have been chosen as regional climate models (RCMs). These regional climate models indicate an overall warming in future in KB under various scenarios. The increase in temperature in the dry months (June, July and August) is greater than the increase in the wet months (January, February, March and April) (Solymani,2014). Balling et al. (2016) analyzed a variety of extreme temperature indices over the period 1961 to 2010 for 31 stations located throughout Iran. Trends in each index were consistent with overall warming across the country. The trends were most significant for indices associated with the daily minimum temperatures as opposed to those associated with maximum temperatures. This study showed a number of identifiable anthropogenic signals in the temperature records from Iran, but unlike most other studies, the signals are stronger with indices related to maximum, not minimum, temperatures. (Soltani, M., Laux, P., Kunstmann, H., Stan, K., Sohrabi, M. M., Molanejad, M., ... & Zawar-Reza, P. (2016). Assessment of climate variations in temperature and precipitation extreme events over Iran. Theoretical and Applied Climatology, 126(3-4), 775-795.)).(Solaymani HR, Gosain AK (2015) Assessment of climate change impacts in a semi-arid watershed in Iran using regional climate models. J. Water Clim Chang 6(1):161–180). Balling Jr, R. C., Kiany, M. S. K., & Roy, S. S. (2016). Anthropogenic signals in Iranian extreme temperature indices. Atmospheric Research, 169, 96-101	Rejected. All extreme climate indices are relevant and appear in Ch11. Only mean temperature, precipitation and snow cover are assessed in the Atlas.
84379	40	5	40	16	this paragraph has quite old references [Annalisa Cherchi, Italy]	Noted. These references have not been assessed in previous IPCC report or special reports.
82411	40	6	40	6	As other warming rates are quoted per decade suggest doing that here too (also line 15). [Blair Trewin, Australia]	Editorial. Text revised for the FGD
82413	40	18	40	22	This seems a very large number of citations for a small number of results - do the quoted ranges represent the upper and lower bounds of what's reported across these studies, or something else? [Blair Trewin, Australia]	Noted. Yes the values are taken from all these references.
84381	40	18	40	22	not clear why this paragraph is separated from the previous one. They could be join keeping information from most recent references [Annalisa Cherchi, Italy]	Editorial. Text revised for the FGD
34223	40	35			“CMORPH”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
110391	40	36	40	36	great is value laden 'a substantial' would be better here [Peter Thorne, Ireland]	Editorial. Text revised for the FGD
34225	40	37			“GSMAP”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
40787	40	44	40	44	should be "Xinjiang" [TSU WGI, France]	Editorial. Text revised for the FGD
110393	40	54	41	1	Wasn't this covered in earlier text? If so why is it being repeated here? [Peter Thorne, Ireland]	Editorial. Text revised for the FGD

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66949	41	4			Atlas section 5.3.2.3 appears to consider both global and regional models (which I expected) but the first line appears to be an assessment of regional models only, which confused me. Maybe start with a sentence or two giving the scope of the section. Also found the jumps between different geographic regions to be a little confusing. I assume some information was available for some regions but not for others but I think it would be helpful to say that explicitly. [Mathew Barlow, United States of America]	Taken into account. Text order has been harmonized across the chapter
110397	41	4			Unlike similar sections this starts out with RCMs then consisders ESMs. All other segments so far have done the opposite. For a. reader consistency of approach would be good. [Peter Thorne, Ireland]	Taken into account. Text order has been harmonized across the chapter
110395	41	13	41	16	I am not sure that much weight should be placed in an ERA40 based analysis given that the reanalysis is 2 generations old and clearly of lower quality than the newer products generally being assessed in the remainer of the report. [Peter Thorne, Ireland]	Taken into account. Text has been revised for the FGD
66951	41	13	41	17	Are CMIP3 models still relevant at this point? [Mathew Barlow, United States of America]	Taken into account. Text has been revised and CMIP3 results deleted
66953	41	13	41	27	Relevant to both the Arabian penninsula and the larger region, there is a wide range in the ability of CMIP6 models to accurately reproduce the ENSO teleconnection that influences the region (Barlow et al, in review). This is important for the direct consideration of CMIP6 models as well as both statistical and dynamical downscaling. Barlow, M., A. Hoell, and L. Agel, 2020: An evaluation of CMIP6 historical simulations of the teleconnection between tropical Indo-Pacific sea surface temperatures and precipitation in Southwest Asia and the coastal Middle East. In review. [Mathew Barlow, United States of America]	Accepted. Barlow et al. (2021) is cited.
84383	41	21	41	21	what do you mean by "ECHAM dataset"? What type of experiment? ECHAM in the sense of experiment done with AGCM alone? [Annalisa Cherchi, Italy]	Taken into account. Text has been revised
34227	41	27			“RegCM4.3.5”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
34231	41	48			“WRF”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
34233	42	6			“COSMO-CLM”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
82417	42	9	42	11	Whilst they may appear in the cited paper (which covers Africa as well), the results from the Sahara and Sahel are not relevant to this section. [Blair Trewin, Australia]	Noted. Text revised for the FGD
84385	42	9	42	11	these African regions have been considered in section 5.2. They don't seem to belong to Middle East Asia [Annalisa Cherchi, Italy]	Noted. Text revised for the FGD
66289	42	13	42	17	Is CMIP3 not too out of date? [Erika Coppola, Italy]	Taken into account. CMIP3 results are still used in the recent literature for the region and considered here in comparison with the later CMIP5/6 results
32811	42	33	42	34	(IDOE, 2017 IRIMO, 2017) [sadegh zeyaeyan, Iran]	Editorial. Propper reference has been included in the FGD
33141	42	33	42	34	(IDOE, 2017 IRIMO, 2017) [Sahar Tajbakhsh Mosalman, Iran]	Editorial. Propper reference has been included in the FGD
106763	42	33			(IDOE, 2017 IRIMO, 2017) [Mansoureh Kouhi, Iran]	Editorial. Propper reference has been included in the FGD
14263	42	41	42	41	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial. Text revised for the FGD

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
93805	42	41	42	48	It is not clear that this paragraph addresses projected climate changes in West and Central Asia and not in the Arabian Peninsula. Please consider drawing a clearer line between the two regions across Section 5.3.2.4, potentially by including more subsections. [Quentin Lejeune, Germany]	Editorial. Text revised for the FGD
32809	43	6	43	8	... (Ozturk et al.2017). In the semi-arid area of western Iran, the RegCM-CLM model was run under the RCP4.5 scenario for the 2016–2025 period. Highest values of precipitation occur in the months of April and May. Because of available moisture increase, evapotranspiration and runoff also have their highest values mostly in these two months. Temperature does not show any perceptible change apart from a small increasing trend (Tizro et al. 2019)(Tizro, A. T., Fryar, A. E., Pour, M. K., Voudouris, K. S., & Mashhadian, M. J. (2019). Groundwater conditions related to climate change in the semi-arid area of western Iran. Groundwater for Sustainable Development, 9, 100273). [sadegh zeyaeyan, Iran]	Rejected. The suggested reference is for the near term projection up to 2025 which did not fit with the rest of the assessment being on the end of the 21st century. Other characteristics are out of the scope of the Atlas where we assess only mean air temperature, precipitation and snow
33139	43	6	43	8	... (Ozturk et al.2017). In the semi-arid area of western Iran, the RegCM-CLM model was run under the RCP4.5 scenario for the 2016–2025 period. Highest values of precipitation occur in the months of April and May. Because of available moisture increase, evapotranspiration and runoff also have their highest values mostly in these two months. Temperature does not show any perceptible change apart from a small increasing trend (Tizro et al. 2019)(Tizro, A. T., Fryar, A. E., Pour, M. K., Voudouris, K. S., & Mashhadian, M. J. (2019). Groundwater conditions related to climate change in the semi-arid area of western Iran. Groundwater for Sustainable Development, 9, 100273). [Sahar Tajbakhsh Mosalman, Iran]	Rejected. The suggested reference is for the near term projection up to 2025 which did not fit with the rest of the assessment being on the end of the 21st century. Other characteristics are out of the scope of the Atlas where we assess only mean air temperature, precipitation and snow
106759	43	6			... (Ozturk et al.2017). In the semi-arid area of western Iran, the RegCM-CLM model was run under the RCP4.5 scenario for the 2016–2025 period. Highest values of precipitation occur in the months of April and May. Because of available moisture increase, evapotranspiration and runoff also have their highest values mostly in these two months. Temperature does not show any perceptible change apart from a small increasing trend (Tizro et al. 2019)(Tizro, A. T., Fryar, A. E., Pour, M. K., Voudouris, K. S., & Mashhadian, M. J. (2019). Groundwater conditions related to climate change in the semi-arid area of western Iran. Groundwater for Sustainable Development, 9, 100273). [Mansoureh Kouhi, Iran]	Rejected. The suggested reference is for the near term projection up to 2025 which did not fit with the rest of the assessment being on the end of the 21st century. Other characteristics are out of the scope of the Atlas where we assess only mean air temperature, precipitation and snow
84387	43	8	43	19	these two paragraphs could be merged and the content homogenized [Annalisa Cherchi, Italy]	Editorial. Text revised for the FGD
84389	43	21	43	25	reference is missing. Apparently this part could be merged with the paragraph just before [Annalisa Cherchi, Italy]	Editorial. Text revised for the FGD
84391	43	30	43	30	and what are these uncertainties? [Annalisa Cherchi, Italy]	Taken into account. Text has been revised for the FGD and confidence statement is added
82419	43	45	43	46	Do the winter and summer warming rates apply to the same scenario? If so, which one? [Blair Trewin, Australia]	Taken into account. Text has been revised for the FGD and includes different scenarios

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
124909	43	53	44	13	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Taken into account. Different scenario results are given for the CMIP6 runs
93807	44	16	44	17	This sentence does not read correctly. [Quentin Lejeune, Germany]	Editorial. Text revised for the FGD
82421	44	18	44	19	These warming rates seem very high, and inconsistent with the warming amounts for the whole period quoted at line 16-17 (which would equate to around 0.5 C/decade). If they are peak warming rates for the fastest-warming decade this should be stated. [Blair Trewin, Australia]	Taken into account. Text revised for the FGD with updated numbers for warming rates from literature and Interactive Atlas
106767	44	34			… to intensify over the peninsula. In South Central Iran (Persian Gulf basin) the temperature increase under three scenarios including B1, A1B, and A2 respectively 2.3, 3.1, and 3.5 °C. Precipitation: (a) precipitation decrease in the north of Bushehr province between 14 and 24%, and in the southern areas between 5 and 13% by the year 2099; (b) decrease in A2 and A1B scenarios will be more severe (42% decrease in the northern half of the province (Naderi et al. 2016)(Naderi M, Raeisi E (2016) Climate change in a region with altitude differences and with precipitation from various sources, southCentral Iran. Theor Appl Climatol 124(3–4):529–540) [Mansoureh Kouhi, Iran]	Rejected. SRES scenarios are considered as outdated and already assessed in the previous reports. The most recent peer-reviewed literature about the region is included.
110399	44	53	44	54	This headline statement requires editing for clarity [Peter Thorne, Ireland]	Not applicable. Text has been removed and put in the main section in revised form
110401	45	22	45	23	The part between the commas defining a geographical domain is not a climate feature and should be removed. [Peter Thorne, Ireland]	Rejected. We consider it as essential information to readers
24441	45	24	45	24	Here the atmospheric angular momentum (AAM) abruptly appears. How does the AAM influences the North Asian climate? [Akio Kitoh, Japan]	Taken into account. Text has been revised with more clear links to the Annex on MoV
110403	45	24	45	32	Where are the links back to the substantive assessments in chapters 2, 3 and in cross-chapter box 10.1 on these issues? [Peter Thorne, Ireland]	Taken into account. The references have been added
84393	45	25	45	25	include reference to Annex VI where NAO/NAM are defined and described in terms of basic characteristics [Annalisa Cherchi, Italy]	Taken into account. Text has been revised and link to the Annex has been added
110405	45	34	45	44	This is yet another way of describing the region rather than necessarily its principal climatic features. Is it required? And can there be greater homogeneity applied in the final draft around the approach to this section in each region? [Peter Thorne, Ireland]	Taken into account, a common approach to introducing (reference) regions is used in all of the regional sections.
34235	46	2			“WGII”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
110407	46	6	46	12	As this is observed changes shouldn't this be in the later sub-section accordingly? [Peter Thorne, Ireland]	Taken into account. Text has been moved to the section on previous findings
34237	46	36			“SROCC”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
84395	46	37	46	37	"here" where? [Annalisa Cherchi, Italy]	Editorial – copyedit to be completed prior to publication
88463	46	43	46	44	It isn't the fire itself that results in permafrost warming and thaw and subsequent alteration of stability but rather the damage to the vegetation and organic layer which results in changes to the site microclimate and leads to ground warming. [Sharon Smith, Canada]	Accepted. Text has been revised to state clear positive feedback of warming, vegetation degradation, fire and permafrost thawing
34239	47	2			“SREX”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
34241	47	3			“CMIP5”, avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
110411	47	16	47	44	This has substantial overlaps with cross-chapter box 10.1 and readers should be pointed there and the redundant material removed here. [Peter Thorne, Ireland]	Taken into account. Text has been revised, but with references to Cross-Chapter Box 10.1 stay here since it is a very specific feature of mean climate state of these regions.
110409	47	17	47	17	HadCRUT is the Hadley/CRU product … [Peter Thorne, Ireland]	Not Applicable. Text has been removed
14265	47	20	47	20	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
84397	47	21	47	21	"more intense warming" suggest to remove "climate" [Annalisa Cherchi, Italy]	Editorial. Text has been revised
82423	47	33	47	35	Even if midlatitude circulation variability is the primary driver for both changes, this doesn't indicate that they have no influence on each other (as implied by the text) - this looks to me to be the epitome of a positive feedback (with reduced sea ice further amplifying temperature changes). [Blair Trewin, Australia]	Taken into account. Text has been revised
84399	47	34	47	34	"by" before parenthesis is useless [Annalisa Cherchi, Italy]	Editorial – copyedit to be completed prior to publication
14267	47	39	47	39	Check the reference of ROSHYDROMET, 2019. Complete name must appear. [Maria Amparo Martinez Arroyo, Mexico]	Noted. Reference is correct.
34243	47	46			Check unit format: “xx mm/month”. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
82425	48	2	48	19	It is mentioned in reporting on previous assessment findings (P46 L24), as well as in model evaluation (P49 L19), that cold-season precipitation data have large biases; does this add uncertainty to any of the findings reported here, and have there been any further developments in addressing it since AR5? [Blair Trewin, Australia]	Taken into account. Text has been revised to point out on uncertainty due to scarce station data resulting in low confidence of the assessment
14269	48	21	48	21	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
110413	48	27	48	28	Methods were covered earlier - no need to repeat. [Peter Thorne, Ireland]	Taken into account. Text has been revised
82427	48	27	48	31	It would be useful to know if ERA5 also has these biases, although reporting on that requires literature which may not be available in time. [Blair Trewin, Australia]	Noted. There was not literature on ERA5 in the region up to the deadline for AR6 WGI
110415	49	4	49	5	Chapter 11 assess HadEX3 and I assume the Atlas does likewise so I would query the value of retention here. [Peter Thorne, Ireland]	Taken into account. Reference to corresponding Ch11 has been added
34245	49	13			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
88465	49	37	47	37	It isn't just because it is the permafrost region that there are greater increases in air temperature but it is high latitude/Arctic - essentially this is Arctic Amplification [Sharon Smith, Canada]	Noted. This summary is not for high latitude/Arctic, but permafrost region in Siberia where Arctic Amplification is valid too, but permafrost thawing with methane emission is additional factor to rise warming rate.
66255	49	40	49	46	This is an assessments of projection for dry extremes and flood risk for the whole North Asia and clash with CH12 assessment done by several regions included in North Asia [Erika Coppola, Italy]	Accepted, Text has been revised and harmonised with Ch12
14271	49	44	49	44	CDD must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
34247	49	44			“CDD”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
66257	50	1	50	12	This is an assessment of projection of temperature and precipitation extreme indices that should be left to CH11 or CH12 [Erika Coppola, Italy]	Accepted, Text revised and harmonised with Ch11 and Ch12
24443	50	4	50	4	As winter is defined as DJF (page 48, line 29), "a decrease of wintertime duration" does not make sense. Rewording is necessary. [Akio Kitoh, Japan]	Accepted. Text has been revised
34249	50	20			“MGO”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
82429	50	33	50	33	What is meant by "the variability of extremes" here? [Blair Trewin, Australia]	Editorial. Text has been revised

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
44123	51	16	51	37	Quantitative assessments and more spatially detailed descriptions of the observed warming are absent from the Regional Executive Summary for the Southeast Asia region. Could the authors include such statements? Moreover, the Executive Summary doesn't include any information on rainfalll extremes, although Chapters 11 and 12 report medium confidence in an "increase in extreme precipitation", and in "more intense rainfall events", respectively. [Lamin Mai Touray, Gambia]	- Accepted, for more description of the observed warming in the Regional Executive Summary - Rejected, for rainfall extremes – outside the scope of the chapter
110419	51	18	51	18	This erroneously implies that ENSO is responsible for this warming and requires substantive revision accordingly. [Peter Thorne, Ireland]	Accepted. The text in observation section has been revised to provide more details on ENSO influence.
45171	51	18	51	20	It is not clear why medium confidence and low confidence have been assigned for this assessment, if El Nino events have "strongly" influenced observed warming over Southeast Asia. This sentence may be suitably rephrased. [Krishnan Raghavan, India]	Accepted. The text in observation section has been revised to provide more details on ENSO influence.
82431	51	18	51	26	Whilst the ENSO influence on temperature and precipitation in this region is certainly important, it seems a significant omission not to report (either here or in the main text) on how much change is occurring, apart from some brief discussion at the end of P52. P52 L16-19 states that there have been a number of recent studies on climatic trends in the region but does not report any results from them. Reporting that ENSO has a large influence on interannual variability of temperature and precipitation in the region (which it does) is also not the same as showing that ENSO has influenced observed trends in those variables (although it would have the potential to do so, especially over shorter periods where one or both ends of the period is dominated by one ENSO phase). [Blair Trewin, Australia]	Accepted. The text in observation section has been revised to provide more details on ENSO influence.
124911	51	23	51	23	What does "Changes in daily mean precipitation are less spatially coherent (low confidence)" mean? There is low confidence in the coherence of changes, or there is low confidence that changes are less coherent? If the latter, it may be better to leave this statement out. [Trigg Talley, United States of America]	Taken into account. "low confidence" has been removed.
110421	51	28	51	37	Again, no scenario dependency here and concentrating upon highest emissions scenario. [Peter Thorne, Ireland]	Taken into account. Text revised
124913	51	28	51	37	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Accepted. Text revised
66275	51	32	51	37	Here the South East Asia precipitation is projected to decrease with medium confidence. CH12 gives an increase with medium confidence. Moreover Figure Atlas 30 show a precipitation increase and also in page Atlas 55 line 12-46 [Erika Coppola, Italy]	Taken into account. Revised accordingly to ensure the consistency across the sub-section and the chapters (difference between the trends of RCMs and those of GCMs)
78317	51	36	51	36	It would be useful to explain by what "Maritime Continent" constitutes/means [Leonie Lee, Singapore]	Not Applicable – because of word limits
84401	51	44	51	44	"maritime continent" need initials letters in capital [Annalisa Cherchi, Italy]	Editorial – copyedit to be completed prior to publication
84403	51	46	51	47	include references of section in Annex VI for MJO and ENSO [Annalisa Cherchi, Italy]	Accepted.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
24525	52	2	52	4	The paragraph talks about model simulations and then mentions a change of extreme precipitation by 22mm and 10 mm per decade. Is it based on model simulations or observations? Isn't it better to present ranges rather than giving very specific values? [Subimal Ghosh, India]	Not applicable. Text no longer included in the Chapter
89599	52	9	52	12	May I clarify that these findings are not from WGI AR5 ? [Faye Abigail Cruz, Philippines]	Taken into account. Already checked and confirmed these findings are from WGI AR5 (WGII AR5- Part B, section 24.3.2 referred to these findings in WGI). Text revised.
124915	52	11	52	12	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. This should be propagated to the underlying text on page 55. [Trigg Talley, United States of America]	Results for RCP2.6 and RCP8.5 have been added. The information was taken from section 14.8.12, WGI AR5 (only two specific RCPs were mentioned)
44125	52	15	52	46	Table 11.5 in Chapter 11 also mentions more studies presenting regional findings for Southeast Asia, which should be considered in this Section in order to build a comprehensive assessment of climate impact drivers in the region. [Lamin Mai Touray, Gambia]	Rejected - outside the scope of the chapter. Table 11.5 is pertaining to extremes, whereas Atlas is only assessing means
110423	52	21	52	23	What do you mean about global warming contributing half? This makes no logical sense to me. [Peter Thorne, Ireland]	Accepted. Text revised
82433	52	22	52	22	It may be worth saying (for the benefit of readers less familiar with the region) that April is the month with peak occurrence of extreme high temperatures in much of the region. [Blair Trewin, Australia]	Accepted. Text revised
24527	52	28	52	31	Isn't it better to provide ranges rather than specific values. [Subimal Ghosh, India]	Accepted. Text revised (from the existing numbers, the range provided in Limsakul and Singhruk (2017) has been inserted in the FGD)
34253	52	30			Check unit format: "xxmm/day". [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
110425	52	39	52	41	This is figure caption and not text material. [Peter Thorne, Ireland]	Accepted. Text removed
34255	52	49			Page 52_L49. Check unit format: "xx mm/day". [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
110429	53	33			This section has large overlaps with several chapters - notably chapter 8 and should refer the reader to these rather than undertake its own substantive assessment. [Peter Thorne, Ireland]	Rejected. We presume reviewer means Ch10, not Ch8. But in Ch10, reference to RCM model evaluation does not point to particular sub-regions. Whereas this section is particularly talking about model evaluation for SEA.
102361	53	35	53	35	Suggest to change into "inadequacies and too coarse scales of observed…" [Philippe Tulkens, Belgium]	Taken into account. The whole paragraph was revised. Only the last sentence remained and was moved to the prior subsection
110427	53	37	53	39	This should surely be in the prior subsection? [Peter Thorne, Ireland]	Accepted. Text revised.
82033	54	2	54	2	Please reconsider the term 'bias correction'. Better use 'bias adjustment'. Check also in IA [Swantje Preuschmann, Germany]	Accepted. Text revised.
84405	54	2	54	3	and what have been the results with bias corrected SST? [Annalisa Cherchi, Italy]	Taken into account. No specific impact of adjusted SST was discussed in Katzfey et al. (2016), the paper we cited in the SOD. We have revised and removed this sentence in the FGD. We have also added additional information on the warm bias over some areas in the Maritime Continent (Cruz et al. 2017) and Vietnam (VanKhiem et al. 2014)
84407	54	5	54	8	the two sentences could be better harmonized in the information they give [Annalisa Cherchi, Italy]	Accepted. Text revised.
110431	54	17	54	20	These indicies were introduced earlier so this sin't required here? [Peter Thorne, Ireland]	Accepted. Text revised.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20861	54	33	54	34	There is nothing in the similarity index allowing to extract specific information about phases or shapes. [philippe waldteufel, France]	Taken into account. The part about the similarity index has been removed in the FGD
84409	54	33	54	34	why text in parenthesis? Text could be harmonized [Annalisa Cherchi, Italy]	Not Applicable. Text no longer in the chapter.
44127	54	47	55	46	This section Atlas.5.3.4.4 looks very bulky and it is hard to catch ist most important messages. It would be really useful if the authors could streamline, structure and even hierarchise the multiple studies that are mentioned and the findings that they present. A possibility could be to divide this paragraph into more subsections or to add paragraph headings, in order to address the different subregions within Southeast Asia separately. [Lamin Mai Touray, Gambia]	Taken into account. The section has been shortened and streamlined as suggested.
89601	55	5	55	10	This seems to be repeating what was discussed in the earlier section (previous findings from IPCC assessment) so I think this can just be rephrased for brevity. Also may I confirm that these findings are not from WGI AR5? [Faye Abigail Cruz, Philippines]	Accepted. Text revised. It's true that the statement was from WGII AR5 but WGII AR5 referred to the results of WGI AR5 (section 14.8.12)
82435	55	12	55	36	There appears to be considerable internal inconsistency in the findings reported here (and the associated figures, 30 and 32). In particular, it is difficult to see how a pattern of decreasing JJA rainfall and increasing DJF rainfall (when JJA is the main rainy season) in the region centred on Thailand (Figure 32) can be consistent with the increases in annual rainfall shown in Figure 30. If this reflects different results from different choices of models - no information is given on which models are used in Figure 32 or the associated text - then the uncertainty which that indicates should be given more prominence in the assessment than it currently is. (It is also unhelpful that significance stippling in Figure 32 has the opposite meaning to Figure 30). [Blair Trewin, Australia]	Taken into account. Yes, inconsistency is resulted from different use of models. The Figure Atlas.30 (SOD) was based on GCMs whereas Figure Atlas.31 (SOD) was based on a number of selected GCMs and RCMs in Tangang et al. (2020). GCMs in Tangang et al. (2020) were preselected to ensure their ability to simulate mean climate e.g. monsoon and variability. Not all GCMs that could well simulate the monsoon and if all are selected such as in Figure Atlas.30, the projected ensemble mean may be different from that of Tangang et al. (2020). Text revised to ensure the consistency throughout the section.
14273	55	22	55	22	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
45195	56	3	59	53	Much of the regional assessment for South Asia needs to be modified, shortened considerably and ensuring cross-chapter consistency [Krishnan Raghavan, India]	Taken into account - text revised.
80561	56	5	56	7	Should a time frame be specified upfront here, i.e. since the 1950s? [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. Text deleted.
45173	56	5	56	9	Suggestion to rephrase the sentence "The South Asian monsoon has shown contrasting behaviour over India and Pakistan (in the monsoon dominated region only)", The sentence could be something like this "The South Asian monsoon precipitation has shown contrasting behavior between the central and northwestern areas of the monsoon dominated areas of South Asia. It is better to avoid explicitly referring to political boundaries. [Krishnan Raghavan, India]	Taken into account - text revised.
110433	56	5	56	9	Monsoons should be the domain of chapter 8 and not the Atlas. This risks causing confusion. Suggest discuss with chapter 8. [Peter Thorne, Ireland]	Noted - only mean changes has been discussed here.
44129	56	5	56	22	Does the South Asia region as described in the regional executive summary also encompass the Tibetan Plateau and the Himalayas? If yes, can it be made clearer and if not, please also add some main findings for these regions. [Lamin Mai Touray, Gambia]	Taken into account - text revised.
24445	56	7	56	7	500-1000 hPa? [Akio Kitoh, Japan]	Not applicable. Text deleted.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
45185	56	7	57	9	The sentence is unclear and may be dropped "Vertically Integrated Moisture Transport and extra-tropics connections are mainly forming the dipole like mechanisms since the 1950s". The policy relevance of this statement Is not clear and can be dropped as a key message of the Regional Executive Summary. Also VIMMT is vertical integration from surface or 1000 hPa; not 0-500 hPa [Krishnan Raghavan, India]	Not applicable. Text deleted.
80563	56	7			This is surely mistaken and should be 1000-500 hPa, i.e. the lower troposphere. Very little monsoon moisture is transported in the upper troposphere. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. Text deleted.
84411	56	11	56	12	"winters are warming faster than summers" [Annalisa Cherchi, Italy]	Not applicable. Text deleted.
45175	56	11	56	13	The sentence may be suitably rephrased. "Winters are getting warmer faster than summers" is not very clear. Please also provide quantitative trends of summer and winter temperatures [Krishnan Raghavan, India]	Not applicable. Text deleted.
45177	56	15	56	17	Future projected regional warming during 2081-2100 may be provided separately for the RCP8.5 and SSP5-8.5 scenarios [Krishnan Raghavan, India]	Not applicable. Text deleted.
110435	56	15	56	22	Again, no scenario dependency here and concentrating upon highest emissions scenario. [Peter Thorne, Ireland]	Not applicable. Text deleted.
124917	56	15	56	22	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Not applicable. Text deleted.
45179	56	19	56	22	Summer monsoon precipitation in South Asia is likely to increase by the end of the 21st century while winter monsoons are projected to be drier. Is the term "winter monsoon" is being referred to winter precipitation over northern and western parts of South Asia caused by westerly winds which transport moisture from the Atlantic Ocean ? If so, this is incorrect. The winter precipitation associated with westerly winds is due to Western Disturbances and this cannot be called as "Winter Monsoon". Regions in Peninsular India receive rains during October-December due to northeasterly winds from Asian region. This phenonmenon is called Northeast Monsoon and is different from the western disturbances. This point needs to be clarified. [Krishnan Raghavan, India]	Taken into account - text revised.
45181	56	31	56	32	"In winter, westerly winds ….of South Asia" - Please note that this cannot be called as Winter Monsoon. This is precipitation due to winter western disturbances (Ref: Krishnan et al. 2019a, 2019b) [Krishnan Raghavan, India]	Taken into account - text revised.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
80565	56	31	56	32	The sentence alludes to "Western Disturbances". While is is accurate to state that air parcel trajectories can be traced back to the Atlantic, they contribute relatively little moisture. (Afterall, at 200 hPa in the subtropical westerly jet, the air is too cold to hold substantial moisture.) See Hunt et al. (2017) (https://doi.org/10.1002/qj.3200) Fig. 2a for the tracks originating over the Atlantic. See Hunt et al. (2018) (https://doi.org/10.1175/MWR-D-17-0258.1) for a discussion of moisture origins. While that paper is from the perspective of the extreme events, its winter event composites indicate most moisture being advected in from the northern Indian Ocean. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account. Text revised.
34259	56	35			« IPCC », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
80567	56	36			Here and more generally in the Atlas as a whole, when discussing added value it would be useful to cross-reference discussions thereof in Chapter 10. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. Section discusses findings from previous assessments.
34261	56	42			« IPCC », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
80569	56	50			Insert "when" before "considering" [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Editorial – copyedit to be completed prior to publication
84413	56	54	56	54	"along" is repeated many times [Annalisa Cherchi, Italy]	Accepted - text revised.
102363	57	5	57	5	3.398 = 3.4 [Philippe Tulkens, Belgium]	Not applicable. Text deleted.
102365	57	8	57	8	Atlas: 'It is projected with medium confidence that the projected weakening of the Atlantic Meridional Overturning Circulation (AMOC) will result in decline in summer rainfall over South Asia.' double usage of the word 'projected' should be avoided. [Philippe Tulkens, Belgium]	Accepted - text revised.
45203	57	8	57	10	The assessment that the AMOC is projected to weaken (medium confidence) and will result in decrease of rainfall over South Asia is inconsistent with the assessment of Chapter 8 (Please see Chapter 8 SOD, page 7, lines 33-44). Assessment of this statement in Atlas needs to be rectified. [Krishnan Raghavan, India]	Taken into account - text revised.
80571	57	22	57	22	This passage of text contains good, thorough referencing. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Thank you.
45183	57	31	57	32	Sabin and Mujumdar 2016 reference is incorrect and may be dropped. This reference should be Krishnan et al. 2016 which is already referred in line 30. [Krishnan Raghavan, India]	Accepted. Reference removed.
45187	57	34	57	40	The paragraph is unclear and needs to be rephrased [Krishnan Raghavan, India]	Accepted - text revised.
80573	57	42	57	46	This passage of text seems to give a rather nebulous assessment on the attribution of the declining trend in Indian rainfall. The overall message of Chapter 8 is much more in favour of aerosol dominating the declining trend whereas here, no real assessment is made. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted - text revised.
14275	57	48	57	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
45189	57	50	57	51	The sentence "There are no significant observed precipitation changes over most of South Asia but for some regions in southern India" is incorrect and inconsistent with the assessment of Chapter 8. This sentence needs to be rectified or dropped. [Krishnan Raghavan, India]	Rejected - this statement is concluded from Figure Atlas.33, where <66% is considered not significant.
45191	57	54	58	4	References to published paperss need to be provided to support this assessment. [Krishnan Raghavan, India]	Accepted. Reference added.
84415	57	55	58	3	reference missing [Annalisa Cherchi, Italy]	Accepted. Reference added.
124919	57	55	58	11	[PROGRESS] In order to focus on new information since AR5, this section should be updated with CMIP6 results. If not available, it may make sense to remove this section. [Trigg Talley, United States of America]	Accepted. Additional text and references added.
84417	58	7	58	7	"they fail" is intended for both CMIP5 and CMIP6 models? [Annalisa Cherchi, Italy]	Noted. Text clarified.
80575	58	25			Would CMIP5 models not have a warm bias over India, due to the large dry biases in precipitation, as in Sperber et al. (2013)? Or is the cold bias referred to in a different location or at a larger-scale? [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted - yes, this statement for large-scale as mentioned in text as well (almost entire region).
45193	58	26	58	26	Replace "Khush" by "Kush" [Krishnan Raghavan, India]	Accepted - text revised.
24449	58	36	59	21	A high-resolution AGCM projects a decrease in summer precipitation along the Western Ghats (e.g., Rajendran et al., 2012, 2013; Krishnan et al., 2013). How do you assess this finding? Rajendran, K., A. Kitoh, J. Srinivasan, R. Mizuta and R. Krishnan, 2012: Monsoon circulation interaction with Western Ghats orography under changing climate: Projection by an ultra-high resolution global model. Theor. Appl. Climatol., 110, 555-571, doi:10.1007/s00704-012-0690-2 Rajendran, K., S. Sajani, C. B. Jayasanka,r and A. Kitoh, 2013: How dependent is climate change projection of Indian summer monsoon rainfall and extreme events on model resolution? Current Science, 104, 1409-1418. Krishnan, R., T.P. Sabin, D.C. Ayantika, A. Kitoh, M. Sugi, H. Murakami, A.G. Turner, J.M. Slingo and K. Rajendran, 2013: Will the South Asian monsoon overturning circulation stabilize any further? Climate Dynamics, 40, 187-211, doi:10.1007/s00382-012-1317-0. [Akio Kitoh, Japan]	Taken into account - text revised.
124921	58	41	58	46	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Accepted. Section opens with reference to summary figure with multiple RCPs and warming levels.
34263	58	41			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
80577	58	44	58	46	This statement is unreferenced. The previous sentence refers to a study on 23 CMIP5 models, whereas this sentence refers to 20 models, so it must be a different paper. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Text revised.
34265	58	48			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
34267	58	50			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
80579	59	1	59	2	By "IPCC AR4-based AOGCMs" do you mean CMIP3? IPCC does not run GCMs. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Yes and text revised.
34269	59	7			« ECHAM5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
34271	59	10			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Editorial – copyedit to be completed prior to publication
79471	60	8	60	10	"(for example, Australasian land area warming in CMIP6 from 1995-2014 to 2°C global warming since pre-industrial is 1.0°C to 1.5°C compared to the global average of 0.8°C to 1.4°C)." I don't get this example. Why do we compare a period with a temperature target? Also, the comparison of Australasia land with the global mean is somewhat misleading: it probably means that Australasia land warms at lower rate that the global land... And there is nothing wrong with that. [Alejandro Di Luca, Australia]	Accepted. These values have all been revised for FGD
66061	60	13	60	14	Suggest clarification of this sentence to remove ambiguity and ensure the reader understands that it is a drying trend observed during this 6 month period (also described as the "cool season (April-October)" on Page 60, Line 23-24) in south west Western Australia. This is a trend during the entire 1910-present, correct? Suggest consistency in describing these seasons/time periods. For example, on Page 60, Line 24, the New Zealand winter is referred to (but does this mean June-August? or something else). [Kushla Munro, Australia]	Accepted. Text revised, accept lower confidence rating
79473	60	18	60	20	We have a paper in GRL (still in revision) where we present a pretty comprehensive evalutaion of temperature extremes (both hot and cold)in CMIP5 and CMIP6 and we fouind that extremes are improved in CMIP6 compared to CMIP5 in most land regions including old SREX SAU and NAU regions. Get in touch with me if you want a copy of the submitted paper. [Alejandro Di Luca, Australia]	Noted. The chapter no longer covers extremes, so this paper can be assessed in Ch 11
66277	60	23	60	25	Here there is high confidence in rainfall decline in southwest Australia in CH 12 there is medium confidence instead. Same in New Zealand CH12 has low confidence Atlas has high confidence in winter rainfall increase. [Erika Coppola, Italy]	Noted and resolved in the cross-chapter team.
24529	60	27	60	29	In south Asia, there is no added value by the use of CORDEX and needs to be mentioned [Subimal Ghosh, India]	Noted. Our assessment of CORDEX-Australasia found added value - issues of added value in other regions can be drawn out in the overview section. Comment not accepted for south Asia - there is literature that documents added value for this region

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66063	60	27	60	32	Suggest clarification of the following statement: "There is high confidence that dynamical downscaling and statistical downscaling performed for regional studies have produced 'added value' in the climate change projected signals in regional temperature, rainfall and extremes related to topography and coasts in Australia and New Zealand, however care must be taken in placing projections using different model inputs and downscaling methods in context, and regional downscaling does not fully sample uncertainties encompassed by the latest CMIP and CORDEX simulations. {Atlas.5.4.4}" The Atlas itself does not appear to include CORDEX simulations for the Australia-New Zealand domain. [Kushla Munro, Australia]	Noted. Section revised and this part removed. CORDEX-Australasia included and discussed in FGD
79475	60	27	60	32	I understand the intention of this statement but I find it a little overconfident. First, we cannot show that downscaling has produced added value for future projections, simply because we don't know what is the truth in the future. Second, the high confidence sounds a little optimistic: plenty of times, even in complex topography regions, RCMs do not improve upon the driving GCMs for some specific variables...Maybe say something like "there is medium confidence that downscaling techniques can improve upon the driving models including providing more realistic projections of tuture climate changes... An alternative would be to make the statement more specific (Australian Alps in spring) and then it would be more precise? [Alejandro Di Luca, Australia]	Accepted. Text revised, accept lower confidence rating
110437	60	27	60	32	This was more the scope of chapter 10 and 12 than the Atlas? [Peter Thorne, Ireland]	Accepted. Section revised and this part removed
66065	60	35	60	48	Suggest immediately referencing the Map of the Australasian Region which shows the division into the four regions (NZ, NAU, SAU, and CAU - such as in Atlas.34). Suggest doing this for all regions, which would assist readers in viewing the region, and navigating to the corresponding region in the Interactive Atlas Map online. [Kushla Munro, Australia]	Accepted. Reference regions are shown in common figure - reference to this is added
5643	60	39	60	39	The defined regions are too broad to allow for a sensible assessment of Australia and New Zealand. There should be differnetiation between the east and west coasts and a separate interior region. [Louise Wilson, Australia]	Accepted. New region has been added
66067	60	41	64	31	Suggest consistency with regards to use of monsoon or wet season, or if there is a nuance the authors wish to convey, suggest defining this. As a minimum, suggest defining the approximate months of the monsoon/wet season when it is first introduced for each Atlas region, if applicable - for example, by including the month range in parentheses. [Kushla Munro, Australia]	Accepted. Seasons revised in figure - now show consistently just JJA and DJF seasons to avoid confusion
84419	60	45	60	48	include references to sections in Annex VI for ENSO, IOD, SAM and MJO [Annalisa Cherchi, Italy]	Accepted. reference to annex has been added
34275	60	52			« AR5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted
14277	60	53	60	53	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
34277	60	55			« AR5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted
66069	61	1	62	15	Suggest clarification. There are at least six different baseline periods in this passage alone. Some of these differences appear to arise because of differing baselines by the Australian Bureau of Meteorology versus NIWA. If this is case, suggest describing results for Australia and New Zealand in different sections, for greater clarity and readability. [Kushla Munro, Australia]	Accepted. Figure has been majorly revised to address all these issues
34279	61	2			« AR5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
84421	61	14	61	18	sentence too long, consider to split in shorter sentences [Annalisa Cherchi, Italy]	Accepted. Sentence revised and shortened
34281	61	14			« AR5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
34283	61	15			Check unit format: “xx mm/yr”. [Guiomar Rotllant, Spain]	Accepted. Changed to mm yr-1
84423	61	33	61	34	quite generic sentence, maybe some short detail could be inserted [Annalisa Cherchi, Italy]	Accepted. detail added on specific findings (direction of change)
110439	61	37			There is no cross-reference made to the chapter 10 case studies [Peter Thorne, Ireland]	Noted. The major case study (southern Australia drying) is now removed from Chapter 10, but we do now refer to section 10.4 on rainfall trends and attribution
82439	61	47	61	48	The reference here can be updated to Trewin et al 2020 (Geoscience Data Journal, in press). This reports a mean temperature trend of 0.123 C/decade for 1910-2016 so "just over 1 C" is something of an understatement - it may be better to be specific here. This also affects the section Executive Summary and Table 6 (where the 0.09 C figure appears to be from ACORN-SAT v1). [Blair Trewin, Australia]	Accepted. This has been updated, and the new reference given
82441	61	49	61	49	Now nine out of ten. Another angle on this is that the last seven years (2013-2019 inclusive) have all ranked in the top ten. [Blair Trewin, Australia]	Accepted. Updated statistics have been added
14279	61	55	61	55	NIWA must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Now defined
82443	62	5	62	9	This paragraph only discusses precipitation changes which are the subject of cited attribution studies; there have been numerous other precipitation changes which would be worth mentioning (perhaps with reference to Figure 35). [Blair Trewin, Australia]	Accepted. A short note and reference to the figure has been added
14281	62	15	62	15	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
34285	62	22			« WGI », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
84425	62	32	62	34	references missing [Annalisa Cherchi, Italy]	Accepted. References now cited (Evans and Di Virgillio)
34287	62	32			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
34289	62	46			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
14283	62	47	62	47	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
14285	62	48	62	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
14287	62	54	62	54	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
84427	63	21	63	21	"show" instead of "project" [Annalisa Cherchi, Italy]	Not applicable. This sentence has since been removed
34291	63	36			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted.
14289	63	43	63	43	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110445	65	11			The mid-summer drought was a case study in chapter 10. This needs explicit cross-linking and redundant assessment components should be removed from the Atlas accordingly [Peter Thorne, Ireland]	Accepted- However, in the current version the topic is treated in a Cross-Chapter Box in the Atlas section of Small Islands. The assessment has been referred to the Cross-Chapter Box
84429	65	24	65	26	to what specific region do these numbers refer? [Annalisa Cherchi, Italy]	Accepted. However, the regional ES has been removed. In the summary of the section, the warming signal has been mentioned for the Atlas reference regions composing Central America
63895	66	13	66	14	There is no consistency with the regions defined in chapter1 Fig. 1.15 or Figure.Atlas2. [APECS, MRI, PAGES ECN, PYRN and YESS ECS group review, Canada]	Accepted: The subregions have been better specified, for consistency with figures.
110447	66	36	66	44	This should be replaced with areference to the substantive assessment on tropical cyclones in chapter 11. [Peter Thorne, Ireland]	Accepted. The assessment of this topic was referred to Chapter 11.
84431	66	39	66	44	include references of section in Annex VI for ENSO, AMO, PDO. Also check the names and acronyms used in the Annex, to have them consistent in the whole report [Annalisa Cherchi, Italy]	Taken into account. Combined with comment 110447. The topic has been referred to Chapter 11.
82445	66	42	66	42	Eastern Pacific tropical cyclones occasionally affect countries other than Mexico. [Blair Trewin, Australia]	Taken into account. Combined with comment 110447. The topic has been referred to Chapter 11.
82447	66	52	66	53	very likely' does not appear in the AR5 WG1 assessment, although 'medium confidence' does. It would also be best to remove the brackets around 'teleconnections' to make it clear that it is the teleconnections which are projected to move east, not El Nino and La Nina themselves. [Blair Trewin, Australia]	Accepted. Text fixed as suggested.
84433	67	3	67	5	include/mention the report this result is referred to [Annalisa Cherchi, Italy]	Accepted. The citation had been included in the preceding paragraph, and now has been repeated at the end of the sentence.
82449	67	25	67	27	Need to clarify that the Stephenson et al 2014 results are primarily for the Caribbean, not Central America (except for a few sites in Belize). [Blair Trewin, Australia]	Accepted. The paragraph has been completed with the specification of the Caribbean region.
110449	67	47	68	1	Redundant with the chapter 10 case study which should be referenced instead. [Peter Thorne, Ireland]	Accepted. However, in the current version the topic is treated in a Cross-Chapter Box in the Atlas section of Small Islands. The assessment has been referred to the Cross-Chapter Box
110451	68	3	68	11	Largely redundant with chapter 11 which should be referenced and only the remaining unique material should be retained here. [Peter Thorne, Ireland]	Accepted. Redundant text has been deleted and referred to Chapter 11.
82451	68	6	68	6	This citation should be just Landsea 2015. [Blair Trewin, Australia]	Not applicable. . The paragraph has been deleted following another comment.
68529	68	32	68	52	The following study should be refferred here. They used 20-km grid spacing global model for projecting CLLJ. PRECIS is a regional model but with lower horizontal resolution. The present-day climate simulation in the 20-km grid spacing global model is much better than that of PRECIS due to the experimental setups. Nakaegawa, T., A. Kitoh, Y. Ishizaki, S. Kusunoki, H. Murakami. Caribbean low-level jets and accompanying moisture fluxes in a global warming climate projected with CMIP3 multi-model ensemble and fine-mesh atmospheric general circulation models. International Journal of Climatology, 34, 964-977, DOI: 10.1002/joc.3733 [Tosiyuki Nakaegawa, Japan]	Accepted. The proposed reference has been included and discussed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110453	68	54	69	21	This is entirely redundant with a substantive assessment performed in chapter 11 making recourse to considerably more literature. It should be removed in entirety and the reader referred instead to the substantive assessment performed in chapter 11 which is the appropriate chapter to undertake this assessment. [Peter Thorne, Ireland]	Accepted: The paragraph has been deleted.
84435	69	3	69	5	sentence unclear, better to rewrite [Annalisa Cherchi, Italy]	Not applicable. . The paragraph has been deleted following another comment.
84437	69	14	69	21	not clear, sentences need to be rephrased [Annalisa Cherchi, Italy]	Not applicable. . The paragraph has been deleted following another comment.
110455	69	32	69	33	I really would advise against including results from two model generations ago using two generation old scenarios - it will serve to muddy the waters rather than clarify and there are very few references to CMIP3 / SRES across the report as a whole. [Peter Thorne, Ireland]	Accepted. CMIP3 references have been removed due to lack of space.
84439	69	37	69	38	the paper do not project, eventually analyze and show results from models' projections [Annalisa Cherchi, Italy]	Accepted. The word projected has been replaced by ´reported´
14291	69	38	69	38	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
66291	69		69		Are CMIP3 results still needed? [Erika Coppola, Italy]	Accepted. CMIP3 references have been removed due to lack of space.
110457	70	3	70	21	Firstly this is redundant with the chapter 10 case study. Secondly it is written as a review not an assessment. I would suggest to replace with a cross-reference to the chapter 10 case study. [Peter Thorne, Ireland]	Taken into account. in the current version the topic is treated in a Cross-Chapter Box in the Atlas section of Small Islands .It has been cited for its detailed discussion of the MSD phenomenon and attribution assessment on the case study, even if it only includes the Caribbean islands, and not the rest of the Central America region. However, the case study does not include climate change projections nor the future evolution of the MSD. so we consider that, in this case there is no redundancy.
110907	70	15	70	17	I think is important to state why the confidence is low in this study (poor simulation of important monsoon physical processes by most of the ensemble); otherwise, it may be confusing to the reader as to why the agreement is high but the confidence is low. And/or the high model agreement on drying may be the only point that is picked up by the reader and the low confidence bit ignored. [Melissa Bukovsky, United States of America]	Accepted. Fixed in the text
84441	70	34	70	34	include details of section number in ch 11 [Annalisa Cherchi, Italy]	Accepted. A summary assessment about extremes is included at the end of the section, referred to chapter 11.
66293	70	34	70	53	Is the extreme summary well placed here? [Erika Coppola, Italy]	Accepted. A summary assessment about extremes is included at the end of the section, referred to chapter 11.
82453	70	37	70	43	This text is unclear - by 'increasing', does it mean that trends in mean temperature and warm temperature extremes are positive over the last 30-40 years, or that trends are accelerating? Also, what are the drought trends which have been found (line 43) - does the low confidence indicate that the studies are inconsistent? Some citations would be useful here. [Blair Trewin, Australia]	Accepted. The unclear text has been corrected. The low confidence statement has been supressed.
8647	70	40	70	43	I think necessary to indicate the metric in which is based this assessment of droughts in order to be comparable with the drought assessment in other chapters. In this case the PDSI. [Sergio Vicente-Serrano, Spain]	Not applicable. . The paragraph has been deleted following another comment. Assessment about extremes in the region has been limited to a summary , referred to chapter 11.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
68531	70	45	49	53	The following study should be refferred here. They showed the distinct difference in projections in caribbean ilslands between 20-km and 60-km grid spacing. The existence of land mass in the model is a key to projection when you say "isladns." Nakaegawa, T., A. Kitoh, S. Kusunoki, H. Murakami, and O. Arakawa. Hydroclimate change over Central America and the Caribbean in a global warming climate projected with 20-km and 60-km mesh MRI atmospheric general circulation models Papers in Meteorology and Geophysics. 65, 15-33. [Tosiyuki Nakaegawa, Japan]	Accepted. The suggested study was referred in a paragraph above, in the subsections model assessment and of climate change projections.
34297	71	36			« AR5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	We appreciate the reviewer's comment. Accepted. Text revised as suggested
82455	71	38	71	38	The ES statement of 'almost 0.2C per decade' is not directly traceable to any content in the main body of the text - no regional averages are presented and Figure 39 shows areas with trends both somewhat larger and somewhat smaller than that. An assessment that it is very likely that there has been warming in this period is reasonable so it may be best just to delete the 'almost 0.2C per decade' text. [Blair Trewin, Australia]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
14293	71	40	71	40	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
34299	71	41			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
14295	71	46	71	46	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
66279	71	48	71	55	Here there is inconsistencies with confidence statement for SES and SWS and SSA precipitation projections. CH12 has a high confidence for SES and SSA, low for SSA , Atlas has medium and medium respectively. [Erika Coppola, Italy]	Accepted. Text revised as suggested.
110459	71	48	71	55	There is no communication here of scenario dependencies. [Peter Thorne, Ireland]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
14297	71	55	71	55	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
80377	72	3	76	43	There are recent comprehensive reviews regarding mean climate and climate change in South America. For instance, Espinoza et al. (2020) reviews the hydroclimate of the Andes: https://www.frontiersin.org/articles/10.3389/feart.2020.00064/full. Poveda et al. (2020) reviews the occurrence of high impact events in this region: https://www.frontiersin.org/articles/10.3389/feart.2020.00162/full. Also, Pabon-Caicedo et al. (2020) reviews the observed and projected changes, as well as global and regional model performance in this region: https://www.frontiersin.org/articles/10.3389/feart.2020.00061/full. Masiokas et al. (2020) reviews the current state and recent changes of the Andes cryosphere: https://www.frontiersin.org/articles/10.3389/feart.2020.00099/abstract [Paola Arias, Colombia]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
84443	72	4	72	11	include references to sections in Annex VI for modes of variability. Also check for acronyms used there to have consistency in the whole report [Annalisa Cherchi, Italy]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
110461	72	4	72	11	Provide a link to technical annex on modes of variability and ensure the acronyms used match these. [Peter Thorne, Ireland]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
100853	72	5	72	10	Here a reference to the Annex VI on models of variablility should be included. Also the mane should be consistent (i.e. PDO should move to PDV, AMO to AMV) [Corti Susanna, Italy]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
84445	72	13	72	13	as comment above but for SAM [Annalisa Cherchi, Italy]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
110463	72	17	72	18	SAM rather than AO for whole report consistency [Peter Thorne, Ireland]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
82457	72	32	72	51	This section only covers projected changes. Have any findings been made in previous Assessment Reports about observed changes in the region? [Blair Trewin, Australia]	We appreciate the reviewer's comment. Accepted. Text revised as suggested.
84447	72	49	72	49	what "areas"? [Annalisa Cherchi, Italy]	We appreciate the reviewer's comment. Accepted. Text revised.
84449	73	5	73	5	specify the section number of ch 11 [Annalisa Cherchi, Italy]	Not applicable. Text removed.
82459	73	13	73	13	Is the 0.6 to 0.7 C figure a total change or a change rate per decade? (and is it from Figure 39 or from Marengo et al 2018?). 0.6 doesn't look to me to be consistent with Figure 39 (which looks to peak around 0.4 C/decade, or 1.4 C over the full 1980-2014 period). [Blair Trewin, Australia]	Noted. Reference to Interactive Atlas added (where HadCRUT5 shows this trend).
84451	73	16	73	16	specify the section number of ch 11 [Annalisa Cherchi, Italy]	Not applicable. Text removed.
84453	73	17	73	17	specify years' interval for "recent decades" [Annalisa Cherchi, Italy]	Not applicable. Text removed.
14299	73	18	73	18	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
82461	73	23	73	23	It might be better to say "circulation changes associated with stratospheric ozone depletion" - would be a better reflection of the causal links here, I think. [Blair Trewin, Australia]	Not applicable. Text removed.
84457	73	29	73	29	specify the section number of ch 11 [Annalisa Cherchi, Italy]	Accepted.
82463	73	29	73	31	I don't quite follow this - by definition the cold season is (largely) the austral winter. Did you mean to say that minimum temperature trends are largest in winter? (if so, then "cold season" can be deleted). [Blair Trewin, Australia]	Noted. Yes but sentence is clear as written.
82465	73	38	73	39	Suggest saying "most of southern South America" - a problem which always arises is that the authors' definition of a region won't always correspond to the regions used by IPCC. The Chilean exception is also significant but is noted later in the paragraph (a challenge in this type of regional assessment is that small but important regions undergoing major changes, such as central Chile, can be too small to be detected in regional analyses). [Blair Trewin, Australia]	Accepted. Text revised.
14301	73	42	73	42	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
82467	73	46	73	46	This is a result also quoted in Saurral et al 2017 - check reference is correct. [Blair Trewin, Australia]	Not applicable. Text removed.
84455	73	50	73	50	specify years' interval for "past 2 decades" [Annalisa Cherchi, Italy]	Not applicable. Text removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
80379	73	51	73	53	Other studies also discuss these changes in the Amazon: Debortoli et al. (2015; https://link.springer.com/article/10.1007/s10584-015-1415-1); Arias et al. (2015; https://link.springer.com/article/10.1007/s00382-015-2533-1); Lopes et al. (2016; https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2016GL067738); Espinoza et al. (2019a; https://link.springer.com/article/10.1007/s00382-018-4462-2); Espinoza et al. (2019b; https://www.sciencedirect.com/science/article/pii/S2214581819301582); Correa et al. (2020, in revision) [Paola Arias, Colombia]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
80381	74	31	74	37	Condom et al. (2020) reviews the available measurement netwwork for hydrological and climatological variables in the Andes. This paper can be found at: https://www.frontiersin.org/articles/10.3389/feart.2020.00092/full [Paola Arias, Colombia]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
82469	74	41	75	44	Is there any information available on how well models simulate key teleconnections, such as those associated with ENSO? [Blair Trewin, Australia]	Noted. Yes and relevant text and references added.
80383	74	50	74	53	Recent papers analyze how CMIP5 models represent precipitation and related processes, such as low-level jets, in the region: Sierra et al. (2015; https://www.hindawi.com/journals/amete/2015/634720/) and Sierra et al. (2017; https://link.springer.com/article/10.1007/s00382-017-4010-5) [Paola Arias, Colombia]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
80385	75	11	75	15	Rojas et al. (2016) analyze biases of PMIP3/CMIP5 models simulating the South American monsoon (https://www.clim-past.net/12/1681/2016/) [Paola Arias, Colombia]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
23671	75	17	75	23	Bozkurt et al. (2019) illustrated a persistent warm bias over the Atacama Desert, Chile in high resolution RCM (10 km) driven by reanalysis (ERA-Interim) reveals the complexity in representing land surface and radiative processes over the desert. Furthermore, difficulties in capturing the temperature trend in northern Chile are notable for high resolution RCM experiment. Bozkurt, D., Rojas, M., Boisier, J.B., Rondanelli, R., Garreaud, R., Gallardo, L., 2019. Dynamical downscaling over the complex terrain of southwest South America: Present climate conditions and added value analysis. Climate Dynamics, 53, 6745–6767, doi:10.1007/s00382-019-04959-y. [Deniz Bozkurt, Chile]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
34303	75	17			« RCM », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	We appreciate the reviewer’s comment. Accepted. Text revised as suggested.
84459	75	21	75	23	references missing [Annalisa Cherchi, Italy]	We appreciate the reviewer’s comment. Accepted. Text revised as suggested.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
84071	75	31	75	34	The validation metrics, measures (i.e. bias, root-mean-square error, and Pearson's correlation coefficient) and quantile–quantile plots reveal that ESD model tends to underestimate near-surface temperature and precipitation; whereas extreme values are subject of considerable uncertainties. See Borges et al. 2016 (DOI: 10.1002/joc.4686) [Marco Tulio Cabral, Brazil]	Noted. Due to limited space additional details not added.
80387	75	36	75	44	Pabon-Caicedo et al. (2020) reviews the performance of regional models simulating climate over the Andes: https://www.frontiersin.org/articles/10.3389/feart.2020.00061/full [Paola Arias, Colombia]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
84461	76	6	76	6	specify the section number of ch 12 [Annalisa Cherchi, Italy]	Not applicable. Text removed.
110465	76	8	76	29	As written this erroneously implies no scenario dependency in how either temperature or precipitation will respond which needs correcting. [Peter Thorne, Ireland]	Accepted. Text revised.
23673	76	21	76	23	Bozkurt et al. (2018) adjusted historical and future simulations from 19 climate models participating in CMIP5 with the observational dataset and then used to make hydrological projections for central-southern Chile including the Andes. By the end of the century, there is a large difference between the scenarios, with projected drying of ∼ − 3% (RCP2.6), ∼ − 30% (RCP8.5). Bozkurt, D., Rojas, M., Boisier, J.P., Valdivieso, J., 2018. Projected hydroclimate changes over Andean basins in central Chile from downscaled CMIP5 models under the low and high emission scenarios. Climatic Change, 150, 131-147, doi:10.1007/s10584-018-2246-7. [Deniz Bozkurt, Chile]	Noted. Due to limited space, the number of references is controlled. Relevant references added as appropriate.
24531	76	27	76	29	Confusing statement [Subimal Ghosh, India]	Accepted. Text removed.
84463	76	29	76	29	specify the section number of ch 11 [Annalisa Cherchi, Italy]	Not applicable. Text removed.
14303	76	33	76	33	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
14305	76	38	76	38	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
7383	77	27	77	28	This statement is formulated in an unclear way. Furthermore, addressing two completely different CIVs (extreme precipitation and warm temperature) in a single sentence wrongly suggests that they are very closely coupled. Please separate the statements for the two CIDs and reformulate them to make more clear what is known about past trends and projections across Europe. [Hans-Martin Füssel, Denmark]	Taken into account. This Executive Summary Statement deals with extreme precipitation and is deleted from the Atlas assessment. All ESSs are integrated at the start of the Atlas chapter
110467	77	28	77	28	persistent is a very odd choice of phrase and implies long-lasting whereas I think you mean becoming more frequent? [Peter Thorne, Ireland]	Taken into account. This Executive Summary Statement deals with extreme precipitation and is deleted from the Atlas assessment. All ESSs are integrated at the start of the Atlas chapter
24533	77	42	77	44	Comment on convection-permitting RCMs, valid for globally or at specific regions? [Subimal Ghosh, India]	Accepted. Evaluation of convection permitting models is indeed the merit of Chapter 10, and is largely removed from Atlas. Only a brief reference to European CPRCMs is retained, with a reference to chapter 10

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110469	77	42	77	45	But this was the scope of chapter 10. This and the associated assessment text should be moved to 10 and merged there. The regional assessment methods are unambiguously the domain of chapter 10. The Atlas should cross-reference these materials rather than redundantly repeat prior assessments. [Peter Thorne, Ireland]	Accepted. Evaluation of convection permitting models is indeed the merit of Chapter 10, and is largely removed from Atlas. Only a brief reference to European CPRCMs is retained, with a reference to chapter 10
8649	77	47	77	48	Necessary to indicate the matric or driver to be consistent with Ch 11 in which it is stated that the atmopsheric evaporative demand is the main driver of these drought trends. [Sergio Vicente-Serrano, Spain]	Accepted. We have coordinated drought topics with all relevant chapters and resolved issues of drought mechanisms and metrics. This is primarily addressed in chapters 8, 11 and 12, with a discussion of meteorological precipitation trends in Atlas sections
15101	77	47	77	50	Although I appreciate the cautiuos tone used here, my concern with this ES (but it applies to all similar ones) is that the ES may change if/when all available CMIP6 results are assessed. Especially given the postponed deadlines for data submission that nay make more CMIP6 runs available. The risk is that ESs in the FGD (which is not reviewed) will differ from those in the SOD, which underwent revision by Governments. [Alessandro Dosio, Italy]	Accepted. We have taken out any reference to time-dependent availability of CMIP6 from assessment statements, relying on the overall policy that all figures and statements refer to the same selection of models. Phrase "at the time of SOD" was added as placeholder for updating figures and assessment statements prior to FGD deadline
34305	77	49			« JJA », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Suggestion accepted
14307	77	50	77	50	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
5123	77	52	77	53	IA: Atlas.5.6 Europe: In highlights of the 5th section of Atlas it was mentioned strong winter warming in Northern Europe will continue(p.77, line 52) , but on p.80 (lines 22-23) it was said about continued warming has been observed, particularly during spring. There is some inconsistency here. Also, according to the classification in Atlas, there is no Southern Europe in the list, only MED, CEU, NEU, EEU (Atlas.5.6 Europe, p.78). [Larysa Pysarenko, Ukraine]	Accepted. This specific ESS is removed. All ESSs are integrated in a section at the start of the Atlas chapter
106135	77	52		55	In my reading, I have had difficulties to identify the text in section 5.6.4 that supports these three lines. I am not arguing against the content of these four lines (I agree), but I suggest a minor revision of section 5.6.4 to make clear which is the evidence that in the literature (beside the Atlas) supports it. [Piero Lionello, Italy]	Accepted. The statements on which this Executive Summary statement is based are scattered around the text in 5.6.4, without systematic use of calibrated confidence language. All ESSs are now integrated at start of Atlas chapter
7385	77	53	77	54	What does "seasonal mean precipitation"? Please clarify the season(s) to which this statement applies or replace by a statement about annual precipitation [Hans-Martin Füssel, Denmark]	Accepted. The statements on which this Executive Summary statement is based are scattered around the text. All ESSs are now integrated at start of Atlas chapter
15103	77	57	58	3	I understand the spirit of this ES but the formulation is too negative to me and may lead to intrpretation like "IPCC say that models give inconsistent results (hence we cannot trust them)." I would formulate this statemnt adding the fact that on many aspects of future projectstions model do agree. Even for temperature, it is clear that all model agree on the warming, whether it is the magnitude of it that is uncertain. The ES in the present form, to me, may lead to misinterpretation by people that do not know the details behind it. [Alessandro Dosio, Italy]	Taken into account. The ESS is integrated in the set of Atlas-specific ESS
84465	78	14	78	14	include references to sections in Annex VI for modes of variability. Also check for acronyms used there to have consistency in the whole report [Annalisa Cherchi, Italy]	Accepted. A cross reference to the Technical Annex on MoV and the overview table in Atlas.3 is made.
100855	78	14	78	14	Reference should be included to Annex VI.2 on AO/NAO [Corti Susanna, Italy]	Accepted. A cross reference to the Technical Annex on MoV and the overview table in Atlas.3 is made.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110471	78	15	78	15	Reference the modes of variability annex rather than a 2003 paper [Peter Thorne, Ireland]	Accepted. A cross reference to the Technical Annex on MoV and the overview table in Atlas.3 is made.
106123	78	22			Zampieri and Lionello (2011) found that anthropic land use produces cooler summers by increasing evapotranspiration over the Balkans and cloudier sky conditions over central-western Europe. I suggest to add this citation to the text: Zampieri M, Lionello P (2011) Anthropic landuse cools down summer season in Europe. Clim Res , 46:255-268. doi:10.3354/cr00981 [Piero Lionello, Italy]	Accepted. Reference added to the text
87755	78	28	78	28	MED is not an entire european region, to avoid confusion,it's better to add a note indicating that a part of this region is belong Africa here and also in page 28 [Wafae BADI, Morocco]	Taken into account. Some assessments for MED are for the European part only. Large spatial variability is present within the MED area. These topics are explicitly addressed
106125	78	29		31	I would delete "The climate is determined by sinking motion on the eastern flank of the climatological high pressure in the Atlantic region in boreal summer, and by the Atlantic storm track in boreal winter" for two reasons 1) It adds a detail which is not very relevant in this context (and , in fact, there is no analogue statement for the three other regions) 2) the precise meaning is not clear (It is meant that these two factors explain most of variability? that they are unique for the Mediterranean region? what's about other competing mechanisms (e.g the west Asian Monsoon, the Siberian high...) [Piero Lionello, Italy]	Accepted. An explicit reference to the Technical annex on Modes of Variability is made, and the text is revised
110473	78	38			This summary of prior assessment findings is incredibly long and likely requires very substantial efforts to shorten. As noted the whole concept of these sections is questionable because they give primacy to prior assessment reports when the prior 12 chapters have just undertaken a substantive reassessment of many of these features and arguably it is these assessments which should be being highlighted here. [Peter Thorne, Ireland]	Accepted. The whole section has been reduced and reorganized
15105	78	40	79	11	I miss a sentence about mean temperature, at least (and possibly mean precipitation). [Alessandro Dosio, Italy]	Accepted. The whole section has been reduced and reorganized
15107	78	40	80	13	Although this part is inteesting, I find that using nearly two pages to review past assessment is maybe too much. [Alessandro Dosio, Italy]	Accepted. The whole section has been reduced and reorganized
84467	78	48	78	48	remove "and" between "greening" and "has" [Annalisa Cherchi, Italy]	Taken into account. The whole section has been reduced and reorganized
77707	78	48			"A vegetation greening and has been observed..." [Emer Griffin, Ireland]	Taken into account. The whole section has been reduced and reorganized
82473	78	51	78	51	"cools summertime temperature" - is there any indication of the magnitude of this effect, and is it specific to particular parts of Europe? Elsewhere in this section summer temperature increases are reported for numerous parts of Europe which are near to, or larger than, increases in annual mean temperature. [Blair Trewin, Australia]	Not incorporated. Since this is a summary of past assessments we need to keep its length limited, and will not be able to expand on quantitative indications of these mechanisms. The (high) level of agreement is the main point to be made here
68179	78	55	78	55	missing inforatmion for what period this redecution is observed [Guðfinna Aðalgeirsdóttir, Iceland]	Accepted. SROCC reported these changes over recent decades. Added to text
34307	78	55			« SROC », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted
106127	79	6		11	In which previous report is contained this information? Please specify [Piero Lionello, Italy]	Accepted. The whole section has been reduced and reorganized. Statement has been deleted
34309	79	15	79	44	« AR5, SRCCL & SROCC », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
34311	80	6			« SROCC », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted
5125	80	22	80	23	In highlights of the 5th section of Atlas it was mentioned strong winter warming in Northern Europe will continue(p.77, line 52) , but on p.80 (line 23) it was said about continued warming has been observed, particularly during spring. There is some inconsistency here [Larysa Pysarenko, Ukraine]	Not accepted. The statement on (previous) page 77 refers to projections, while the statement on p80 referred to by the reviewer refers to observed trends. This is not necessarily inconsistent
5127	80	22	80	31	IA: Atlas.5.6 Europe: In this section the first sentence is dedicated to Northern Europe in general, but further sentences mentioned about particular countries referred to another region – Central Europe (CEU, according to the classification presented on p.78 Atlas.5.6 Europe and Figure Atlas.2, p.181). Maybe it is better to operate categories of climatic regions (MED, CEU, NEU, EEU) and within their description to stress on particular countries for understanding for which particular region this country belongs to. [Larysa Pysarenko, Ukraine]	Accepted. The text is restructured to follow the defined regions
106129	80	22		37	This paragraph contains a list of study addressing the observed regional warming. Clearly it is very diffciult to be comprehensive when you list individual studies on warming at sub-regional scale. Concerning studies in which I was involved, I suggest you cite an overall assesment for the Mediterranean region which emphasizes the overall warming Lionello P., F. Abrantes, L. Congedi, F. Dulac, M. Gacic, D. Gomis, C. Goodess, H. Hoff, H. Kutiel, J. Luterbacher, S. Planton, M. Reale, K. Schröder, M. V. Struglia, A. Toreti, M. Tsimplis, U. Ulbrich, E. Xoplaki (2012) Introduction: Mediterranean Climate: Background Information in Lionello P. (Ed.) The Climate of the Mediterranean Region. From the Past to the Future , Amsterdam: Elsevier (NETHERLANDS), XXXV-lXXX, ISBN:9780124160422 . The list of studies confirming warming at subregional level, can be made very long. Other citable studies are https://doi.org/10.1002/joc.1251 , https://doi.org/10.1002/joc.4298, https://link.springer.com/article/10.1007/s10584-009-9664-5, https://doi.org/10.1016/j.atmosres.2013.12.002, https://link.springer.com/article/10.1007/s10113-013-0482-y .... [Piero Lionello, Italy]	Accepted. The text is restructured to follow the defined regions
15109	80	24	80	24	...temperature trends...(3C)' this is not a trend but a amount of warming. Trends should be indocatd in C/year or decades. [Alessandro Dosio, Italy]	Accepted. "trends" and "increases" are distinguished in the updated text
5129	80	27	80	29	IA: Atlas.5.6 Europe: Don’t understand this explanation (highlighted in the text), because previous sentences referred to mean temperature trends, but further was spoken about that the summer diurnal temperature range has decreased particularly in cities and a second part of sentence mentioned about significant trend in winter mean air temperatures. Maybe it is better to mention about no significant trend in winter mean air temperatures firstly and than about the summer diurnal temperature range in order to connect this sentence to previous ones. [Larysa Pysarenko, Ukraine]	Accepted. The text is restructured to follow the defined regions

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
5131	80	32	80	37	IA: Atlas.5.6 Europe: Again, according to p. 78 (Atlas.5.6 Europe, p.78) there is no Western Europe in classification. Maybe it is better to use unified classification such in Atlas. [Larysa Pysarenko, Ukraine]	Accepted. The text is restructured to follow the defined regions
27443	80	33	80	35	We're not sure that this level of details (e.g. city level) is necessary. In that case, the results for hundred of cities could be cited. [Eric Brun, France]	Accepted. This level of detail is removed and cross-references to appropriate sections is included
106131	80	39			Same comment as above. Lionello et al (2012) show that precipitations trends over the Mediterraena region are present only in sparse areas at difference with the substantial regional coherency of the observed warming (Lionello P., F. Abrantes, L. Congedi, F. Dulac, M. Gacic, D. Gomis, C. Goodess, H. Hoff, H. Kutiel, J. Luterbacher, S. Planton, M. Reale, K. Schröder, M. V. Struglia, A. Toreti, M. Tsimplis, U. Ulbrich, E. Xoplaki (2012) Introduction: Mediterranean Climate: Background Information in Lionello P. (Ed.) The Climate of the Mediterranean Region. From the Past to the Future , Amsterdam: Elsevier (NETHERLANDS), XXXV-lXXX, ISBN:9780124160422) [Piero Lionello, Italy]	Accepted. Citation is included
34313	80	43			Check unit format: “day/decade”. [Guiomar Rotllant, Spain]	Accepted. Units in (now) figure Atlas.23 have been revised
24535	80	54	80	54	This discussion should refer to Ch 11 [Subimal Ghosh, India]	Accepted. This paragraph on extremes is deleted from the Atlas chapter, and a paragraph is added to refer to corresponding sections elsewhere in the report
84469	81	17	81	27	and what are the results from these datasets? [Annalisa Cherchi, Italy]	Noted. The new (high resolution) data sets primarily support the assessment of extremes and therefore we refer to chapter 10 and 11
104803	81	22	81	25	The text says that gridded products exist in grid resolutions of 2 to 25 km. However, one reference is Rauthe et al. 2013, where a 1km-dataset is described. Other examples of such 1km-datasets exist, e.g. as described in https://doi.org/10.5194/asr-10-99-2013. [Frank Kaspar, Germany]	Accepted. Text is adjusted and references are included
104805	81	29	81	33	Caveats of gridded products are explained. As mentioned on page 16/line 16, regional reanalyses are an alternative (with other advantages/disadvantages). A complete assessment of approaches should mention regional reanalyses, as those made significant progress since AR5 (e.g. https://doi.org/10.1088/2515-7620/ab2ec3) [Frank Kaspar, Germany]	Accepted. Some additional information on regional reanalyses is included
84471	81	29	81	35	and what are the results from these datasets? [Annalisa Cherchi, Italy]	Noted. The statements refer to the caveats that are revealed by the generation and interpretation of these new datasets. Reference to elaborate discussions on these data sets elsewhere in the report are included
15111	81	38	81	38	All this section deals with performcances of RCMs only. Whee is the evaluation of GCMs (CMIP5 and 6) over Europe? At least you should refer to previous chapters where this assessment is done. [Alessandro Dosio, Italy]	Accepted. Assessment of GCM performance at European level is included briefly in this section, with reference to chapter 3
34315	81	53			« RCMs », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted
110475	82	47	83	1	This requires cross-referencing to and a cross-check with chapters 6 and 7 for consistency. If redundant with assessments there it should be replaced with a cross-reference. [Peter Thorne, Ireland]	Taken into account. Assessment of impact of aerosols on regional climate mean features will stay in this section; Section 6.3.4 does not make regional assessments of regional aerosol impacts

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
15113	83	8	83	8	Fig40. Where are the maps based on CORDEX results? The layout of the figure is also odd. I would plot temperature in the first row and precipitation in the second. Now results are difficult to compare. I would use four columns with observed, cmip5, cmip6 and cordex reults for temperature (first row) and precipitation (second row). This applies to all figures with similar layout. [Alessandro Dosio, Italy]	Accepted. This "common figure" has been revised including CORDEX results (now figure Atlas.24)
106133	83	38		53	Is this section meant to provide an assesment only of regional climate simulations? I think that also valuable information at regional scale can be extracted from global models. Certainly RCMs provide added information, but the information extracted from GCMs should not be discarded. Any literature on validation of global models at regional scale? e.g. Lionello and Scarascia 2018 (doi:10.1007/s10113-018-1290-1) show the consistency among reanalyses, CRU and an ensemble of CMIP5 simulations on centennial trends in the 20th century in the Mediterranean region. Lionello and Scarascia 2020 (doi: 10.1007/s10113-020-01610-z) show that differences between ensemble mean and reanalyses are comparable to differences among the reanalysis themselves for the values of some indicators (CDD, CWD, SDII) and that there is a substatial agreement for others (TX10, TN90) [Piero Lionello, Italy]	Accepted. Consistent with the review statement 106135 more explicit discussion of the assessment of mean climate change over Europe derived from recent CMIP(6) evaluations is included in this section
15117	83	39	83	39	Dosio and Fischer 2018, not 2017, see https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017GL076222 [Alessandro Dosio, Italy]	Accepted. Reference is corrected
106137	83	40		41	Lionello and Scarascia 2018 (doi:10.1007/s10113-018-1290-1) have used an ensemble of CMIP5 global simulations to show that the temperature in the Mediterranean region will warm 20% more than the global annual average temperature (50% more in summer) . Lionello, P., Scarascia, L. The relation between climate change in the Mediterranean region and global warming. Reg Environ Change 18, 1481–1493 (2018). https://doi.org/10.1007/s10113-018-1290-1 [Piero Lionello, Italy]	Accepted. Reference and statement is added to the assessment
24537	83	44	83	44	Since it is on precipitation extremes at sub-daily scale with limited observations, either refer to ch 11 or add confidence statement. [Subimal Ghosh, India]	Accepted. Text is deleted and moved to Chapter 11
5133	83	47	83	48	IA: Atlas.5.6 Europe: Due to classification (Atlas.5.6 Europe, p.78), almost all territory of Ukraine belongs Central Europe, not Eastern. [Larysa Pysarenko, Ukraine]	Taken into account. This section is entirely restructured.
82477	83	55	83	55	Clarify whether or not this includes former tropical cyclones which have undergone extratropical transition. [Blair Trewin, Australia]	Taken into account. This section is deleted
7387	83	55	84	17	This paragraph includes several unclear statements. E.g., how are signals "modifed" (l. 6), what are the "opposite trends" (l. 8), and what are the "lower responses" (l. 12). Please reformulate so that the difference between RCM and GCM projections in each statement is clear. [Hans-Martin Füssel, Denmark]	Taken into account. A large fraction of this paragraph is deleted (with cross-reference to Chapter 11), and the remaining part is strongly reformulated
84473	83	56	83	57	better to include details of likely improvements in HighResMIP if/when available [Annalisa Cherchi, Italy]	Taken into account. This section is deleted

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
106139	83			43	Lionello and Scarascia 2018 (doi:10.1007/s10113-018-1290-1) have used an ensemble of CMIP5 global simulations to show that precipitation in the Mediterranean will decrease with annual global mean temperature at a rate around -20mm/K or -4%/K). Reduction of precipitation will affect all seasons in the southern Mediterranean areas, with maximum reduction for winter precipitation (-7 mm/k or -7%/k), and mostly summer in the northern Mediterranean areas (-7mm/K or -9%/K). [Piero Lionello, Italy]	Accepted. Reference to this citation is included
106141	83			44	Lionello and Scarascia 2020 (doi: 10.1007/s10113-020-01610-z) have analysed the future contrasts within the Mediterranean region as function of the global warming and found that the simple daily precipitation Intensity index and the total precipitation during very wet days, which are already larger in the North Mediterranean than in the South Mediterranean, will increase with global warming at a rate of approximately 0.1mm/K and 5mm/K, respectively, in the North Mediterranean, with no significant change in the South Mediterranean. On the contrary, the maximum number of consecutive dry days is already larger in the South than in the north and it will increase more in the former than in the latter (rates are about 8days/K and 5days/K, respectively) . Lionello, P., Scarascia, L. The relation of climate extremes with global warming in the Mediterranean region and its north versus south contrast. Reg Environ Change 20, 31 (2020). https://doi.org/10.1007/s10113-020-01610-z [Piero Lionello, Italy]	Taken into account. Since this statement refers to extreme (high or low) precipitation this reference needs to be included in Chapter 11. Section in Atlas chapter has been reformulated with reference to Chapter 11 for extremes
34319	84	2			« RCMs », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Adjusted
15119	84	4	84	4	RCMs produce lower warming levels' I am not sure 'level' is the tight word as 'warming level' is usually associatd to 'GWL (e.g. 1.5C). [Alessandro Dosio, Italy]	Accepted. "Levels" has been replaced by "rates"
84475	84	15	84	15	what regions? [Annalisa Cherchi, Italy]	Taken into account. This section is deleted
27445	84	24	84	24	Based on Gutierrez et al. (2020) and Boé et al. (2020), Bartok et al. (2017) wrongly attribute the differences in changes in solar radiation at surface between GCMs and RCMs to simply cloud cover, whereas the absence of time-variations in anthropogenic aerosols in most current RCMs is firstly responsible for these differences between RCMs and GCMs. As a result, the affirmation that RCMs are more realistic because of better cloud representation is not supported. [Eric Brun, France]	Accepted. The paragraph has been reformulated to bring across this point
14309	84	29	84	29	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
15115	84	42	84	42	Fig 41: will CORDEX results be added as well? And what are the different colours for in the normalizd response pamels? Green and blue are not explaind, although one may understand their meaning from the figure. [Alessandro Dosio, Italy]	Taken into account. (Now) Figure Atlas.24 includes CORDEX results
14311	84	54	84	54	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
34323	84	55			« JJA », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted
34325	85	5			« DJF & JJA », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
77617	85	14	85	14	Move Coppola et al. to before the bracket ['for example Coppola et al. (submitted a).'] [Emer Griffin, Ireland]	Accepted
109669	85	18	85	33	This description has a couple issues requiring correction. It should mention that the cryosphere also has fundamental roles in mountain glaciers in North America, particularly in western Canada and Alaska, and therefore in freshwater and associated biogeochemical fluxes to the coastal ocean in the Gulf of Alaska (O'Neel et al., 2015, Icefield-to-ocean linkages across the Northern Pacific coastal temperate rainforest ecosystem, Bioscience, 65, 499-512). Climate change has major implications for this (Moore et al., 2009, Glacier change in western North America: influences on hydrology, geomorphic hazards and water quality, Hydrological Processes, 23, 42-61; and Clarke et al., 2015, Projected deglaciation of western Canada in the twenty-first century, Nature Geoscience, 8, 372-377). Note that this region contains the largest or second-largest (depending on whose account one uses) ice masses outside Greenland and Antarctica. Additionally, ENSO also has major impacts across much of western North America, not just in California as stated here (Fleming and Dahlke, 2014, Parabolic northern-hemisphere river flow teleconnections to El Niño-Southern Oscillation and the Arctic Oscillation, Environmental Science Letters, 9, 104007). [Sean Fleming, United States of America]	Rejected (I think). These issues are covered in Chapter 9
110591	85	29			While the North America section does touch on a number of critical climate features - one discussion topic that is missing is change in Tropical Cyclones (This is mentiond in other sections of the Atlas). Work has been done with NA-CORDEX (Rendfry et al, submitted) & CMIP5 (Park et al, 2017). Tropical Cyclones are mentoined frequently in other sections and chapters, so perhaps at least a reference to those could be included in the North America Section. [Rachel McCrary, United States of America]	Rejected. This topic is covered in Chapter 11 on extremes.
14313	85	48	85	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
105995	85	50	85	50	"is very likely critical" This language does not conform to the calibrated uncertainty language and should be rewritten to avoid confusion with the calibrated language. [William Gutowski, United States of America]	Accepted. This sentence has been rewritten.
110477	85	50	85	52	This feels very much like it should be a topic of chapter 10 and not the Atlas. Suggest to move this finding and the associated text to chapter 10 which is charged with methodological concerns. [Peter Thorne, Ireland]	The regional executive summary statements have been reframed. It is now made more specific to North America. This statement can appear in both Chapter 10 and the Atlas with different emphases.
110479	85	55	86	1	What use is a finding of likely uncertainty to a policy maker? [Peter Thorne, Ireland]	Rejected. A high likelihood of uncertainty is useful to a policy maker. It means they much really pay attention to making policies/decisions that are robust again the uncertainty.
66259	86	3	86	11	This is an assessment of extreme precipitation and snow cover projection. Is it this the right chapter to be? [Erika Coppola, Italy]	Accepted. Statements about extremes have been transferred to chapter 11.
82479	86	11	86	11	"precipitation increase" rather than "snowfall increase" is probably more appropriate in this context. [Blair Trewin, Australia]	Reject. We think that snowfall is correct term here.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82481	86	18	86	33	The text here (and elsewhere in this section) includes Mexico, but the NCA region (which includes most of Mexico) is also described in section 5.5.1 as being in their scope; this should be consolidated. In particular the NCA region is shown in both Figures 37 and 42. (Mexico appears to be in the North American region in Figure 1.15). [Blair Trewin, Australia]	Taken into consideration. The authors of NA and CNA agreed to have the northern part of Mexico discussed in both sections. We have checked text in both sections and refer to the other section in the NA section.
14315	86	20	86	20	The acronym of the United States of America can be USA later used as US both have to be stated [Maria Amparo Martinez Arroyo, Mexico]	Accepted. These acronyms have been defined.
110935	86	30	86	30	I suggest inserting ", for example," so that this line reads "with, for example, the North Atlantic...", otherwise, this sentence implies that only these places are affected by these modes. [Melissa Bukovsky, United States of America]	Accepted. We agree and we have inserted the language suggested.
84477	86	30	86	31	include references to sections in Annex VI for modes of variability. Also check for acronyms used there to have consistency in the whole report [Annalisa Cherchi, Italy]	Accepted. We have included references to the Annex VI and checked the acronyms.
82483	86	31	86	33	ENSO teleconnections affect other parts of North America, not just California as implied here. [Blair Trewin, Australia]	Taken into consideration. We have corrected this sentence indicating that these are examples, not necessarily covering all effects.
110593	86	35	86	35	Missing work from previous IPCC assessment. In Chapter 2 of the SROCC future changes in temperature and snow cover ar eexamined for the Rocky Mountains in NA-CORDEX. Key statemet regarding snow cover in mountains Is in section 2.2.2 " At lower elevation in many regions such as the European Alps, Western North America, Himalaya and subtropical Andes, the snow depth or mass is projected to decline by 25% (likely range between 10 and 40%), between the recent past period (1986–2005) and the near future (2031–2050), regardless of the greenhouse gas emission scenario (Cross-Chapter Box 1 in Chapter 1). This corresponds to a continuation of the ongoing decrease in annual snow cover duration (on average 5 days per decade, with a likely range from 0 to 10). By the end of the century (2081–2100), reductions of up to 80% (likely range from 50 to 90%) are expected under RCP8.5, 50%". Figure 2.3 from this chapter has results specific for the Rocky Mountains. [Rachel McCrary, United States of America]	Noted. Relevant text and reference to SROCC added.
105997	86	38	86	38	"climate stressors that carry risk"should be changed to Climate Impact Drivers (as the LAs probably know at this point). [William Gutowski, United States of America]	Not applicable. Text removed.
34327	86	39			« SR1.5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Rejected. There is no prohibition for starting a sentence with an acronym.
105999	86	44	88	8	Why four paragraphs on snow cover, but observed precipitation is discussed only within one paragraph in 5.7.2? This seems unbalanced and should be explained. [William Gutowski, United States of America]	Accepted. We have shortened this section.
14317	86	46	86	46	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
82485	86	49	86	49	Should be described as "temperatures have not increased significantly" (no area is mapped with a trend less than 0). [Blair Trewin, Australia]	Accepted. We have added 'significantly'.
14319	86	50	86	50	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
84479	86	51	86	51	specify years' interval for "past 35 years" [Annalisa Cherchi, Italy]	Accepted. This has been specified.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
106001	86	52	86	53	What is the confidence level, level of evidence and agreement-of-evidence level supporting this statement in the calibrated language? [William Gutowski, United States of America]	Taken into consideration. We do not wish to include all of the information the review suggests. We refer to the 3 various observed data sets. We make a confidence statement regarding the one part of the domain where there is significant decline in precipitation.
14321	86	53	86	53	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
110595	86	55	87	2	This statement regarding interannual variability of precipitation needs a reference (to either a chapter in the IPCC or a paper) perhaps one of the Deser et al. large ensemble papers would touch on this issue. [Rachel McCrary, United States of America]	Accepted. We have added a reference to a relevant section of chapter 2.
84481	87	5	87	5	specify the section number of ch 12 [Annalisa Cherchi, Italy]	Accepted. We have included the section number.
14323	87	8	87	8	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
14325	87	10	87	10	change WG II to WGII [Maria Amparo Martinez Arroyo, Mexico]	Rejected. This suggestion is not correct. It should be 'WGII'
84483	87	12	87	12	specify the section number of ch 9 and ch 12 [Annalisa Cherchi, Italy]	Not applicable. Text removed.
88467	87	14	87	14	Revision required. Permafrost thaws it does not melt. [Sharon Smith, Canada]	Taken into consideration. Reviewer is correct, but this paragraph has been moved to a different chapter (12).
110597	87	14	87	16	This statement regarding hazards of sea ice and permafrost changes needs a reference (either to a chapter in the IPCC or a paper, perhaps WG2 of the AR5? [Rachel McCrary, United States of America]	Taken into consideration. This statement has been moved to Chapter 12, but the reviewer is correct, it needs a reference
84485	87	19	87	19	specify the section number of ch 11 [Annalisa Cherchi, Italy]	Taken into consideration. We have now included a citation for the CMIP5 work, but we don't know of any for CMIP6. The chapter authors have agreed that statements about mean change in snow will stay in the Atlas, and statements about extreme snow should go in Chapter 11. Some impacts related statements will be put in Chapter 12.
110481	87	21	88	5	This text has very substantial overlaps with substantive assessments performed in 2,3 and 9 and shouldbe checked and reconciled and cross-references added. [Peter Thorne, Ireland]	Accepted. Reviewer is correct. We are reconciling these statements with those in 2,3, and 9 and making reference to these other chapters.
110599	87	26	87	26	The following reference could be included. They explore the uncertainty in gridded SWE observation based products over North America. MCCRARY, R. R., S. MCGINNIS, and L. O. MEARNS, 2017: Evaluation of Snow Water Equivalent in NARCCAP Simulations, Including Measures of Observational Uncertainty. JOURNAL OF HYDROMETEOROLOGY, 18, 28. [Rachel McCrary, United States of America]	Accepted. We have included these references.
110601	87	34	87	36	The following reference could be included here, they use a new gridded SWE product to explore observed trends and also find large spatial heterogeneity. Zeng, X., Broxton, P., & Dawson, N. (2018). Snowpack change from 1982 to 2016 over conterminous United States. Geophysical Research Letters, 45, 12,940– 12,947. https://doi-org.cuucar.idm.oclc.org/10.1029/2018GL079621 [Rachel McCrary, United States of America]	Accepted. Thank you for this reference. We have included it.
106003	88	52	90	17	I am again puzzled by the emphasis on snow. Three of eight full paragraphs in 5.7.3 focus on snow. [William Gutowski, United States of America]	Accepted. We have reduced the length of the section on snow.
110483	88	52			Section is long and detailed and much off the text arguably is redundant with / belongs in chapter 10. There is no assessment of ESM performance [Peter Thorne, Ireland]	Accepted. We have rectified the over laps with Chapter 10 and reduced the section length. We have now included evaluation of the CMIP6 models over the region.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110937	89	21	89	21	I would change "presumably" to "possibly". "Presumably" is too strong a word choice in my opinion. This would not be my first guess as to why some of them rain too much (which is what I assume is meant by "overactive", although, that too is unclear because it could also be the frequency of the burst/break cycle of precipitation - please clarify). [Melissa Bukovsky, United States of America]	Accepted. We have changed these sentences.
66295	89	28	89	29	"generated better simulation" of what? [Erika Coppola, Italy]	Accepted. Than of coarser resolution simulations in terms of precipitation. Phrase has been added.
110939	89	31	89	31	Does the diurnal cycle of convection bit refer to the southwest U.S. only or North America in general? This is unclear as written. [Melissa Bukovsky, United States of America]	Accepted. This is only for the southwest U.S.. We have clarified the sentence.
34333	89	47			« NARCCAP », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Reject, There is no problem in starting a sentence with an acronym.
110603	89	51	89	54	It should be clarified that this paper examined SWE biases in the ERA-I driven NA-CORDEX simulations, which have less bias than the GCM driven simulations. As discussed in Mahoney et al (submitted) - RegCM4 has problems with runaway snow when meterological biases are large. [Rachel McCrary, United States of America]	Accepted. We have clarified this point and added the Mahoney et al. reference
110605	90	15	90	17	This paragraph says an evaluation of NA-CORDEX was carried out using data in the interactive Atlas - but it is not clear to me where to look for this evaluation. The rest of the paragraph seems to identify where to learn about the data, but not the evaluation. [Rachel McCrary, United States of America]	Taken into consideration. These statements have been removed.
110487	90	20			This section is very substantively longer and more detailed than any equivalent section. There may be more to say based upon model results but there isn't that much more than e.g. Europe. The section should be shrunk considerably for chapter balance and some of the material arguably should anyway instead be in 10, 11 or in particular 12. [Peter Thorne, Ireland]	Accepted. This section has been reduced. And some parts moved to other chapters.
110607	90	31	90	31	the description of "far north" and "far south" is ambigious. Could you use the regions defined in Figure Atals.42? Are you using different regions? Where do you actually average? [Rachel McCrary, United States of America]	Accepted. We now clarify the meanings of these areas based on the diagram present in the section.
34335	90	35	90	41	Table Atlas.7. Could you indicate whether the differences in temperature and precipitation are increasing (+) or decreasing (-). Format table could be improved. [Guiomar Rotllant, Spain]	Not applicable. Table removed.
102367	90	35	90	41	Suggest to provide a link to a figure (if it exists - otherwise provide it) where the north/south divisions are visible. Otherwise it is of no use. [Philippe Tulkens, Belgium]	Not applicable. Table removed.
82487	90	37	90	39	How are "far north" and "south" defined here? [Blair Trewin, Australia]	Not applicable. Table removed.
66297	90		91		CMIP5 and CMIP6 assessment is only based on Atlas figure 42 no literature cited. [Erika Coppola, Italy]	Taken into consideration. We have now included a citation for the CMIP5 work, and included citations for CMIP6 simulations over North America. The chapter authors have agreed that statements about mean change in snow will stay in the Atlas, and statements about extreme snow should go in Chapter 11. Some impacts related statements will be put in Chapter 12.
34337	91	1			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Rejected. We think it is OK to start a sentence with an acronym.
14327	91	2	91	3	The acronym of the United States of America can be USA later used as US both have to be stated [Maria Amparo Martinez Arroyo, Mexico]	Accepted. We have defined the meaning of these terms.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
84161	91	11			The regional atlas is very useful and we would like to express our gratitude to the authors for compiling it. Maybe additional information on extreme sea level rise (e.g. as compiled in the SROCC) could also be added here [Jeffers Cheryl , Saint Kitts and Nevis]	Rejected. Sea level rise and its extremes are discussed in chapters 11 and 9.
87145	91	11			We are very grateful to the authors for the inclusion of this regional Atlas. We would appreciate if additional information related to extreme sea level rise as was done in the SROCC was included as well. [Jacqueline Spence, Jamaica]	Rejected. Sea level rise and its extremes are discussed in chapters 11 and 9.
100021	91	11			The regional atlas is very useful and we would like to express our gratitude to the authors for compiling it. Maybe additional information on extreme sea level rise (e.g. as compiled in the SROCC) could also be added here. [Caroline Eugene, Saint Lucia]	Rejected. Sea level rise and its extremes are discussed in chapters 11 and 9.
110609	91	15	91	21	This section of this paragraph is very difficult to follow. There are some vague/faulty or just missing pronoun references which make it hard to know if you are talking about CMIP6 or CMIP5 [Rachel McCrary, United States of America]	Accepted. We have clarified which model set is referred to in the paragraph .
14329	91	54	91	54	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
110611	92	24	92	24	I suggest adding the Mahoney et al (submitted) paper here. Possible text is: Mahoney et al. (submitted) examined end-of-chentry changes in temperature, precipitation, and snow over the western United States in the 25 and 50km NA-CORDEX simulations. This study found there to be considerable spread in the future changes across the NA-CORDEX ensmblbe, but general agreement on increasing daily extreme precipitation magnitudes, decreasing seasonal snowpack, and a shortening of the wet season in California in particular. [Rachel McCrary, United States of America]	Accepted. We have added the Mahoney et al. reference and the substance.
66261	92	34	92	55	This is assessment of extreme precipitation change that should be left to CH11 [Erika Coppola, Italy]	Accepted. This section has been moved to Chapter 11.
24539	92	49	92	51	Better to provide a range rather than very specific values [Subimal Ghosh, India]	Accepted. We have now provided a range, but this entire section has been moved to chapter 11.
84487	92	51	92	51	specify the section number of ch 10 [Annalisa Cherchi, Italy]	Taken into consideration. This entire section has been moved to chapter 11.
84489	93	7	93	7	"of the models" instead "of the modelling" [Annalisa Cherchi, Italy]	Rejected. "of the modelling' is correct here.
66263	93	31	94	12	This is there is an entire sub-section on the assessment of snow and snow related variables projections and it should be left to CH12 [Erika Coppola, Italy]	Taken into consideration The chapter authors have agreed that statements about mean change in snow will stay in the Atlas, and statements about extreme snow should go in Chapter 11. Some impacts related statements will be put in Chapter 12.
106005	93	31	94	12	And again - a substantial emphasis on snow, in this case, a whole subsection on snow-related variables in the projections for North America. [William Gutowski, United States of America]	Accepted. This section has been reduced.
34341	94	2			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Rejected. There is no problem with starting a sentence with an acronym.
110613	94	5	94	5	End of Century changes in NA-CORDEX indicate the fraction of precipitation that falls as snow could decrease by up to 20-40% over the moutnains in the Western US (Mahoney et al. (submitted)). [Rachel McCrary, United States of America]	Accepted. We have added a citation to Mahoney et al. submitted and included a statement about snowfall decrease.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110615	94	7	94	12	Musselman et al. (2018) should be included here. This paper uses a pseudo global warming convection permitting WRF simulation to show that ROS events will become less frequent in the future, due to snowpack delines, but that at high-elevations ROS events will become more frequent due to a shift from snow to rain. Musselman, K. N., F. Lehner, K. Ikeda, M. P. Clark, A. F. Prein, C. Liu, M. Barlage, and R. Rasmussen, 2018: Projected increases and shifts in rain-on-snow flood risk over western North America. Nature Climate Change, 8, 808–812, https://doi.org/10.1038/s41558-018-0236-4. [Rachel McCrary, United States of America]	Accepted. We have included the Musselman et al. 2018 reference. Thanks you for the suggestion.
80743	94	15	96	22	It would be useful to show maps for this region as well. I understand that the countries are too small to be visible on the map but in this case, the use of EEZ limits could address this issue. It is important because the small islands in the Pacific region are not easy to see on the global maps. [Helene Jacot Des Combes, Marshall Islands]	Accepted. Figure 28 includes a map with climatological regions including Small Islands and summary information about climate changes in these regions.
80745	94	15	96	22	One of the key climate change impacts for small islands is sea level rise. It would be helpful to have it mentioned in this section. [Helene Jacot Des Combes, Marshall Islands]	Accepted - text on sea-level rise added in Cross Chapter Box Atlas.2 and information included in Figure Atlas.28.
108953	94	15	96	22	Very littly mention and analysis of Islands in Africa. This provides no useful insight to decision makers in Africa, which is likely to experience the most extreme climate related impacts. [Siyasanga Sauka, South Africa]	Noted. Due to space constraints the focus of this section (and the new accompanying Cross Chapter Box Atlas.2) is on the main Small Islands regions and thus only those off the east African coast in the Indian ocean are included.
80747	94	25	94	25	'in the' is missing between 'regions' and 'western' [Helene Jacot Des Combes, Marshall Islands]	Accepted - relevant text rewritten in the new summary section (Atlas.10.5).
84491	94	25	94	27	sentence to rewrite, it has many repetitions and it is hard to understand [Annalisa Cherchi, Italy]	Accepted - relevant text rewritten in the new summary section (Atlas.10.5).
93809	94	25	94	27	Some words seem to be misplaced in this sentence. [Quentin Lejeune, Germany]	Accepted - relevant text rewritten in the new summary section (Atlas.10.5).
80749	94	42	94	42	add a ',' between 'Pacific' and 'phases' [Helene Jacot Des Combes, Marshall Islands]	Accepted.
84493	94	42	94	42	include references to sections in Annex VI for ENSO. [Annalisa Cherchi, Italy]	Accepted.
82489	94	45	94	45	Should say "tropical cyclones" rather than "typhoons" (the term typhoon is used only in the North Pacific). [Blair Trewin, Australia]	Accepted.
84495	94	54	94	54	specify years' interval for "recent decades" [Annalisa Cherchi, Italy]	Rejected. Detail not available.
124923	95	10	95	11	Note what type of centennial events and include context from SROCC: "In particular, many small islands (including SIDS) are projected to experience local sea levels that historically occurred once per century at least annually by 2050 under RCP2.6, RCP4.5 and RCP8.5 emissions. The increasing frequency of high water levels can have severe impacts in many locations depending on the level of exposure." [Trigg Talley, United States of America]	Noted. Statement clarified.
84497	95	10	95	12	not clear what does this statement mean [Annalisa Cherchi, Italy]	Noted. Statement clarified.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
84163	95	19	96	22	Sections Atlas.5.8.3 and Atlas.5.8.4 provide useful information on future changes in temperature and precipitation. Climatic impact drivers such as severe wind storms from tropical cyclones, marine heatwaves, coastal floods or extreme sea-level rise events should also be included. These are particularly relevant for SIDS. Based on the information on these categories of events and impacts that is available notably in Chapters 11 and 12, it should be possible to cover them in the Section 5.8 of the Atlas. This would provide a more comprehensive overview of the state of the knowledge about past and future changes in climate impact drivers in small islands. [Jeffers Cheryl , Saint Kitts and Nevis]	Accepted. Some information on tropical cyclones and sea level rise now included along with cross-references to Chapter 11 and 12 for information on extremes and climatic impact-drivers. Small Islands regions also added to the Interactive Atlas where summary statistics of changes in many variables can be obtained.
89919	95	19	96	22	The Atlas is most welcomed and provide very important and useful information for policy-makers in SIDS in Sections 5.8.3 and 5.8.4 of the Atlas; however we believe there is room for further enrichment given that key impact drivers that are relevant to SIDS including extreme winds from tropical cyclones, marine heat waves, and coastal flooding associated with SLR is absent. This is another missed opportunity given the vulnerability of SIDS to these drivers and given that there is already existing information in both Chapter 11 and 12 on these, it should be particularly easy to lift these pertinent information from the chapters to Section 5.8 of the Atlas. We hope that our recommendation is taken on board so that the Atlas more appropriately fulfil its role. [Joanne Deoraj, Trinidad and Tobago]	Accepted. Some information on tropical cyclones and sea level rise now included along with cross-references to Chapter 11 and 12 for information on extremes and climatic impact-drivers. Small Islands regions also added to the Interactive Atlas where summary statistics of changes in many variables can be obtained.
100023	95	19	96	22	Sections Atlas.5.8.3 and Atlas.5.8.4 provide useful information on future changes in temperature and precipitation, but leave out a number of climatic impact drivers that are especially relevant for small islands, such as severe wind storms from tropical cyclones, marine heatwaves, coastal floods or extreme sea-level rise events. Based on the information on these categories of events and impacts that is available notably in Chapters 11 and 12, it should be possible to cover them in the Section 5.8 of the Atlas. This would provide a more comprehensive overview of the state of the knowledge about past and future changes in climate impact drivers in small islands, and therefore more appropriately fulfil the role of the Atlas as stated in Section Atlas.1. [Caroline Eugene, Saint Lucia]	Accepted. Some information on tropical cyclones and sea level rise now included along with cross-references to Chapter 11 and 12 for information on extremes and climatic impact-drivers. Small Islands regions also added to the Interactive Atlas where summary statistics of changes in many variables can be obtained.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82491	95	21	95	43	Results are only presented here for two island regions (the tropical western Pacific and the Caribbean). Presumably this is because of a lack of published studies for other small island regions, in which case the text should say so (although I am aware of some other regional studies, e.g. Jovanovic et al (2012), https://www.researchgate.net/profile/Branislava_Jovanovic2/publication/313898439_Climate_variations_and_change_evident_in_high-quality_climate_data_for_Australia's_Antarctic_and_remote_island_weather_stations/links/5da5570245851553ff9210bd/Climate-variations-and-change-evident-in-high-quality-climate-data-for-Australias-Antarctic-and-remote-island-weather-stations.pdf, for islands in the Australian region). While duplication of Caribbean material between this section and 5.5.1 is inevitable given the definitions used, the two sections should be checked for consistency. [Blair Trewin, Australia]	Taken into account - additional island (regions) added both in the text but also in the Interactive Atlas.
110491	95	31	95	43	You already assessed changes over the carribean explicitly in an earlier section. It is also a case study in chapter 10. It does not need assessing in triplicate. [Peter Thorne, Ireland]	Taken into account - case study now included in the Small Islands Cross-Chapter Box and overlap with the earlier section resolved.
66265	95	38	95	43	The assessment of extreme precipitation trend should be made consistent with what is also in CH12 [Erika Coppola, Italy]	Accepted.
82493	96	38	96	39	This statement is presumably made to define broader cryosphere findings as out of scope, in which case a cross-reference to Chapter 9 would be useful. Since it also applies to the Arctic section perhaps it could be moved to the introduction of 5.9 rather than that of 5.9.1? [Blair Trewin, Australia]	Accepted. This statement has been moved to the introduction paragraph of the Atlas.11 Polar regions including relevant cross-referencing to Chapter 9 and other chapters.
91067	96	48	96	50	for what period? Defined later on but uncler what epoch this refers to. [Jonathan Bamber, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. The statement has been extended adding a period (over 20th century)
66071	96	48	96	55	Suggest clarification of the statement: "West Antarctica likely experienced an increase in surface mass balance mostly seen over the Antarctic Peninsula and the east part of West Antarctica". This may be misunderstood as IPCC stating there has been an increase in mass balance overall (not the case). Is the intent here (and on p.6) to express that West Antarctica experienced in precipitation minus surface seasonal melting? If so, suggest including a brief definition of 'surface mass balance'. [Kushla Munro, Australia]	Noted. Our statement clearly refers to the surface mass balance and a definition is given in the section text. Atlas discusses basic climate variables (temperature and precipitation/surface mass balance), and conclusion about the total mass changes is given in the Chapter 9 ES.
110497	96	48	97	2	SMB of ice sheets is unequivocally the charge of chapter 9. The Atlas should remove this material and share with chapter 9. This applies to the underlying text in addition to this finding. [Peter Thorne, Ireland]	Noted. During the FGD preparation, a better consistency between Chapter 9 and Atlas Polar regions has been achieved. Detailed assessment of precipitation and surface mass balance have been kept in the Atlas and extended with additional material from Chapter 9. There is a cross-reference between Chapter 9 and Atlas. Chapter 9 discusses SMB as part of the total mass balance component.
110499	97	6	97	7	Suggest remove inference about SMB which is charge of chapter 9 to assess and involves more than precipitation changes. [Peter Thorne, Ireland]	Noted. The statement has been rephrased for both Polar regions and concerns temperature and precipitation.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
69617	97	13	97	13	"has been historically leading to the ice-shelf collapse" --> "has historically been linked to ice-shelf collapse" [Nicholas Golledge, New Zealand]	editorial change not applicable anymore as the sentence has been deleted.
84499	97	23	97	38	specify the section number of ch 9 and ch 10 [Annalisa Cherchi, Italy]	Accepted. Section number have been specified for Chapter 9. Chapter 10 is mentioned along with other chapters for general information.
110501	97	23	97	38	This is a huge cross-cut with 2,9 and I would suggest should be removed. [Peter Thorne, Ireland]	Rejected. These paragraphs contain regional climate description which is a focus of the Atlas. The paragraphs have been revised to make them more focused and cross-checking was done with Ch2 and Ch9.
124925	97	23	97	47	Recommend that authors review likelihood statement for this section regarding snowfall. "It is very likely that volume loss from Antarctic ice shelves has been accelerating overall since the early 1990s (e.g., Paolo et al., 2015). Antarctic ice shelves primarily lose mass through basal melting and iceberg calving (e.g., Depoorter et al., 2013; Rignot et al., 2013; Liu et al., 2015), and although surface melting can be important in some cases (Lenaerts et al., 2017)" See Chapter 9, page 59. [Trigg Talley, United States of America]	Noted. The section is about key features of the regional climate and does not require likelihood statements. A statement about ice shelves is now removed and the reader is referred to Chapter 9 for ice shelf changes assessment.
124927	97	32	97	38	Recommend that authors review the statement regarding Chapter 9, page 6: "It is very likely that the Antarctic Ice Sheet has lost mass since at least the early 1990s and likely that it will lose mass by the end of the century under all emissions scenarios. The grounded Antarctic Ice Sheet has likely contributed 0.0069 ± 0.0014 m to sea level rise over 1992-2018 and loss has accelerated over the last decades (medium confidence) dominated by ice discharge over the West Antarctic Ice Sheet and the Antarctic Peninsula. Ice shelf basal melting dominates current dynamical losses and will remain the dominant driver of West Antarctic mass losses (high confidence). Antarctic snowfall will likely increase by about 4-8% per °C of regional temperature change, partially compensating for dynamic losses. It is likely that the Antarctic ice sheet will contribute 0.12 (0.00-0.26) m to GMSL by 2100 with little scenario dependence, but there is deep uncertainty regarding the Antarctic contribution under the high emissions scenarios. {9.4.2.1; 9.4.2.2, 9.6.3.2; Box 9.3}" [Trigg Talley, United States of America]	Noted. The paragraph has been cross-checked and rephrased with a clear reference to Chapter 9.
69619	97	37	97	37	Ch. 9 has "0.0069 ± 0.0014 m to sea level rise over 1992-2018", Atlas has "7.6 ± 3.9 mm between 1992 and 2017" - cross-chapter coordination required [Nicholas Golledge, New Zealand]	Noted. Atlas now refers to Chapter 9 for SLR and mass loss assessment.
124929	97	49	97	54	Recommend adding medium confidence to this statement based on SROCC Chapter 3, page 240: "Increased föhn winds due to the more positive SAM (Cape et al., 2015) caused increased surface melting on the Larsen ice shelves (Grosvenor et al., 2014; Luckman et al., 2014; Elvidge et al., 2015) and after 11,000 years intact, the 2002 melt-driven collapse of the Larsen B ice shelf followed strong warming between the mid–1950s and the late 1990s (Domack et al., 2005) (medium confidence)." [Trigg Talley, United States of America]	Accepted. Medium confidence is added to both statements.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110503	97	49	98	11	This assessment is very certain and yet based on no literature citations at all. Critics would take great issue and this is not in keeping with the careful assessment of the issues in e.g. chapter 9. I would remove this text or far more explicitly and unambiguously link it to prior assessment reports. Presently it looks like your own assessment but without any traceable account. I'm not quite sure what is going on here but some greater care and attention is required. [Peter Thorne, Ireland]	Noted. All statements were from SROCC and it was stated "The following summary from previous IPCC reports is derived from the SROCC report (IPCC, 2019b)". In the revised version we make this link to previous reports as clear as possible. The entire section is dedicated to Findings from previous IPCC assessments.
66267	98	14	100	40	There is some overlap with present trend assessment with CH12 section 12.4.9 [Erika Coppola, Italy]	Noted. The Atlas sections and Ch12 section 12.4.9 have been checked for consistency/overlap.
14331	98	17	98	17	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
84501	98	27	98	29	include references to sections in Annex VI for SAM and AMO. Also check for acronyms used there to have consistency in the whole report [Annalisa Cherchi, Italy]	Noted. References to Annex VI are included and acronyms checked.
23675	98	29	98	31	Using multiple-data sources (station, reanalysis, regional climate model), Bozkurt et al. (2020) highlighted that there exists a persistent windward warming trend in the autumn season as well as at the annual time scale even during the recent cooling period. Bozkurt, D., D. H. Bromwich, J. Carrasco, K. M. Hines, J. C. Maureira, and R. Rondanelli, 2020: Recent near-surface temperature trends in the Antarctic Peninsula from observed, reanalysis and regional climate model data. Adv. Atmos. Sci., 37, 477-493. https://doi.org/10.1007/s00376-020-9183-x. [Deniz Bozkurt, Chile]	Noted. A reference Bozkurt et al (2020) has been added to strengthen the statement.
124931	98	46	98	47	Recommend adding low confidence to this statement based on the SROCC Chapter 3, page 212: "In contrast to the Arctic, the Antarctic continent has seen less uniform temperature changes over the past 30–50 years, with warming over parts of West Antarctica and no significant overall change over East Antarctica (Nicolas and Bromwich, 2014; Jones et al., 2016; Turner et al., 2016), though there is low confidence in these changes given the sparse in situ records and large interannual to interdecadal variability." [Trigg Talley, United States of America]	Accepted. The statement is moved to section Atlas.11.1.1.2 Findings from previous IPCC assessments and low confidence is added.
110505	99	12	99	22	This was assessed in chapter 9 in considerable depth and the reader should be referred there rather than performing a redundant assessment here. [Peter Thorne, Ireland]	Noted. The statement has been focused on temperature with a reference to Chapter 9 for the link to impact on the ice shelves.
124933	99	18	99	18	Recommend review of likely statement due to SROCC Chapter 3, page 240, statement of medium confidence: "Increased föhn winds due to the more positive SAM (Cape et al., 2015) caused increased surface melting on the Larsen ice shelves (Grosvenor et al., 2014; Luckman et al., 2014; Elvidge et al., 2015) and after 11,000 years intact, the 2002 melt-driven collapse of the Larsen B ice shelf followed strong warming between the mid–1950s and the late 1990s (Domack et al., 2005) (medium confidence)." [Trigg Talley, United States of America]	Noted. The statement has been removed after cross-checking with Ch9.
69621	99	19	99	19	meltwater ponding "has" led [Nicholas Golledge, New Zealand]	Noted and corrected
69623	99	24	99	24	might be necessary to explain what 'diamond dust' is [Nicholas Golledge, New Zealand]	Noted. Sentence has been moved to Atlas.11.1.1.1 Key features of the regional climate. It was decided not to include an explanation because of space problems

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82495	99	37	99	37	Is the 171 mm/yr figure water equivalent? [Blair Trewin, Australia]	yes this is water equivalent - we have added to the text (and the sentence is moved to section "Key features of the regional climate")
110507	99	41	100	40	This text feels out of scope for the Atlas and should rather be in chapter 9. [Peter Thorne, Ireland]	Noted. It was agreed in preparation of FGD that Atlas will include regional precipitation and snow cover assessment (changes in mean snow variables - snow cover, snow water equivalent, SMB, etc - when they are considered as simple climatic variables), while a general assessment of changes in snow (e.g. from a global perspective) as a component of the cryosphere or the hydrological cycle will be in Ch 9 and Ch 8 respectively (in which they may refer to specific regions but only as part of a “global” assessment). Thus, this text containing the assessment of changes in precipitation/SMB in Antarctica was kept in the Atlas and also extended in coordination with Chapter 9. Cross-chapter referencing has been made clearer.
32449	100	7			Kohnen (typo) [Olaf Eisen, Germany]	corrected
82497	100	22	100	22	What was the sign of these anomalies? (later text implies positive) [Blair Trewin, Australia]	yes these are positive anomalies in SMB. the text is updated
34343	100	53			« GCM », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Taken into account. Sentences rephrased.
23677	101	31	101	36	Bozkurt et al. (2020) performed a dynamical downscaling approach over the Antarctic Peninsula using Polar-WRF model at 15 km spatial resolution for the period 1991-2015. Furthermore, they made use of available surface observations, ECMWF’s ERA5 and its predecessor ERA-Interim, as well as CORDEX-Antarctic simulation (RACMO21P) to contrast different data sources. They showed the existence of added value, for instance, unlike the boundary conditions (ERA-Interim), regional climate model simulations capture the persistent cooling trend (1991-2015) observed at the Larsen Ice Shelf station. Bozkurt, D., D. H. Bromwich, J. Carrasco, K. M. Hines, J. C. Maureira, and R. Rondanelli, 2020: Recent near-surface temperature trends in the Antarctic Peninsula from observed, reanalysis and regional climate model data. Adv. Atmos. Sci., 37, 477-493. https://doi.org/10.1007/s00376-020-9183-x. [Deniz Bozkurt, Chile]	Noted. The reference Bozkurt et al (2020) is included in a statement about improvements in finer resolution RCM studies.
124935	102	12	102	20	This text includes results only for RCP8.5. However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. If changes are not significant for some RCPs, that should be noted as well. [Trigg Talley, United States of America]	Taken into account. The subsection was updated using four scenarios and including CMIP6 models (using the most recent references and the updated Interactive Atlas).
82035	102	36	102	36	Please reconsider the term 'bias correction'. Better use 'bias adjustment'. Check also in IA [Swantje Preuschmann, Germany]	Not applicable. Text removed.
34347	102	36			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Taken into account and sentence rephrased.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
26481	103	20	103	20	Absorbtion of solar radiation should not be picked here alone. Poleward energy transports should be added here, as they are at least equally important (and their importance is especially indicated in the most recent studies). [Tiina Nygård, Finland]	Accepted. Yes, there are many factors contributing to Arctic amplification and accordingly this sentence has been improved. It reads now "This is based on various Arctic amplification processes, in particular the combined effect of several related feedback processes including sea-ice and snow-cover albedo and water-vapour-cloud-radiation feedbacks as well as poleward energy transports (high confidence)."
84503	104	2	104	4	homogenize the sentences [Annalisa Cherchi, Italy]	Accepted. The text was rewritten.
110509	104	3	104	3	days/year/decade? [Peter Thorne, Ireland]	Noted. In annual mean precipitation.
91069	104	13	104	13	mass loss dominated by surface melting is only true with high confidence for recent years (since ~1995). Rignot et al 2019? suggest that discharge is dominant if you go back as far as the 1970s [Jonathan Bamber, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. The text was adjusted.
66269	104	29	106	20	There is some overlap with present trend assessment with CH12 section 12.4.9 [Erika Coppola, Italy]	Noted. We find this as very minor overlap
109757	104	34	104	34	The Medieval Warm Anomaly is elsewhere in the report, as is generally the case, ending at 1250 (NOT 1400). Actually, the period thereafter are rather cold. [Charpentier Ljungqvist Fredrik, Sweden]	Not applicable. Text removed.
84505	104	54	104	54	specify years' interval for "last 15 years" [Annalisa Cherchi, Italy]	Accepted. The period is 2003 - 2017; it is included now.
82499	105	13	105	18	Svalbard's warmth has been even more pronounced after 2012. Whilst that is after the published papers, information on the post-2012 anomalies should be available through channels such as the BAMS State of the Climate reports and annual climate summaries from the Norwegian Meteorological Institute. [Blair Trewin, Australia]	Accepted. We include latest literature and have fully revised this paragraph. It reads now "Over the ARO region, long-term temperature records are available from Spitsbergen (Svalbard Airport). For the period 1898 to 2018, the annual mean warming is 3.8°C or 0.32°C/decade, about 3.5 times the global mean temperature for the same period and since 1991, 1.7°C/decade, or about seven times the global average for the same period (Nordli et al., 2020) (high confidence). There is a positive trend in the annual temperature for all stations across Svalbard (Gjelten et al., 2016; Hanssen-Bauer et al., 2019; Dahlke et al., 2020) of 0.64–1.01°C/decade for 1971–2017 (Hanssen-Bauer et al., 2019) co-varying with regional changes in sea-ice conditions (Dahlke et al., 2020). The largest temperature trends very likely occurs in winter (e.g., with Svalbard airport during 1898–2018 warming at 0.43°C/decade and 3.19°C/decade during, for 1991–2018 (Nordli et al., 2020) (high confidence). (Isaksen et al., 2016) report on the substantial warming in western Spitsbergen, particularly in winter, while the summer warming is moderate. "

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
26483	105	33	105	33	I suggest to start like this: "Along with the amplified warming, the Arctic has become moister (Rinke et al. 2019, Nygård et al 2020)." References: (1) Rinke, A., B. Segger, S. Crewell, M. Maturilli, T. Naakka, T. Nygård, T. Vihma, F. Alshawaf, G. Dick, J. Wickert, and J. Keller, 2019: Trends of Vertically Integrated Water Vapor over the Arctic during 1979–2016: Consistent Moistening All Over?. J. Climate, 32, 6097–6116, https://doi.org/10.1175/JCLI-D-19-0092.1 (2) Nygård T., Naakka T., Vihma T. (2020): Horizontal moisture transport dominates the regional moistening patterns in the Arctic. Journal of Climate. doi: https://doi.org/10.1175/JCLI-D-19-0891.1 [Tiina Nygård, Finland]	Accepted. We agree and have included this sentence.
14333	105	37	105	37	remove : [Maria Amparo Martinez Arroyo, Mexico]	Accepted.
82501	105	52	106	7	The challenges in measuring frozen precipitation could be mentioned as a potential source of uncertainty here. [Blair Trewin, Australia]	Noted. The text was rewritten.
66477	106	9			A suggestion of a study to consider as a part of the report: Łupikasza et al. (2019) analysed increased frequency of rain-on-snow events in Honsund fiord (Svalbard) for 1978-2017 time span and its impact on winter mass balance and dynamics of Hansbreen glacier. Section 4.1 describes the changes in frequency and trends of rain-on-snow events, whereas in section 6 influence of rain-on-snow on glacier mass balance, glacier's dynamics and snowpack structure is discussed. Łupikasza, E.B.; Ignatiuk, D.; Grabiec, M.; Cielecka-Nowak, K.; Laska, M.; Jania, J.; Luks, B.; Uszczyk, A.; Budzik, T. The Role of Winter Rain in the Glacial System on Svalbard. Water 2019, 11, 334. [Barbara Barzycka, Poland]	Accepted. According to this comment and new literature, we include on page 105 line 48 "and winter rain totals and frequency have significantly increased in Svalbard since 2000 (Lupikasza et al., 2019). Rain-free winters have virtually not occurred since 1998 (Peeters et al., 2019). " Peeters B., Pedersen Å.Ø., Loe L.E., Isaksen K., Veiberg V., Stien A., Kohler J., Gallet J.-C., Aanes R. & Hansen B.B. 2019. Spatiotemporal patterns of rain-on-snow and basal ice in High Arctic Svalbard: detection of a climate-cryosphere regime shift. Environmental Research Letters 14, article no. 015002, doi: 10.1088/1748-9326/aaefb3.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
41901	106	23	108	4	This paper adds information on preindustrial model performance: 'Natural drivers of multidecadal Arctic sea ice variability over the last millennium' Halloran et al. 2020. ABSTRACT 'The climate varies due to human activity, natural climate cycles, and natural events external to the climate system. Understanding the different roles played by these drivers of variability is fundamental to predicting near-term climate change and changing extremes, and to attributing observed change to anthropogenic or natural factors. Natural drivers such as large explosive volcanic eruptions or multidecadal cycles in ocean circulation occur infrequently and are therefore poorly represented within the observational record. Here we turn to the first high-latitude annually-resolved and absolutely dated marine record spanning the last millennium, and the Paleoclimate Modelling Intercomparison Project (PMIP) Phase 3 Last Millennium climate model ensemble spanning the same time period, to examine the influence of natural climate drivers on Arctic sea ice. We show that bivalve oxygen isotope data are recording multidecadal Arctic sea ice variability and through the climate model ensemble demonstrate that external natural drivers explain up to third of this variability. Natural external forcing causes changes in sea-ice mediated export of freshwater into areas of active deep convection, affecting the strength of the Atlantic Meridional Overturning Circulation (AMOC) and thereby northward heat transport to the Arctic. This in turn leads to sustained anomalies in sea ice extent. The models capture these positive feedbacks, giving us improved confidence in their ability to simulate future sea ice in in a rapidly evolving Arctic.' https://www.nature.com/articles/s41598-020-57472-2 [Freya Garry, United Kingdom (of Great Britain and Northern Ireland)]	Noted. This paper is not appropriate for this specific part of the Arctic section.
34349	106	39			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. The text is reformulated
34351	107	9			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. The text is reformulated
82503	107	11	107	13	Speaking over a "trend" over such a short period is potentially misleading (especially as the headline number relates to a single gridpoint in a single month). Might be better to be more general and note that the model reproduces rapid decadal-scale changes. [Blair Trewin, Australia]	Accepted. M1446We accordingly changed this sentence to "Rapid temperature changes, such as the pronounced temperature change of 2°C per year during the 2003–2012 period over the Kara and Barents Seas in March is well captured (Kohnemann et al., 2017)."
34353	107	15			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	The text is reformulated
82505	107	23	107	24	This seems a very large bias - does it primarily reflect precipitation biases, temperature biases or a combination? [Blair Trewin, Australia]	The paper of Krasting et al (2013) does not discuss the reason of this bias. Probably it is a combination of precipitation and temperature biases. Because it is not discussed in the paper, we cannot discuss this.
34357	110	9			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. The text is reformulated
34359	110	14			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Accepted. The text is reformulated

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82507	110	15	110	15	Is "intensify" the intended word here? Its meaning would usually point to higher daily/sub-daily amounts whereas the rest of the paragraph suggests the intended context is largely a higher proportion of winter precipitation falling as rain rather than snow? [Blair Trewin, Australia]	Accepted. The text is reformulated
80581	110	34	110	37	This section should cross-reference the cross-chapter box on the Hindu Kush Himalaya that is hosted by Chapter 10. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
74337	110	34	111	25	Is the region definiton appared here, conflict with Box 10.3? The figure 1 of Box 10.3 (P226) shgows us that it covers not only the high elevation area in the Himalaya's, but also Pakistan or Myanmar, where the altititude is not so high. [Izuru Takayabu, Japan]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
45201	110	34	114	25	A National Climate Change Assessment Report for India entitled "Assessment of climate change over the Indian region" - Eds Krishnan et al. (2020) by Springer is being published shortly. This book contains useful material on regional climate change over the Hindu Kush Himalayas. Cross-referencing this report could help in shortening the text in Atlas. [Krishnan Raghavan, India]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
106007	110	34	114	37	This section should be compared with Cross-Chapter Box 10.3: Climate Change over the Hindu Kush Himalaya to ensure consistency and to remove any excessive redundancy. [William Gutowski, United States of America]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
98539	110	38	110	41	Specify the projected loss of glacier mass under RCP4.5 and RCP8.5 in the HKH and revise the confidence statement. It is very likely that under RPC 4.5 a 50% loss of glacier mass by 2100 will occur and under RCP8.5 a 64% loss. More specification is needed. Also the line of sight {Atlas 5.10.1.4} does not provide the underlying evidence to make this statement. A careful focus on tracebility is needed here. [Philippus Wester, Nepal]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
82515	110	42	110	43	This states that minimum temperatures are warming faster than maximum temperatures, but the only information presented on this in 5.10.1.2 is a study from Nepal which has the opposite result - check consistency. [Blair Trewin, Australia]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
82509	110	43	110	43	Suggest "the largest increases" rather than "high values" to make it clear that it is the rate of change being described here. [Blair Trewin, Australia]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
81171	110	47			This statement of potentially more GLOFs is not backed-up (traceable) in the text, and in strong contrast to several studies and SROCC that do currently not find more GLOFs, even despite an increasing number of glacier lakes. [Andreas Kääb, Norway]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
80583	111	5			The westerly storms are alternatively known as western disturbances: see e.g. Dimri and Chevuturi (https://www.springer.com/gp/book/9783319267357, "Western Disturbances - An Indian Meteorological Perspective") [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted
80585	111	15	111	16	But at what time horizon? Aerosol emissions are unlikely to be of interest in the long term, since they will have been largely reduced in the RCPs. The may have more impact at the near term. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
34361	111	23			« SR1.5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
82511	111	39	111	39	May be better to refer to low-elevation sites surrounding the TP (nowhere on the TP itself is below 500m). [Blair Trewin, Australia]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
82513	111	50	111	50	Is the "CRU" data set referred to here CRU TS? If so, note concerns expressed elsewhere about CRU TS reverting to climatology in data-sparse areas. [Blair Trewin, Australia]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
80587	112	23	113	2	This section does not appear to have assessed model performance at simulating the westerly storms (a.k.a. western disturbances) mentioned in its introduction. The study of Hunt et al. (2019) (https://doi.org/10.1175/JCLI-D-18-0420.1) "Representation of Western Disturbances in CMIP5 Models" suggests that there is a clear link between model resolution and western disturbance frequency: those models at higher horizontal resolution showing more frequent western disturbances. However, this frequency is generally overestimated in models compared to observed values. Despite this bias, the fraction of precipitation explained by modelled western disturbances is reasonable. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
34363	112	47			« CORDEX », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
98541	113	9	113	11	Specify the reference period for the projected temperature change. What is the baseline? [Philippus Wester, Nepal]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
82517	113	26	113	27	Is the projected warming faster in the eastern or western HKH? [Blair Trewin, Australia]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
34365	113	38			« CMIP5 », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.
80589	113	52	113	53	It is not strictly true that there are no future projections of precipitation extremes. Future projections of western disturbances have not been assessed here. One such study is that of Hunt et al. (2019b) "Falling Trend of Western Disturbances in Future Climate Simulations" (https://doi.org/10.1175/JCLI-D-18-0601.1). In it the CMIP5 RCPs are used to demonstrate a clear declining trend in WD frequency by the end of the 21st century (by 15% in RCP8.5), alongside a decrease in vorticity of the storms. Overall this suggests a decline in winter precipitation. At the individual event level including extreme events, a further study (Hunt et al., 2020, currently under review in Climate Dynamics - "The impacts of climate change on the winter water cycle of the western Himalaya") suggests that rainfall associated with the most extremes storms will increase in future. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections included in Cross-Chapter Box 10.4 on the HKH region.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110511	114	40	114	40	This feels like it is largely redundant with the chapter 9 assessment and should anyway be assessed there and not here. These glaciers are a contribution to that assessment far more so than the Atlas. [Peter Thorne, Ireland]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
66271	114	40	116	7	There is quite an overlap with CH12 section 12.4.9 [Erika Coppola, Italy]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
68183	114	40	116	7	There is little coherence in this section 5.10.2, first two paragraphs are about montoring of glaciers in the world and progress in estimating global volume of them but third is about Greenland and the title of the subsection (assessment and synthesis of observations, trends and attribtuion) has little to do with the content. maybe this paragraph sits better in section 10.2.1.1 In-situ and remote sensing data? [Guðfinna Aðalgeirsdóttir, Iceland]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
34369	115	3			« GLIMS », avoid to start a sentence with an abbreviation. [Guiomar Rotllant, Spain]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
81169	115	11			There are much more recent studies using Hexagon: Pieczonka, T. and Bolch, T. (2015): Region-wide glacier mass budgets and area changes for the Central Tien Shan between similar to 1975 and 1999 using Hexagon KH-9 imagery. Global and Planetary Change. 128, 1-13. Goerlich, F., Bolch, T., Mukherjee, K. and Pieczonka, T. (2017): Glacier Mass Loss during the 1960s and 1970s in the Ak-Shirak Range (Kyrgyzstan) from Multiple Stereoscopic Corona and Hexagon Imagery. Remote Sensing. 9(3). Maurer, J.M., Schaefer, J.M., Rupper, S. and Corley, A. (2019): Acceleration of ice loss across the Himalayas over the past 40 years. Science Advances. 5(6), eaav7266. [Andreas Kääb, Norway]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
79061	115	22	115	22	The title of this section is strange - the 'thus' doesn't make sense. [Aimee Slangen, Netherlands]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
79063	115	22	115	40	I have trouble understanding why this section is in the atlas, why does it focus on glacier thickness so strongly? [Aimee Slangen, Netherlands]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
102369	115	24	115	37	Suggest to change into "distributed thickness" throughout. It seems this is assumed, but it stands out as imprecise. [Philippe Tulkens, Belgium]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
82519	115	52	115	54	End dates should be given for these trends. [Blair Trewin, Australia]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
68181	116	1	116	7	Note that work is being done in Ch9 to re-assess the threshold and irreversible mass loss of Greenland, coordination with Ch9 would be good for this section [Guðfinna Aðalgeirsdóttir, Iceland]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
12179	116	25	116	28	The accepted definition for MYI is sea-ice that survived at least two summer melts. Sea Ice that survived at least one summer melt is “Perennial ice” (also known as Old Ice). This is also the definition in the IPCC AR6 WGI Glossary. Please change “Multi-Year Ice (MYI)” in “Perennial Ice”. See also http://globalcryospherewatch.org/reference/glossary.php. [Thomas Lavergne, Norway]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
12181	116	39	116	41	The sentence is correct but not well connected to the previous sentence (where the flooding mechanism was already introduced). [Thomas Lavergne, Norway]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
12183	116	42	116	42	The comma after the closing parenthesis should be deleted. [Thomas Lavergne, Norway]	Noted. Section 5.10 has been removed from Atlas and relevant material from these sections distributed to other chapters.
14335	116	49	116	49	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit to be completed prior to publication
20863	117	18	117	18	A rational approach would begin by assessing and analysing the present situation, including the various communication actions concerning climate, as well as their efficiency. It is likely that some literature about the ways climate information is communicated exists, in which case it is a pity that this report fails to review it. In case literature concerning the efficiency of these actions is lacking, such a lack ought to be mentioned as a knowledge gap. [philippe waldteufel, France]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
86653	117	18	121	25	Although a section on climate change communication is highly welcome (!) this is also a topic that is relevant to all WGs and to multiple topics across WG1 and the other WGs - not just the Atlas chapter. Would it not therefore be beneficial to instead or also have a cross-chapter/cross-WG box on communication summarising what will be relatively similar findings? Such synthesis through a box would also be useful. [Oyvind Christophersen, Norway]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
106009	117	18	121	25	This section should be referencing the section 10.5 in Chapter 10, and there should be interaction with 10.5 LAs to ensure consistency between the two sections. [William Gutowski, United States of America]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
15121	117	18			This section needs linking to ch10.5 Also I think it would beneficial to refer to ch10 and/or glossary for terms such 'information' and 'message' [Alessandro Dosio, Italy]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
110513	117	18			This has been covered by chapters 10 and 12 already - I really don't think it needs to be covered three times. Please decide one place to put it between the regional chapters and then cross-reference accoprdingly. The different sections should be merged into one. [Peter Thorne, Ireland]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
117171	117	22	117	22	I do not agree with the description of the primary purpose of IPCC. It is to provide a policy relevant, non prescriptive, assessment of the state of knowledge. But it does not have the mandate to deliver usable information needed to develop climate policies, which is a different focus, related for instance to climate services, or national climate change committees, etc. And the IPCC cannot replace direct interactions between policymakers in a given context with local scientists and their expertise. The paragraph on approaches to communication appears like a guidance document rather than an assessment. I would suggest to modify this part so as to build on related aspects in chapters 1 and 10, and explain what has informed the choices made to develop the atlas, and how it can be used in the context of communicating science information. [Valerie Masson-Delmotte, France]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2) including a discussion of the role of IPCC reports, and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
20865	117	22	117	35	Without any doubt the IPCC reports are one of the most momentous means fo46r communicating climate change information. It is therefore legitimate to begin this section with IPCC [philippe waldteufel, France]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2) including a discussion of the role of IPCC reports, and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
20867	117	37	117	46	It is not easy to identify what is specific to climate change in these banalities. Every remark seems to apply equally well to the Covid-19 epidemic, for example [philippe waldteufel, France]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
20869	117	48	117	52	Excessive focus on uncertainty? Here is a first easy test. Over chapters 1 to 12 of this SOD, including SPM and TS (leaving aside this Atlas chapter and annexes), the combination "uncerta" is found 2689 times for 3648 pages. Removing references and figures (447 occurrences for 1233 pages), this leaves 2242 occurrences for uncertainties or uncertainty over a text 2242 pages long. It is now up to WG1 authors to judge whether it is appropriate, or too much of a focus on uncertainty [philippe waldteufel, France]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
5067	117		122		Ch. Atlas.6: Another part of communication not yet addressed is the transparency of IPCC's finding, esp. for core figures but also for digital products like the interactive atlas. It is essential to communicate the input data and the data treatment not only in description but also in references to data and tools enabling a reader of the report to go back to the data sources. [Martina Stockhause, Germany]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
18623	118	4	118	11	It would be helpful to link this discussion to climate services discussion and cross-chapter box in CH12 (12.6). [Alexander Ruane, United States of America]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
106011	118	10	118	10	"the effectiveness of the various communication strategies" - This topic is covered throughout section 10.5, not just 10.5.1, and especially in sections 10.5.2, 10.5.3 and 10.5.4, which should be cited. [William Gutowski, United States of America]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20871	118	14	120	15	Subsections 6.1.1 to 6.1.6 have little to do with the rest of this section 6.1, inasmuch as they do not deal with communication issues: they list ways to obtain evidence. These subsections should be located close to the presentation of uncertainty language in Box 1.1 [philippe waldteufel, France]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
80591	118	14	120	15	Sections Atlas.6.1.1-6.1.6 would be better integrated within the existing text of chapter 10 in order to help reduce the length of the Atlas. Chapter 10 is the chief location for positioning methods explaining how to get from global to regional climate change and covers aspects such as direct use of GCMs, RCM downscaling, behaviour of physical drivers, storylines and narratives, and expert elicitation. Removal of the pragraphs would help shorten the Atlas and additional references could be used in Chapter 10. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
20873	118	27	118	31	While this is common sense, this is also extending to the climate change domain a method widely used in meteorology when attempting to predict rain over a short time interval ("nowcasting"): the frontal rain bands located by radar imagery are assumed to move without major deformation. Similarly, wind estimates from geostationary images have been obtained through tracking cloud features for decades. References are easy to find [philippe waldteufel, France]	Taken into account. Although we largely agree with this comment, the position and context of this section have been strongly revised and integrated in the guidance documentation for the IA. Therefore this elaboration of trend extrapolation is not considered to be within scope of the present text anymore
79065	118	29	118	29	generally = sometimes? I wouldn't say extrapolating is common practice, nor something that the sea level community would advocate [Aimee Slangen, Netherlands]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
84507	118	39	118	39	need to include a reference to a section/chapter in the report where "scenario storyline" is defined [Annalisa Cherchi, Italy]	Taken into account. The section is integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
15123	118	52	118	52	sayng that downscaling adds 'spatial details' is misleading. Downscaling is supposd to 'add value' not simply 'spatial detail' (which in some cases can be regareded only as 'noise' without adding new meaningful information) to the low resolution runs. See ch10.3 where added value of downscaling is assessd. [Alessandro Dosio, Italy]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
117173	118		118		Some of the points mentioned in Atlas 6.1.1 are extremely important and need to be very carefully considered. Are past trends expected to continue in the future if forcings change? (there are insights from chapters 3-4, 6, 8, 9 on this). Consider ozone depletion and recovery. Aerosol emission increases and stabilisation + regional shift of emissions. Maybe future reductions in GHG and SLCF emissions. The rationale for why past trends could continue need to be further developed. Moreover, at the regional scale, and due to modes of multidecadal variability, internal variability could mute or enhance small human induced trends over successive periods. The whole notion of emergence could be considered when discussing the interpretation of past trends for possible future evolutions. I suggest to sharper this paragraph, ground it better into the wealth of information of this report, and nuance the discussion from constrasted examples (which exist in the report). In this whole section, I would suggest to not do an assessment per se (apart on methodological aspects if relevant), but ground these aspects in the assessment done in various chapters. I have the same remark for storylines (how can the atlas be used for that? examples from this report building on the atlas?). [Valerie Masson-Delmotte, France]	Taken into account. Although we largely agree with this comment, the position and context of this section have been strongly revised and integrated in the guidance documentation for the IA. Therefore this elaboration of trend extrapolation is not considered to be within scope of the present text anymore
77619	119	3	119	4	The Bessembinder et al. (2018) reference in the Reference section relates to the use and generation of statistics on rainfall extremes, rather than giving an overview of European national climate change scenario programs. [Emer Griffin, Ireland]	Noted, reference replaced by reference to EEA report
14337	119	24	119	24	KNMI must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Taken into account. Text has changed strongly; acronym not used anymore
34373	119	24			“KNMI”, meaning? Describe abbreviation. [Guiomar Rotllant, Spain]	Taken into account. Text has changed strongly; acronym not used anymore
84509	119	37	119	38	specify the section number of ch 1 and ch 10 [Annalisa Cherchi, Italy]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
70873	119	40	119	40	Should be Zappa and Shepherd [Theodore Shepherd, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The text is thoroughly revised and moved to other sections. Reference is no longer used here
84511	119	40	119	41	"here" where? Not clear meaning of this sentence [Annalisa Cherchi, Italy]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2)
20319	120	18	122	15	The content of this section 6.2 should rather be associated to section 12.6 (climate services) for which it is quite relevant [philippe waldteufel, France]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
102371	120	28	120	36	This uncertainty aspect in relation to the broader public is HIGHLY relevant. And worthy of much more than a paragraph throughout AR6 itself. It is likely also addressed elsewhere. However, and in the context of the Atlas, it is suggested to present elaboration on how it is addressed here, not least in the online version. That is, how is the communication of uncertainty delivered to the general/popular reader also? [Philippe Tulkens, Belgium]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
82521	120	35	120	36	"It is also argued that" seems a slightly flimsy basis for a potentially controversial statement (given the IPCC's policy-neutral mandate). Certainly experience in my country is that anything which hints at advocacy will lead to external attacks on credibility in certain parts of the media (especially social media), although whether attacks of that type damage the credibility of the scientists concerned in the broader community is less certain. [Blair Trewin, Australia]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
124937	120	35	120	36	At best this statement omits the corresponding view that advocacy can be perceived to hurt credibility. It could unfortunately also be read as the IPCC unnecessarily opining on advocacy and undermining its own reputation for objectivity. [Trigg Talley, United States of America]	Accepted. Phrase has been deleted in the thoroughly revised (and moved) text
14339	120	48	120	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
57513	121	9	121	9	There is a Nature Climate Change publication of this WMO (2018) work which would probably be better to reference instead, or in addition if you prefer: Hewitt, C. D., R. C. Stone and A. B. Tait, 2017: Improving the use of climate information in decision-making, Nature Climate Change, 7, 614-616. [Chris Hewitt, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The text is thoroughly revised and moved to other sections. Reference is no longer used here
32967	121	16	121	17	We wrote a paper about climate change in Hamburg, Germany, We applied the principles of effective visual communication and, thus, visually supported the climate data with Hamburg's skyline. The succesful development of effective visual communication is based on interdisciplinary teamwork - without this, data and visuals do not match properly. The paper about the interdisciplinary development process can be found here: https://www.adv-sci-res.net/17/9/2020/asr-17-9-2020.pdf [Bettina Steuri, Germany]	Noted. The text has been thoroughly revised and moved to Atlas.2.4.2. Reference is not considered relevant for the way the topic is now addressed
14341	121	22	121	22	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
20875	121	44	121	48	Unfortunately, the SOD has gone out for review before any case study is included. That is too bad. This absence of examples does little to help build confidence. [philippe waldteufel, France]	Noted. Case studies are no longer included.
82523	121	46	122	6	Looks like the additional case studies didn't happen before SOD went out for review - is there a plan to add them later? If not this section might be best deleted as it looks thin with only a single case study. As far as the case study shown is concerned, examples could also be given of where different observational data sets give inconsistent outcomes. [Blair Trewin, Australia]	Noted. Case studies are no longer included.
14343	122	1	122	1	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
20877	122	4	122	6	As a teaser this passage stands out. Its states some requirements to create a "comprehensive and effective narrative on regional climate change", and then, instead of showing how to comply with these requirements, it stops! [philippe waldteufel, France]	Taken into account. The section is strongly revised and integrated in the Interactive Atlas guidelines (Atlas.2.4.2), and cross referencing to corresponding chapters and sections (particularly Chapter 10 on climate information and section 12.6 on climate services) has been included
27447	122	18	122	18	We recommand to include in Section Atlas.7 a discussion about the complementarity between the online Interactive Atlas and climate services. This discussion should include information about the plans for updating the online Atlas. [Eric Brun, France]	Noted. Climate services are the scope of a Cross-chapter box and links to the Interactive Atlas have been included, describing how the interactive Atlas is positioned in this area. In principle, the Interactive Atlas won't be updated (similarly to other IPCC products).
110687	122	18	122	18	General comment on the Interactive Atlas: The interactive atlas is a wonderful addition and really well executed, congratulations. [Bruce HEWITSON, South Africa]	Noted: Thank you.
110689	122	18	122	18	General comment on the Interactive Atlas:: wind might be a valuable addition [Bruce HEWITSON, South Africa]	Noted: Thank you.
110691	122	18	122	18	General comment on the Interactive Atlas: I could not see a way to difference maps ... this would be useful for comparing, for example, CMIP5/6, CMIP/CORDEX, different observation data sets. As it stands the shading makes it almost impossible to evaluate differences, and that seems to be quite a important/valuable option. [Bruce HEWITSON, South Africa]	Accepted. Robustness/uncertainty representation has been harmonized across the whole report, building on Cross Chapter Box Atlas.1. The Interactive Atlas implements the various options there presented.
110693	122	18	122	18	General comment on the Interactive Atlas: Are the colours “colour-blind” friendly, or perhaps an option colour palette could be offered? [Bruce HEWITSON, South Africa]	Noted. The colours are pre-defined by the TSU to provide consistency to the full report.
110695	122	18	122	18	General comment on the Interactive Atlas: Could a user “save” the setup they’ve chosen for a given plot/display? [Bruce HEWITSON, South Africa]	Taken into account. There is an option to obtain a permalink with the current configuration.
110697	122	18	122	18	General comment on the Interactive Atlas: It seems that a page of pre-conditioned “buttons” that mimic in a traceable way key relevant figures from the body of the report would be extremely valuable for showing reproducibility. [Bruce HEWITSON, South Africa]	Noted. This was considered but couldn't be implemented uniformly so the option of having permalinks for particular configurations and including those in the interactive material is used instead.
110699	122	18	122	18	General comment on the Interactive Atlas: Could the underlying data of a map be downloadable, say as a netCDF? [Bruce HEWITSON, South Africa]	Noted. The data can be downloaded in GeoTiff format, which could be easily converted to any other standard format (e.g. netCDF).
38635	122	18	122	55	The Atlas.7 section does not include an explanation of the "Climatic Impact Drivers" section on the IA. [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Accepted. This has been fixed in the final version
38637	122	18	122	55	It could be a good idea to excel that the IA is available in other languages [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Noted. This possibility has been included in the design of the Interactive Atlas and the actual implementation would align with the translation timeline for the WGI report.
20321	122	18	122	188	Obviously this section .7 is the heart of the Annex it is recommended to build, in order to present the AR6 Atlas and help future users. [philippe waldteufel, France]	Noted. Section 7 has been moved to the front of the Chapter in order to allow for a better integration with the assessment done in the chapter
42757	122	18			A general comment. For understandable reasons, the SOD IA only has very limited functionality. This makes it hard to properly review it scope and usefulness. Would a later and limited review be possible once the functiionality is nearer completion? [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The functionality of the Interactive Atlas is nearly complete (apart for updating indices and datasets) and only the view of Climatic Impact Drivers will largely change (in relation to the TS and SPM, which will undergo an additional review).

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110515	122	18			Should this not come first rather than being buried at the chapter end? It seems a real pity to bury all this information so far down and a good argument can be made that the chapter should start by outlining the interactive Atlas component i.e. lead with what is new and novel [Peter Thorne, Ireland]	Accepted. The description of the Interactive Atlas has been moved upfront (to section 2)
110617	122	18			This is to discuss the usefulness of the IA: As a research scientists who works with stakeholders/climate data users I believe the atlas could be useful for quick work to highlight broad changes and get the discussion going about what regional changes users may face. I also see this being very useful when teaching about climate change and its impacts - being able to focus easily on different regions. Without a spedific question to be asked (or being guided to a question) I think it could be easy to just get lost in the Atals (so many options). Is it possible for the other chapters to reference the Interactive Atlas for "more information"? [Rachel McCrary, United States of America]	Noted. Cross-references between the Atlas, the Interactive Atlas and other chapters have been implemented, including links to the Interactive Atlas for more information.
110619	122	18			This is to discuss the Design of the IA: Given how much information is conatined in the atals I did find it relatively easy to navigate. However I think the website needs to have the information about navigating the atlas on the website itself (and not just the IPCC Atlas chapter) When using the regional summaries line plots etc I found that the graphics on the page did not scale appropraitely and made things start to be messy. I wonder if a brief youtube type video of all of the functionality of the Atals could be made - I think people could get frustrated with all of the options and lost. [Rachel McCrary, United States of America]	Noted. A new section on user guidance has been included as well as a guided tour. Short videos describing the functionality are being produced.
106117	122	25			IA Is there any possibility to add surface salinity, sea level and integrated values (e.g.mean temperature of the uppermost 100meters) to the Interactive Atlas [Piero Lionello, Italy]	Noted. The indices included in the Interactive Atlas support the assessment done in the chapters and, therefore, they are selected in agreement with the different chapters. Sea level has been included in the new version
14345	122	33	122	33	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
20323	122	37	122	44	On figure .53: "signal-to-nose" to be corrected. Also, "various" is better than "different" in the line before. [philippe waldteufel, France]	Not applicable: This paragraph has been rephrased.
38633	122	37	122	44	The Figure Atlas.53 does not show the proper menu of the IA. About/Instructions/License/Climatic Impact Drivers/EN. [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Noted. The figures have been updated and revised.
14347	122	47	122	47	FAIR must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Done

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
5069	122	47	122	52	Ch. Atlas 7: If the reproducibility is a main concern in the development of the atlas, information on data curation is required, taking care that all datasets are securely stored on the long-term; or in other words adding the TRUST principles to the FAIR principles. A repository baring the CoreTrustSeal would be a natural choice. The given information and reference to the atlas software is a necessary piece for reproducibility but not sufficient. Another currently unanswered question concerning reproducibility on the long-term reproducibility is the treatment of new source dataset and software versions and the treatment/documentation/notification of errata. [Martina Stockhause, Germany]	Noted. The implementation of FAIR principles is being coordinated with TSU. Long-term storage of data is managed by IPCC-DDC
34375	122	47			“FAIR”, describe abbreviation when first cited. [Guiomar Rotllant, Spain]	Accepted. Done
124939	122	48	122	49	The text states that metadata is available for spatial maps in the IA. But for every spatial map tried, metadata was not active. [Trigg Talley, United States of America]	Noted. An illustrative example was available in the SOD. The full metadata functionality has been deployed in the final version.
18621	122	54	122	55	Please note that 'confidence' is missing the 'i' in the Climatic Impact Drivers legend on the Interactive Atlas. [Alexander Ruane, United States of America]	Editorial – copyedit has been completed prior to publication
42747	123	1			Should the interactive Climate Change Atlas developed by KNMI to supplement the AR5 material be mentioned in this section. It is a very useful tool with may users. I recommend that the AR6 Atlas developers looked in detail and the functionality of the KNMI Atlas and aim to improve upon it. The SOD IA has much less functionality. (Note the KNMI Climate Change Atlas is not the main Climate Explorer tool but a user-friendly subset of it. See https://climexp.knmi.nl/plot_atlas_form.py?id=someone@somewhere .) [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Noted: The functionality of the Interactive Atlas is limited to allow a revision of the information (following IPCC principles) and to avoid misuse. We are aware of the Climate Explorer and think it is a fantastic tool but it has a broader scope, with more flexible functionalities.
20881	123	3	123	22	What is missing in this subsection is the identification of the target. Who are the expected users? What are their expected technical levels? [philippe waldteufel, France]	Accepted. A new section on documentation has been included in the Interactive Atlas, gathering the existing information for the different uses of the Interactive Atlas.
20879	123	25	123	25	This atlas is a tremendous communication tool, which hopefully will be made available to everybody: restraining access to those communities professionally concerned would be a mistake. The minimal place of the ocean is a limitation of the present version. [philippe waldteufel, France]	Noted. Thank you. Ocean information has been extended considering new variables such as Sea Level Rise and sea ice.
20883	123	25	123	25	Please describe the procedure implemented to consult the users about the functionalities of the Atlas. [philippe waldteufel, France]	Noted. The functionalities have been designed in coordination with the different chapters, since the Interactive Atlas supports the assessment done in the chapters. A user survey is being conducted during the review of governments.
124941	123	25	125	9	On clarifying use of datasets, this section must include detailed information on the observational datasets used as well as the projections. It should also include links to where the datasets are discussed elsewhere in the report. [Trigg Talley, United States of America]	Rejected. Technical information on the datasets and links to the original sources are provided in the Technical Annexes. Links have been included in the final version
66073	123	25	125	21	We appreciate that Section 7 clearly describes the context of the Interactive Atlas as well as the provenance and accessibility to metadata. However section 7.2 would benefit from further detail on the actual functionality of the Atlas. For example, suggest including a description of how to download a PNG file augmented with metadata. [Kushla Munro, Australia]	Accepted. A new section "guidance" has been introduced as online material to properly describe the use and limitations of the interactive Atlas. Moreover, a guided tour has been included as a user-friendly version of this information.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
106119	123	34		40	IA It would be very useful for future users to provide beside graphics also the actual values. E.g. beside the map it would be useful to download also a matrix with the plotted values on a suitable grid; beside the plot of the time series to download also the values plotted; for the stripe plot the sequence of values for each model ... and so on) [Piero Lionello, Italy]	Noted. Actual values can be already downloaded in GeoTIFF format, which can be easily converted to other standard formats (e.g. netCDF).
110621	123	37	123	37	the term "stripe plots" is not defined anywhere in the Atlas chapter nor the Interactive Atals. These are new plots, and must be defined. [Rachel McCrary, United States of America]	Accepted. This has been fixed in the final version
14349	123	48	123	48	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
20885	123	48	123	52	It would be both consistent and useful to select for Figure 54 a screenshot illustrating the two varieties of hatching commented upon in this paragraph [philippe waldteufel, France]	Noted. Uncertainty representation has been harmonized across the WGI report building on Cross-Chapter Box Atlas.1. Figure 54 has been removed
42749	123	50			It would be useful if the method used to measure and display uncertainty is fully consistent with that used in Chapter 4 (i.e. the definition of stippled and hatched areas). What is used in the IA sounds similar but it would be useful if they can be made identical. For example, if the IA is used to reproduce the global change maps in Chapter 4 – these maps should be identical. If not, confusion will arise in interpretation, particularly when only regional maps are produced. [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Uncertainty representation has been harmonized across the WGI report building on Cross-Chapter Box Atlas.1. The Interactive Atlas implements the agreed approaches.
42751	123	52			In the plot shown the coastlines are clear. However, after creating a few maps using the IA, this is often not the case. I suggest it is very important to fix this, otherwise the IA will be of limited use. It's important that users can geographically orient themselves when looking at the maps. [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Geographical coordinates can be now visualized in the maps.
14351	124	11	124	11	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
79067	124	18	124	31	Are there plans to include sea-level change projections in the interactive atlas? [Aimee Slangen, Netherlands]	Accepted. Information on Sea Level has been included
82011	124	18	124	31	also IA: (Content)There is no explanation or link how the indices are calculated or what they mean. [Swantje Preuschmann, Germany]	Noted. This has been fixed in the final version.
82001	124	20	124	20	also IA: 'About' section VARIABLES: ETCCDI is not explained [Swantje Preuschmann, Germany]	Noted. This has been fixed in the final version.
52613	124	22	124	31	IA: would it be possible to add flooding related to x m of sea level change? As for example in floodmap.net [Gema Martínez-Méndez, Germany]	Rejected. The indices are included in the Interactive Atlas to support the assessment done in the chapters. Therefore, indices are included in agreement with the different chapters
34377	124	28	124	29	I guess there is a mistake in the abbrevations. Please, change: "Days with maximum temperature above 40ºC (TX35), both raw and bias adjusted. Days with maximum temperature above 35ºC (TX40), both raw and bias adjusted." By "Days with maximum temperature above 40ºC (TX40), both raw and bias adjusted. Days with maximum temperature above 35ºC (TX35), both raw and bias adjusted." [Guiomar Rotllant, Spain]	Accepted. Done

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
42753	124	31			There is an imbalance in this list between temperature and precipitation indices. As a high priority suggest adding a 'drying' index, such as CDD (consecutive dry days) and Rx5day would also be useful. These are widely used indices. Hopefully it is intended to include the full list of indices but, if not, suggest CDD and Rx5xday as essential additions. [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Rx5day was already included in the SOD. CDD has been introduced in the final version
71597	124	39	124	40	The information about the bias adjustment used is confuse along the different Chapters, Annex and Sections. At this moment, at least three options have been described: Cannon et al. 2015; Casanueva et al. Submitted and two bias adjustment methods but without specify which ones. Based on the paragraph, it seems that both Cannon et al. 2015 and Casanueva et al. Submitted will be the final methods included in the Atlas so it should be clarified along the different Chapters, Annex and Sections of the report. [Sixto Herrera, Spain]	Noted. A single bias adjustment method is included in the Interactive Atlas (the ISIMIP3 method). This is described in the final version
20325	124	40	124	40	"extend" rather than "extended" [philippe waldteufel, France]	Editorial – copyedit has been completed prior to publication
42759	124	45			Can the high res global models results be included at a later stage? [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Rejected. HighResMIP is used in other chapters to provide particular examples. The interactive Atlas builds on experiments providing alternative scenarios (CMIP and CORDEX).
42755	124	55			If I understand correctly, in later versions the user will be able to produce regional plots. I imagine these may be based on the CORDEX regions. Can user specified regions also be included? These can also be used to generate time series of variables averaged over these regions. Guidelines to not use too small regions will be needed. Note the KNMI Atlas has this functionality. [Christopher Gordon, United Kingdom (of Great Britain and Northern Ireland)]	Rejected. The regions are pre-defined in the Interactive Atlas (reference regions, monsoons, etc.). User defined regions are not supported.
14353	125	2	125	2	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14355	125	4	125	4	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
102373	125	24	126	1	Please state more clearly that this is (?) 100% free of charge inlcuding for reproduction (using proper citation). This is not fully discernible here. [Philippe Tulkens, Belgium]	Rejected. The particular license applied by IPCC to the products is out of the scope of the chapter, although we are favouring open licenses free of charge (e.g. CC-BY).
14357	125	35	125	35	RDF must be expanded acronym has not been used [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Done
69063	126	11	126	11	Change "prevent from" to "prevent" [Seth McGinnis, United States of America]	Editorial – copyedit has been completed prior to publication
34379	126	25	126	33	"METACLIP & OWL", describe abbreviation when first cited. Do not start a sentence with METACLIP. [Guiomar Rotllant, Spain]	Noted. METACLIP is introduced providing appropriate references when it first appears. Then, we just use the product name METACLIP to refer to it.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66075	127	7	127	13	Suggest providing greater explanation on how to Download data in GIS Format. We appreciate this might not be relevant to include in the Chapter, as such, we suggest including more detail on the Map in a popup function for this button to explain it further. Currently, when you hover your cursor over this button it simply states "select map projection". When I tested this function, as the Chapter text described (using a global map), nothing happens. [Kushla Munro, Australia]	Accepted. A new sections "documentation" is included in the Interactive Atlas and short videos and documents providing detailed information for users are being prepared. The "select map projection" has been expanded and checked.
66077	127	10	127	10	Suggest clarification of "temporal seriers". Should this be simply "series"? [Kushla Munro, Australia]	Noted. Changed to "time series"
69065	127	10	127	10	Change "temporal seriers" to "time series plots" [Seth McGinnis, United States of America]	Noted. Changed to "time series"
14359	127	13	127	13	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
69067	127	18	127	18	Change "in next section" to "in the previous section" [Seth McGinnis, United States of America]	Not applicable. The paragraph has been shortened.
82525	127	18	127	18	"next section" should be "previous section" [Blair Trewin, Australia]	Not applicable. The paragraph has been shortened.
14361	127	23	127	23	remove : [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
38631	127	25	127	31	It is said that metadata for the augmented PNG file corresponding to the default selection of the Interactive Atlas can be obtained by clicking on the METACLIP button. There is no METACLIP button on the IA. Only when you read carefully the caption of the Figure Atlas.57 you understand that you need to drag and drop the file downloaded from the Interactive Atlas by using metaclip.org. [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Not applicable. The paragraph has been shortened.
89603	127	51			Just to note this section is still incomplete [Faye Abigail Cruz, Philippines]	Noted. It was a placeholder; it has been completed in the final version.
80593	128	7	128	15	Some of the wording here seems to repeat statements made on p123. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Noted. FAQs have been removed from the Atlas chapter and included as interactive material. This has been shortened and rephrased.
29441	128	18	128	18	The atlas is a really good opportunity to get an overview of the results of the IPCC and provides useful information and figures for Climate Change communication. In its role, it can provide the starting point/global perspective for discussions on climate change mitigation and adapation. However to assess information on local/regional level, information has to be broken down to users needs, which might be hard with the existing material. I find it is perfectly suited for climate lectures and also nice for hands-on with students to learn about climate change impact and climate modelling. For local stakeholders it might be a bit difficult to be used 'out-of-the-box. [Joachim Fallmann, Germany]	Noted. A new section "user guidance" has been introduced to properly describe the use and limitations of the interactive Atlas. Moreover, a guided tour has been included.
82025	128	18	128	21	These questions are very relevant. It is worthwhile to answer them and benefit of guiding how to use the information from the IA. [Swantje Preuschmann, Germany]	Noted. FAQs have been removed from the Atlas chapter and included as interactive material. This has been shortened and rephrased.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
110701	128	18	128	25	Maybe it is already to intended to be in the content of the existing FAQs, but it seems a FAQ on how to approach differences between data sets would be valuable to discuss, given the Atlas will very likely see high usage [Bruce HEWITSON, South Africa]	Noted. FAQs have been removed from the Atlas chapter and included as interactive material together with the documentation. For methodological aspects, such as distillation and use of information/lines of evidence the plan is to include interactive links to the online chapter material, when ready.
82027	128	24	128	35	It is impressive that this is public with the Git Hub. Thanks. Helpful is also a hint of how a user can use the Git-Hub and what he can and may do with the information in order to take the user's hurdle. [Swantje Preuschmann, Germany]	Noted. Thank you.
81271	128		128		FAQ ATLAS.1 to .4: will the metadata/products be available for commercial use? If not, then businesses and decision makers will not be able to integrate the data into planning/decisions/etc. [Stephanie Downes, Australia]	Noted. The license of IPCC products is non-commercial but it is not established by the chapters but decided by the bureau. FAQs have been removed from the Atlas chapter and included as interactive material.
55513	129		173		The word ''submitted'' is mentioned 67 times in the Reference Section. Check if the corresponding articles have been published and correct (in text and references and also in the corresponding epigraphs) [Maria del Pilar Bueno Rubial, Argentina]	Accepted. References have been checked and corrected for the final version, including only papers published by the cut-off deadline.
14363	130	6	130	6	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14365	130	13	130	13	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14367	130	26	130	26	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14369	132	5	132	5	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14371	132	8	132	11	Repeating references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and corrected for the final version, including only papers published by the cut-off deadline.
35155	132	33	132	34	Reference: 'Boe, J., Somot, S., Corre, L., and Nabat, P. (submitted). Large discrepancies in summer climate change over Europe as projected by global and regional climate models: causes and consequences' is indicated twice. [Lilia Taranu, Republic of Moldova]	Accepted
14373	132	34	132	34	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14375	132	36	132	36	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14377	133	40	133	40	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14379	134	12	134	13	incomplete reference [Maria Amparo Martinez Arroyo, Mexico]	Accepted. It has been completed.
14381	134	56	134	56	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14383	136	8	136	8	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14385	136	10	136	10	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14387	136	23	136	24	incomplete reference [Maria Amparo Martinez Arroyo, Mexico]	Accepted. It has been completed.
14389	137	41	137	41	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
14391	137	48	137	48	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14393	140	48	140	48	incomplete reference [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14395	142	8	142	8	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14397	143	4	143	4	Reference in caps. Also found in caps in texto. Not the stlye in the document. [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14399	143	50	143	58	Three times reference repeated [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Duplicates have been removed.
11139	145	26	145	50	There is a lack of formal format of the citation of IPCC reports. [Wen Wang, China]	Accepted. Corrected.
14401	145	34	145	36	Incomplete references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14403	145	41	145	43	Incomplete references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14405	145	48	145	50	Incomplete references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14407	146	6	146	6	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
45199	149	43	149	49	The same reference is repeated for Krishnan et al. (2019a) and Krishnan et al. (2019b). The correct reference for Krishnan et al. (2019b) is as follows: Krishnan, R., T.P. Sabin, R.K. Madhura, R. Vellore, M. Mujumdar, J. Sanjay, S. Nayak and M. Rajeevan (2019b): Non-monsoonal precipitation response over the western Himalayas to climate change. Climate Dynamics, 52, 4091-4109. It may be noted that Krishnan et al. (2019a) is a book chapter on Climate Change over the Himalayas in the HIMAP report and the Krishnan et al. (2019b) is exclusively on winter and early spring precipitation changes over the Western Himalayas. [Krishnan Raghavan, India]	Not applicable. Text and references have been moved.
14409	150	56	150	56	missing () [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and corrected for the final version, including only papers published by the cut-off deadline.
14411	153	1	153	2	Reference can not be found in the document [Maria Amparo Martinez Arroyo, Mexico]	Noted. This reference has been removed and a new one has been included.
14413	154	25	154	30	Name of author needs to be checked [Maria Amparo Martinez Arroyo, Mexico]	Noted. Author names have been checked.
14415	158	14	158	18	Incomplete references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14417	161	35	161	36	incomplete reference [Maria Amparo Martinez Arroyo, Mexico]	Accepted. References have been checked and completed for the final version.
14419	161	54	161	57	Repeating references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Duplicated references have been removed.
14421	165	1	165	4	Repeating references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Duplicated references have been removed.
14423	165	16	165	19	Repeating references [Maria Amparo Martinez Arroyo, Mexico]	Accepted. Duplicated references have been removed.
14425	167	52	167	52	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14427	167	53	167	53	Check reference Torma, C. (9998). [Maria Amparo Martinez Arroyo, Mexico]	Noted. This reference has been removed.
14429	167	56	167	56	missing () [Maria Amparo Martinez Arroyo, Mexico]	Editorial – copyedit has been completed prior to publication
14431	168	36	168	36	incomplete reference [Maria Amparo Martinez Arroyo, Mexico]	Accepted. This reference has been updated.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
14433	171	10	171	12	incomplete reference [Maria Amparo Martinez Arroyo, Mexico]	Noted. This reference has been removed.
70871	172	39	172	40	The author names are repeated twice in this reference [Theodore Shepherd, United Kingdom (of Great Britain and Northern Ireland)]	Noted. This reference has been removed (material transferred to other chapter).
82415	174	1	174	9	Table Atlas.1 duplicates the concept of Annex I and so could be merged into there (thus saving you a page). [Blair Trewin, Australia]	Accepted. The table has been removed and information on some datasets has been moved to Annex I
98481	174	1	174	9	Table Atlas.A.1. Observational dataset for South Asia should also be incorporated into this table as it is one important part of Asia (specially due to Monsoon region). [Mehwish Ramzan, Pakistan]	Not Applicable. The table has been removed and information on some datasets has been moved to Annex I
110517	174	6	174	7	There are newer and more appropriate radiosonde products than HadAT2 such as RICH from Leo Haimberger or IUK from Steve Sherwood which should be used instead. CRUTEM5 will have replaced CRUTEM4 over 2020 [Peter Thorne, Ireland]	Not Applicable. The table has been removed and information on some datasets has been moved to Annex I
111167	174		174		It would be good to refere to Annex I on Observations or include listed datasets in the Annex I [Volodymyr Osadchy, Ukraine]	Not Applicable. The table has been removed and information on some datasets has been moved to Annex I
32815	175	1	175	70	Technical report of climate change of the IRIMO,2017 [sadegh zeyaeyan, Iran]	Not Applicable. The table has been removed
33145	175	1	175	70	Technical report of climate change of the IRIMO,2017 [Sahar Tajbakhsh Mosalman, Iran]	Not Applicable. The table has been removed
110519	175	6	175	8	This list is grossly incomplete and misses many notable assessments e.g. by US and many European countries. A partial listing feels like making a proverbial rod for your own backs. [Peter Thorne, Ireland]	Taken into account. The table has been removed
106761	175	The fifth ro			Technical report of climate change of the IRIMO,2017 [Mansoureh Kouhi, Iran]	Not Applicable. The table has been removed
111173	175		175		Table Atlas A.2 covers very limited list of countries with national assessments. Would be good to provide this information for other countries [Volodymyr Osadchy, Ukraine]	Not Applicable. The table has been removed
98483	176	1	176	6	Table Atlas.A.3. Similar table should be added for South Asia. [Mehwish Ramzan, Pakistan]	Not Applicable. The table has been removed
82471	176	1	179	12	This is a lengthy set of tables (which doesn't have an equivalent for other regions) and I wonder if there are more efficient ways of showing the information (perhaps diagramatically), or whether it can be done through the Interactive Atlas? [Blair Trewin, Australia]	Not Applicable. The table has been removed
110521	176	17	179	9	These feel very out of place and a logical question would be raised why these are produced just for these subregions. [Peter Thorne, Ireland]	Not Applicable. The table has been removed
74333	180	1	180	1	Fig. Atlas-1: Here, they categolized all referencing regions into some groups. Why GIC incuded to North America? Politically, Greenland, and Iceland included to the Europe. And why MED included into Europe, the southern side coast line is belonging to Africa. And RAR belongs to Polar region. [Izuru Takayabu, Japan]	Noted. The figure has been revised to better reflect the continental/subcontinental regions used as the basis for the assessment.
102375	180	1	180	9	Font is generally too large compared to other plots - otherwise good figure. [Philippe Tulkens, Belgium]	Noted. This figure has been revised.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
100899	180		180		I am confused with the association of certain AR6 reference regions to multiple continental regions, in particular, the overlapping of North America and North Asia with the Arctic. On Page 96, Lines 26-31 it is explicitly stated that the Arctic includes: the Arctic Ocean (called ARCO in the text, although the correct name is ARO according to Fig.2), Greenland/Iceland (GIC), northeast Canada (NEC), north-western North America (called NWA in the text, although the correct name is NWN according to Fig.Atlas2), and Russian Arctic (RAR). This definition of regions is consistent with the map of the Arctic shown in Fig.48. However, RAR is also explicitly defined as part of North Asia on Page 45, Line 35. There is no explicit definition of the regions that compound North America, but the reference regions NEC and NWN are implicitly included in North America in Figs.42-44. Finally, to make the matter even more confusing, in Fig.1 we find that NEC, NWN and GIC are identified as part of North America, while RAR is part of Asia, and the Polar Regions remain at the bottom suggesting Antarctica alone. This confusion is not only mine. A Ch12 LA also expressed her confusion to me commenting that Greenland is declared as part of North America in the Atlas (Fig.1), while it is part of Polar Regions in the set of Continental (WGII-like) regions used in Ch12 and defined in Ch1 (Fig.1.15). Maybe we need some coordination between Ch1, Ch12 and Atlas to make more consistent the relation between AR6 Reference and Continental (WGII-like) regions. [Sergio Henrique Faria, Spain]	Accepted. The figure has been revised according to these comments.
74335	181	1	181	1	The rectangular region TIB covers not only the tibatan Plataeau, it covers also Taklimkaan Desert. What happened if we caluclate areal mean temperature? Some mixture between mounatin climate and desert climate indicate us no information. [Izuru Takayabu, Japan]	Accepted. This has been changed in the final version.
24301	181	1	181	2	In Figure Atlas.2, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
32819	181	1	181	2	In Figure Atlas.2, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
33149	181	1	181	2	In Figure Atlas.2, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
98485	181	1	181	9	Figure Atlas.2: Including the lat-lon information in this figure will help the future studies to use the same domain as ATLAS to study the climate of particular region. [Mehwish Ramzan, Pakistan]	Accepted. This has been changed in the final version.
102377	181	1	181	9	What is the difference between the colors white and red in the associated table? This is unclear [Philippe Tulkens, Belgium]	Noted. Colours are used to group regions according to continents to facilitate visualization.
102379	181	1	181	9	Include briefly info on why regions are updated [Philippe Tulkens, Belgium]	Noted. This is described in the reference cited.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
102381	181	1	181	9	Also, state if the AR6 regions are used consistently throughout the report, which I believe they are not depending on the origin of the study. This is a bit confusing. [Philippe Tulkens, Belgium]	Noted. AR6 WGI regions are used consistently though the report although they are not the only geographical reference to provide assessment.
27449	181	4	181	4	The current division of Europe into domains is not satisfactory, especially for the "Central Europe" domain. Indeed, it covers a domain with completely different climates. We strongly recommand to choose a new division which makes it possible to separate the Western part of Europe, which has a maritime climate, from the Eastern part which has a continental climate. If it is not the case, all Tables and messages in the vol1 SOD SPM and Chapters referring to the current "Central Europe" would be completely meaningless and useless for France. We recommend to adopt in the Atlas the division mentioned in the first § of 12.4.5. [Eric Brun, France]	Taken into account. The name of the Central European region is changed to Western and Central Europe to clarify the parts that it encompasses. In terms of the climate of the region there is a transition from a more maritime to a more continental climate but there is no clear boundary separating two sub-regions with completely different climate. Also, there are north-south gradients which need representing in the reference regions, and in this WCE is a transition region from a clear signal of projected precipitation decrease to the south and increase to the north. Further decomposition to include all of these details and other relevant details would result in regions too small to be adequately resolved in GCMs. Note also with respect to France, part of it is included, as would be expected, in the MED region. Finally, the text in 12.4.5 is no longer providing regional definitions.
100383	181		181		At Figure Atlas.2 the region numbers are in aleatory order. Is it possible to change it, keeping the alphabetic order? Then all chapters could follow the same order. [Claudine Dereczynski, Brazil]	Accepted. Reference regions are numbered following a geographical order.
100385	181		181		At Figure Atlas.2 it woul be better to write complete region names instead of short names, to avoid differences in the texts. For example: At SOD we have for SES: South Eastern South America; South-eastern South America and Southeastern South America It would be better to use the same region name in the entire document. [Claudine Dereczynski, Brazil]	Noted. Full information for the regions is given in the reference included in the caption which provides access to the GitHub repository including full details and auxiliary information.
81675	182	1	182	1	The CAU region includes very different cliamte zones, from arid interior to temperate east coast. This should either be split into central and east regions, or east coast should be separated and split into the other SAU and NAU regions [Michael Grose, Australia]	Accepted. This has been changed in the final version, splitting in Central and Eastern parts.
34173	182				Figure Atlas.3. Boxes of oceans are not indicated (not defined or missing?), then why to keep a blue scale when not used? [Guiomar Rotllant, Spain]	Rejected. Land and ocean regions are treated equally. In the revised figure numbers are only included for "problematic" regions.
110523	183	1	183	2	Figure is not self describing and lacks an obvious title, legend etc. Significant wotrk required to ensure figure is clear on its own merits [Peter Thorne, Ireland]	Noted. This figure is now combined with other sets of regions and precise information on their definition and companion notebooks and scripts are available at the Atlas repository (Iturbide et al., 2021), which is cited in the figure caption.
82337	183	1	183	6	I think this figure would work better with a colour-coded key rather than putting the numbers on the map - in particular, I presume that the brown regions along parts of the eastern boundaries of the Atlantic and Pacific are all part of region 6 but that is not obvious from the map. [Blair Trewin, Australia]	Noted. This figure is now combined with other sets of regions and precise information on their definition and companion notebooks and scripts are available at the Atlas repository (Iturbide et al., 2021), which is cited in the figure caption.
102383	183	1	183	6	Poor colors [Philippe Tulkens, Belgium]	Noted. This figure has been merged with other sets of regions in the new Figure 4. Colours have been modified.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
55511	183	3			Figure.4: Ten oceanic regions defined by their biological activity used for the regional analysis of oceanic variables in the Interactive Atlas. Sugestion: Include the reference related to the criteria adopted for regional division [Maria del Pilar Bueno Rubial, Argentina]	Noted. Detailed information on their definition and companion notebooks and scripts are available at the Atlas repository (Iturbide et al., 2021), which is cited in the figure caption.
34175	183				Figure Atlas.4. Are these regions only know by numbers? If they have names better to indicate it in the figure. What happen with ocean areas without numbers? [Guiomar Rotllant, Spain]	Noted. Land and ocean regions are treated equally. In the revised figure numbers are only included for "problematic" regions.
44007	183				Page 183. Given the importance of East-West temperature differences such as El Niño across ocean regions, especially the Pacific and Indian oceans, it is unfortunate that the regions are so wide. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The Interactive Atlas supports the assessment done in the chapters and thus we rely on sets of regions which are used in the assessment.
110525	184	1	184	1	Figure is not self-describing. I'm also pretty sure there is an identical figure in chapter 8. The acronyms used also do not match those used in chapter 8. Considerable coordination efforts with chapters 8 and 10 required on this fiigure and may well be best to rely on the figure in chapter 8. [Peter Thorne, Ireland]	Accepted. This is now consistent with Figure 8.11
80595	184	1	184	6	This figure (Atlas.5) needs to be updated to match the latest version presented in Chapter 8 (Figure 8.12a) Why is NAM somehow defined by US state boundaries? This is not the most objective method of defining a monsoon region. [Andrew Turner, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. This is now consistent with Figure 8.11
24439	184		184		Figure Atlas.5 should include the South African Monsoon region. See WGI AR6 SOD Figure 8.12. [Akio Kitoh, Japan]	Noted. The updated definition of monsoon regions (FGD version) in Chapter 8 has been adopted.
34179	184				Figure Atlas.5: Better to include full name of abbreviations: NAM, SAM, WAM, SASM, EAM and AUSMC. [Guiomar Rotllant, Spain]	Noted. The naming and codes for the regions are taken from the original definitions in the corresponding chapters.
38381	185	1	185	4	The East Section of China-India Border is wrongly drawn and the Dotted Line of South China Sea, Nanhai Zhudao, Diaoyu Dao and its affiliated islands of China are missing in Figure Atlas.6. In order to avoid unnecessary disputes, it is suggested to delete the boundary lines from the Figure. [Yaming LIU, China]	Not applicable: The figure has been removed
110529	186	1	186	2	The right hand column should be redone using HadSST4 which takes advantage of the major ICOADS update to v3.0.1 [Peter Thorne, Ireland]	Accepted. The datasets have been updated.
82345	186	1	186	6	The vertical scale on Figure 7 bottom left is illegible but it looks like it covers the range from 15 to 45 - presumably this is thousands but this is not stated. It also doesn't make a lot of sense to speak of the number of 'stations' for SST data since most SST data are observed from mobile platforms (ships or drifting buoys) - the total number of observations, or the number of gridboxes with at least one observation during a month, makes more sense. [Blair Trewin, Australia]	Accepted. The figure has been edited changing the colour style, increasing the font size and including informative labels.
102385	186	1	186	7	It is difficult to see the dominating color (light red) from the left hand side of figure in the legend and therefore understand whether these areas are +8 (no of stations) or..? [Philippe Tulkens, Belgium]	Accepted. The figure has been edited changing the colour style, increasing the font size and including informative labels.
102387	186	1	186	7	The font is indiscernible [Philippe Tulkens, Belgium]	Accepted. The figure has been edited changing the colour style, increasing the font size and including informative labels.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
27451	186	3	186	3	This figure is quite unsightly, with a very low resolution, and is sometimes impossible to read (e.g. the horizontal and vertical axis at the bottom). Also the colors in the figure and in the color scales do not always seem to match. For example, is the color over western Europe in the left column is in the color scale? It does not seem to be the case. [Eric Brun, France]	Accepted. The figure has been edited changing the colour style, increasing the font size and including informative labels.
34181	186				Figure Atlas.7. I guess quality of figure will be improved. Add labels in the axes of bottom graphs. You do not need to put of the values, a few will be enough and will allow putting them in a bigger font and making them readable. [Guiomar Rotllant, Spain]	Accepted. The figure has been edited changing the colour style, increasing the font size and including informative labels.
44009	186				Page 186. The image quality of page is very pixelly. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. The figure has been edited changing the colour style, increasing the font size and including informative labels.
80349	187	1	187	5	What is the meaning of the oval size? The resolution of the dataset? [Paola Arias, Colombia]	Not applicable: The figure has been removed
34185	187				Figure Atlas.8. In the legend, it would be good to indicate which is the meaning of the size of the oval figures. [Guiomar Rotllant, Spain]	Not applicable: The figure has been removed
38383	188	1	188	4	The East Section of China-India Border is wrongly drawn and the Dotted Line of South China Sea, Nanhai Zhudao, Diaoyu Dao and its affiliated islands of China are missing in Figure Atlas.9. In order to avoid unnecessary disputes, it is suggested to delete the boundary lines from the Figure. [Yaming LIU, China]	Not applicable: The figure has been removed
66079	188	1	188	6	Suggest that Frame 'd' in this figure should 'mask' out the ocean. None of the other frames include the ocean; the focus is on precipitation differences over land for different datasets. The inclusion of the ocean in the frame depicting the TRMM dataset makes it difficult to see differences over land. In this figure, RMSD should be color-coded differently from the other frames. At first glance it looks like a fifth precipitation dataset, whereas it is the root-mean-squared differences among the four products. [Kushla Munro, Australia]	Not applicable: The figure has been removed
82353	188	1	188	6	It would be good to mask the TRMM panel of Figure 9 to land areas only if possible, to assist visual comparisons with the other data sets. [Blair Trewin, Australia]	Not applicable: The figure has been removed
102389	188	1	188	6	Show also the TRMM data set without water to enhance the visual comparison basis [Philippe Tulkens, Belgium]	Not applicable: The figure has been removed
82355	188	1	189	6	Citations for the data sets/versions used in Figures 9 and 10 need to be given, either in the captions or in the text. The text implies that Figure 10 is also from Juneng et al 2016 but I suspect it has been plotted by the authors? [Blair Trewin, Australia]	Not applicable: The figure has been removed
124943	188	3	188	4	The Figure 9 caption should explain panels. In particular panel f (Root Mean Square Deviation) should be labeled and explained as in Figure 7. [Trigg Talley, United States of America]	Not applicable: The figure has been removed
34189	188				Figure Atlas.9. I guess “Fig. 2” was the label of this figure in Juneng et al. (2016). This information need to be included in the new legend and erased from de Figure Atlas.9. I. [Guiomar Rotllant, Spain]	Not applicable: The figure has been removed
64733	189	0	0	0	Figure Atlas.10: Similar to Figure Atlas.9: but for Africa. Please consider the southern borders of Egypt in accordance with international agreements [Eman Abdelazem, Egypt]	Not applicable: The figure has been removed

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
87765	189	1	181	1	Figure Atlas 10: Please avoid political borders for this figure. Most of the figures of the chapter are without borders and following the AR6 approach (regional and global not at country level) [Wafae BADI, Morocco]	Not applicable: The figure has been removed
110531	189	1	189	2	NCEP reanalysis should be removed as it is a significantly out of date product - see chapter 1 discussion. No units are given on colour bars. No overall title. Images are blocky. [Peter Thorne, Ireland]	Not applicable: The figure has been removed
95927	189	3	189	3	In some global regions like Africa, users and policy makers know "rainfall" rather than precipitation. [Joseph Mutemi, Kenya]	Not applicable: The figure has been removed
34191	189				Figure Atlas.10: Similar to Figure Atlas.9: but for Africa. Please, write a proper legend for this figure. [Guiomar Rotllant, Spain]	Not applicable: The figure has been removed
64707	189				Figure Atlas.10: Similar to Figure Atlas.9: but for Africa. Please consider the southern borders of Egypt in accordance with international agreements [Eman Abdelazem, Egypt]	Not applicable: The figure has been removed
80351	190	2	190	4	It could be useful to use diffferent colors to differentiate the CORDEX regions [Paola Arias, Colombia]	Accepted. Labels have been included to identify regions.
5743	191	1	191	12	Figure Atlas.12: Please change colours, figure is too pale and not legible. [Joachim Rock, Germany]	Not applicable. This figure has been removed.
102391	191	1	191	14	when using regions, please link to a figure showing these for an enhanced overview [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
84073	191				It would be important to review the colour scheme of this Figure, for small relative bias the colours are very hard to perceive [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
84075	191				Maybe add at the caption "see Section Atlas.5.5.2.1: for the full list of modes of variability" . [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
84077	191				Because Figure Atlas 2, portraits on panel (a) AR5 reference regions and on panel (b) AR6, it would be nice if in this Figure this order was maintained. [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
84079	191				The colour scheme should be revised, it is not possible to clearly see the numbers of the oceanic regions, specially number 9 (maybe for this region na arrow pointing to it with the number more visible would help). [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
84081	191				In the figure the maps for time intervals are marked as letters (a-c), but in the caption they are indicated as numbers (1-3). [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
84083	191				shouldn't the description of the Figure that is at the bottom right side of the image be at the caption instead? [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
84085	191				It would be nice if the Figure had a title "CCSM4 for South Asia in CORDEX-CORE domain WAS-22" and just above each graph instead of "tas/pr CCS for SAS in CORDEX domain WAS" the word "Temperature or Precipitation" appeared. Also, the emissions scenario should be properly abreviated in the Figure RCP2.6/RCP8.5 instead of "rcp 26/rcp85" and should be included in the caption. [Marco Tulio Cabral, Brazil]	Not applicable. This figure has been removed.
80353	192	4	192	5	What does the color of the different regions mean? [Paola Arias, Colombia]	Not applicable. This figure has been removed.
110533	193	1	193	2	Please uncodify this so someone can understand who doesn't speak CMIP / CF but rather English [Peter Thorne, Ireland]	Not applicable. This figure has been removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82359	193	1	193	12	It would be worth dividing the panels in this figure into two parts with a vertical line to make it clear that the point markers relate to RCP2.6 or RCP8.5, and do not represent a continuum of forcings. The baseline for the climate change signal should also be stated either in the caption or the text. [Blair Trewin, Australia]	Not applicable. This figure has been removed.
102393	193	1	193	12	Legend needed -> highly confusing in current state [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
80355	193	4	193	10	It would be useful to include the symbol legends at the bottom of the figure [Paola Arias, Colombia]	Not applicable. This figure has been removed.
110535	194	1	194	2	CRU is not this complete and needs masking for where there is no constraint. See earlier comments on this product. It cannot be used without masking to those points with an observational constraint. [Peter Thorne, Ireland]	Noted. This figure has been updated aligned with Chapter 2 methodology and datasets.
27453	194	1	194	3	The hatching on global maps is too dense and fully hides the color behind. Though the information behind is not statistically significant, we recommand to make it visible by using less dense hatching, as it is already done on regional maps (i.e Figure Atlas.25:). [Eric Brun, France]	Noted. The figure has been updated and hatching has been enlightened.
82363	194	1	194	6	Given that global analyses do not require the highest spatial resolution of analysis, it is difficult to see the justification for using these data sets and not the homogenised data sets used in Chapter 2 for long-term trend analysis (HadCRUT, GISTEMP, NOAAGlobalTemp). Using those data sets would also allow the figure to be updated to 2019 as all are maintained quasi-operationally: it appears rather retrograde to only report trends for 1980-2014 when other chapters will be reporting trends to 2019 or 2020, while many regions will have sufficient data to report trends from much earlier than 1980. This also applies to regional figures (e.g. Figure 24) and Figure TS.37 in the Technical Summary. It would make sense to work with Chapter 2 on this. A good mix may well be to use ERA5 as a reanalysis dataset (replacing EWEMBI for assessing of observational trends - while noting that EWEMBI has its own purpose for bias assessment/adjustment of models), keep Berkeley Earth and introduce HadCRUT5 (which should be available in a near-globally complete format by FGD, and is already available to IPCC). In general the potential for making use of reanalyses, especially in more data-sparse regions, is generally being under-explored in this chapter. The choice of precipitation data sets is also somewhat limiting - whilst having a common analysis period is useful, many regions will have useful precipitation data from much earlier than 1980, and (given the large interannual and interdecadal variability of precipitation in many parts of the world) a lot of useful regional-scale long-term information is being missed here. [Blair Trewin, Australia]	Noted. This figure has been updated aligned with Chapter 2 methodology and datasets.
24303	194	1	194	9	In Figure Atlas.13, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
32821	194	1	194	9	In Figure Atlas.13, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
33151	194	1	194	9	In Figure Atlas.13, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
66081	194	1	195	10	Suggest clarification. The precipitation maps on both pages suggest a decrease in precipitation in East Antarctica, seemingly in conflict with the text on p. 96, ' the surface mass balance in East Antarctica showed strong interannual variability over recent decades, masking any possible existing trends'. This also may be in conflict with the Atlas itself which suggests a slightly increasing trend in precipitation over Antarctica as a whole (possibly not over East Antarctica). Some recent literature also suggests increasing precipitation over East Antarctica (e.g. Zwally et al. 2015). Suggest reconciling these seemingly conflicting results, or noting the conflicts, or covering the issue in the ocean and cryosphere chapter. [Kushla Munro, Australia]	Noted. Figure 14 has been removed and Figure 13 has been updated and aligned with Chapter 2 methodology and datasets. The period used for recent-past in the Atlas is 1980-2015 (slightly different from the 1980-2020 period used in Chapter 2) explaining small differences.
27455	194	8	194	8	We recommend specifying how the significance of the trends is estimated. We think that it is important to have this information. [Eric Brun, France]	Accepted. Information on the methodology to compute trends has been included (and coordinated with Chapter 2)
24305	195	1	195	9	In Figure Atlas.14, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
32823	195	1	195	9	In Figure Atlas.14, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
33153	195	1	195	9	In Figure Atlas.14, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
102395	195	1	195	10	Why 66% threshold and 80% elsewhere (e.g. fig 15) [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
24307	196	1	196	10	In Figure Atlas.15, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Not applicable. This figure has been removed.
32825	196	1	196	10	In Figure Atlas.15, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
33155	196	1	196	10	In Figure Atlas.15, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66281	196	1	196	14	Figure Atlas 15: model agreement is computed according to Nikulin et al., 2018, different from CH12. Figure Atlas 19 model agreement is shown using the 2/3 criteria. [Erika Coppola, Italy]	Not applicable. This figure has been removed.
102397	196	1	196	14	Why a 80% threshold and 66% elsewhere (fig 14) [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
102399	197	1	197	13	Years in headings [Philippe Tulkens, Belgium]	Noted. The figure has changed but informative headings/titles have been included in the updated figure.
35151	197	5	197	11	Figure Atlas.16 is not clear for which RCP is modeled a global mean warming level of 2°C [Lilia Taranu, Republic of Moldova]	Noted. The figure has changed but informative headings/titles have been included in the updated figure.
5059	197		197		Figure Atlas.16: Subtitle inconsistency: top right image should include 'RCP4.5' in the title. [Martina Stockhause, Germany]	Not applicable. Panels have changed.
102401	198	1	198	5	State what the shaded span is (95% confidence level?) [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
80361	198	3	198	4	This figure needs to be better described. What do the gray and blue shades mean? What do the dotted lines mean? [Paola Arias, Colombia]	Not applicable. This figure has been removed.
24309	199	1	199	12	In Figure Atlas.18, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Not applicable. This figure has been removed.
32827	199	1	199	12	In Figure Atlas.18, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Not applicable. This figure has been removed.
33157	199	1	199	12	In Figure Atlas.18, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Not applicable. This figure has been removed.
102403	199	1	199	14	Why a 80% threshold and 66% elsewhere (fig 14) [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
80363	199	5	199	12	The hatching over the dark green areas is not easily observed. Maybe use white hatching over these areas? [Paola Arias, Colombia]	Not applicable. This figure has been removed.
102405	200	1	200	10	Add subfigure headings [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
70983	200	4	200	8	I still find the phrase "less than six out of the nine models agree on the sign of change" very odd (I thought I commented on this for the FOD). Since there is no assessment of statistical significance, all models must have either a positive or a negative change. Hence if, say, two models agree on the sign of change (which is less than six), it follows that the other seven must agree on the other sign of change. Is the region hatched in the case, or not? The only sensible interpretation that I can imagine is that hatching indicates where five models do one thing and four do another, and that non-hatching includes all other possibilities (6-3, 7-2, 8-1, and 9-0), but if I've done my math correctly (quite likely not), there is a 50% chance of a false alarm using this method. [Theodore Shepherd, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. This figure has been removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
70985	200	4	200	8	We are submitting a manuscript (G Zappa, E Bevacqua and TG Shepherd: “The real mean signal to noise of multi-model climate change projections”) to Int. J. Climatol. in which we propose a new methodology to diagnose the robustness and magnitude of future projected changes from multi-model ensembles. Rather than basing the stippling and hatching of spatial maps on the signal to noise of the multi-model mean response - as it is standard in the IPCC, and in this chapter - our proposed approach evaluates the mean forced signal-to-noise of the individual model responses. This enables us to make statements on regions where a large future change compared to year-to-year variability is plausible, regardless of whether the mean signal is robust across the ensemble. While previously proposed alternative approaches were also able to discriminate between regions with a small response from those with large uncertainty, this method has the benefit of being as simple, and with as few free parameters, as the standard IPCC approach, while explicitly providing information that is relevant for risk assessment, i.e. the potential for a large change. For mean precipitation changes, we find that the majority (58% in surface area) of the unmarked regions and part (18%) of the hatched regions from the AR5 hid climate change responses that are on average large compared to the year-to-year variability. Based on the newer CMIP6 ensemble, we identify that a considerable risk of large annual-mean precipitation changes, despite the lack of a robust projection, exists over 21% of the global land area, mostly including Central America, Northern South America (including the Amazon), Central and West Africa (including parts of the Sahel) and the Maritime continent. You may contact g.zappa@isac.cnr.it for the submitted version of this paper. [Theodore Shepherd, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. This figure has been removed. Note that the representation of robustness/uncertainty have been revised and harmonized across the whole WGI report, as described in the Cross Chapter Box Atlas.1.
44011	200				Page 200. If the images were above one another we could see fine detail better. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. This figure has been removed.
79469	201	1	201	1	I think the regional figures such as Atlas.20 are great, well done! [Alejandro Di Luca, Australia]	Noted. Thank you.
105139	201	1	201	16	This is a neat figure for the SPM! [Masa KAGEYAMA, France]	Noted. Thank you.
3691	202	1	202	1	It seems an oversight not to have included Eastern Africa rainfall in this figure. The connection between the short rains and IOD and ENSO is very well established, the 2019 short rains a dramatic xample of the IOD effect [Declan Finney, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The purpose of this figure was to illustrate the complexity of the influence multiple modes of variability can have on regional climate and not to be comprehensive. A more comprehensive treatment has now been added in Table Altas.1.
31633	202	1	202	1	This figure is excellent. It could be useful to consider extreme coastal water levels as well, e.g. using Marcos et al 2015 and other papers. https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015JC011173 [Gonéri Le Cozannet, France]	Noted and many thanks. Also thanks for the reference but the figure is taken from a specific publication and was not created for the chapter and thus there was no opportunity to add additional information.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66083	202	1	202	10	Suggest clarification. It is not clear what this figure adds to the Atlas chapter. The climate drivers such as ENSO, SAM, etc. are mainly dealt with in other chapters. Suggest the Atlas chapter be simplified by taking this figure out. [Kushla Munro, Australia]	Rejected. This figure illustrates an important point about the influence multiple modes of variability can have on regional hazards and thus their relevance to climate risk and resilience. It is now complemented by Table Altas.1 on modes of variability which are now introduced as important drivers of regional climate in the regional assessments in subsequent sections.
80365	202	4	202	9	What is the rationale to show these particular regions and no others? For instance, the influence of ENSO in South America (not only Brazil) is very clear. Check review by Cai et al. (2020; Nature Reviews: https://www.nature.com/articles/s43017-020-0040-3?proof=trueMay) or Poveda et al. (2020; https://www.frontiersin.org/articles/10.3389/feart.2020.00162/full). Also, SAM and PDO have a clear influence on precipitation over central Chile, explaining the megadrought observed in this region during the last years (Boisier et al., 2016): https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2015GL067265 [Paola Arias, Colombia]	Noted. The purpose of this figure was to illustrate the complexity of the influence multiple modes of variability can have on regional climate and not to be comprehensive. A more comprehensive treatment has now been added in Table Altas.1.
102407	203	1	203	11	Show years in headings -> studies diverge between 2081-2100 / 2071-2100 (and sometimes 2099) [Philippe Tulkens, Belgium]	Noted. This figure has been updated and informative headings have been included according to the comment.
80371	203	5	203	9	Something like this is needed in this figure caption: "Polygons represent the oceanic regions defined in Figure Atlas.4" [Paola Arias, Colombia]	Noted. Ocean biomes are introduced as the default regions for oceanic variables.
66285	204	1	204	12	Bias adjustment shows major differences in the tropical regions like for example in central Africa where it is well known that station density is really low. Bias adjustement should be shown only where there is enought confidence in the observations [Erika Coppola, Italy]	Not applicable. This figure has been removed.
102409	204	1	204	15	Years/periods in heading(s) [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
82029	204	12	204	12	Please reconsider the term 'bias correction'. Better use 'bias adjustment'. Check also in IA [Swantje Preuschmann, Germany]	Not applicable. This figure has been removed.
3693	205	1	205	1	It is odd to include so much ocean in the CEAF averaging box. It think this makes it fairly useless. Are only land grid cells used in the averaging? This would make more sense and should be stated in the caption if so. [Declan Finney, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Results are for land only. It has been included in the caption.
24311	205	1	205	4	In Figure Atlas.24, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
32829	205	1	205	4	In Figure Atlas.24, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
33159	205	1	205	4	In Figure Atlas.24, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
124945	205	1	242	4	Regional Figures 24, 25, 27, 29, 30, 33, 34, 37, 39, 40, 42, 48, 48, 49 follow a similar layout. Panels a-f include results only for RCP8.5 (CMIP5) and SSP5-8.5 (CMIP6). However it is important for policymakers to see a range of RCPs in order to judge the sensitivity of changes to human activity. Include at least two RCPs for comparison. Also, to better compare subregions, the y-axes of the regional scatterplots h-n should have consistent y-axes and the line of zero change should be highlighted. [Trigg Talley, United States of America]	Noted. The regional figures mentioned have been updated and they now fulfil the mentioned requirements.
24313	209	1	209	3	In Figure Atlas.27, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Iman BABAEIAN, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
32831	209	1	209	3	In Figure Atlas.27, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [sadegh zeyaeyan, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
33161	209	1	209	3	In Figure Atlas.27, The northern border of the ARP (Arabian Peninsola) covers almost half of Iran. Geographically, Iran is not part of ARP; therefore, the northern border of ARP should be limited to the southern border of the Persian Gulf [Sahar Tajbakhsh Mosalman, Iran]	Accepted. The borders of ARP and WCA have been changed in the updated version of AR6 reference regions as suggested
38385	211	1	211	9	The East Section and West Section of China-India Border is wrongly drawn and the Dotted Line of South China Sea, Nanhai Zhudao, Diaoyu Dao and its affiliated islands of China are missing in Figure Atlas.28. In order to avoid unnecessary disputes, it is suggested to delete the boundary lines from the Figure. [Yaming LIU, China]	Taken into account. Figure has been revised and does not include country borders but only AR6 reference regions
102411	211	1	211	11	Busy figure -> at least enlarge [Philippe Tulkens, Belgium]	Taken into account. Figure has been revised
44013	211				Page 211 This has very crammed images with characters too small to read above wide open space. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account. Figure has been revised
34251	212				Figure Atlas.29. Check unit format: “ºC/decade” and “%/decade”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
38387	215	1	215	6	The East Section of China-India Border is wrongly drawn and the Dotted Line of South China Sea, Nanhai Zhudao, Diaoyu Dao and its affiliated islands of China are missing in Figure Atlas.31. In order to avoid unnecessary disputes, it is suggested to delete the boundary lines from the Figure. [Yaming LIU, China]	Not applicable. This figure has been removed.
34257	215				Figure Atlas.31. Title above the graphs could be explained in the legend although it might be common for CORDEX experts (eg. Tm2). [Guiomar Rotllant, Spain]	Not applicable. This figure has been removed.
38389	216	1	216	6	The West Section of China-India Border is wrongly drawn and the Dotted Line of South China Sea, Nanhai Zhudao, Diaoyu Dao and its affiliated islands of China are missing in Figure Atlas.32. In order to avoid unnecessary disputes, it is suggested to delete the boundary lines from the Figure. [Yaming LIU, China]	Accepted. Country boundaries have been removed.
102413	216	1	216	8	Poor resolution and colors - difficult to read [Philippe Tulkens, Belgium]	Noted. Colours have been revised.
44015	216				Page 216 Again bad space use. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. No clear indications of the suggested changes.
34273	217				Figure Atlas.33. Check unit format: “%/decade”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66085	219	1	220	8	Suggest clarification on the figure showing the Australasian regions (Figure Atlas.34). This comment applies to all the figures in the Atlas chapter showing the same graphs for each area. The graphs (frames g through j) show regional anomalies of temperature and precipitation for different levels of global warming. Why aren't there maps showing the spatial anomalies at these different levels of global warming? This is what policymakers need to know: if/when we get to 1.5, 2, etc. degrees of global warming, what are the implications for my region? [Kushla Munro, Australia]	Noted. The figure has been revised substantially and now focus on averaged information over the reference regions including changes across time-periods and scenarios and global warming levels. Further information is available in the Interactive Atlas including maps with changes across time-periods and scenarios and global warming levels.
66087	219	1	220	8	Suggest clarification on the figure showing the Australasian regions (Figure Atlas.34). This comment applies to all the figures in the Atlas chapter showing the same graphs for each area. In the Delta-P(%) versus Delta-T (degC) plots across the bottom rows of all these figures, it should be made clear in the axis labels and in the captions: is this regional temperature as in frames (c) and (e) and the upper row of plots in (g) through (j), or is it global Delta-T (GWL) as plotted in the upper rows of graphs in (g) through (j).? This has the potential to cause confusion in its current form. [Kushla Munro, Australia]	Noted. The figure has been revised substantially including detailed information on the information presented.
66089	219	1	220	8	Suggest clarification on the figure showing the Australasian regions (Figure Atlas.34). This comment applies to all the figures in the Atlas chapter showing the same graphs for each area. The time interval for observed change in T and P (frames a and b) differs from the historical baseline period against which the T and P anomalies are plotted and mapped (1995-2014). This shift in baselines, just within one figure, also has potential to cause confusion. These need to be distinguished in the caption: one is a baseline period over which averages are calculated for comparison to projections; the other is a 24-year period over which decadal trends are presented. [Kushla Munro, Australia]	Noted. The figure has been revised substantially and all changes are now referred to the recent-past baseline (1995-2014), including also the off-set for preindustrial conditions (1850-1900)
82437	221	1	221	9	Australian temperature and rainfall trend maps in this figure are for the period to 2018, not 2019 as stated in caption (presumably they will be updated for FGD). I generally prefer to avoid Australian rainfall trend maps starting in 1950 because of the influence of the wet, La Nina-dominated 1950s; 1960 may be a better starting point in that respect. [Blair Trewin, Australia]	The underpinning datasets and the map plots have been updated and now the trend maps show the period 1960 to 2019
66091	221	1	221	10	Suggest this figure be adjusted to form two separate figures, or revised into a consistent presentation for both Australia and New Zealand, including consistent baseline periods and linear trend intervals. Currently, the figure uses a different baseline period from the previous figure (Figure Atlas.34) for Australia, two other time periods for estimating trends, both different from each other and from the projections figure on the previous page. Also the figure shows a temperature anomaly map for Australia, and not for New Zealand. Furthermore the mapped precipitation anomalies are seasonal for New Zealand and annual for Australia. [Kushla Munro, Australia]	Figure has undergone major revision, and now shows consistent time periods and seasons within the figure. The different presentation (map for Australia but stations for New Zealand) is unavoidable as this is what the dataset providers support. The motivation for the longer time period compared to other figures is given in the text.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
81671	221	2	221	2	The plots of temeprature and rainfall trends should be for a consistent time period, seasons and colour scale [Michael Grose, Australia]	Figure has undergone major revision and all these elements are now consistent
34229	221				Figure Atlas.28. It is impossible to read the axes labels. Maybe figures “a” to “l” need to be bigger. [Guiomar Rotllant, Spain]	Axis labels have been enlarged as part of major revision to the figure
34293	221				Figure Atlas.35. The font from the labels under maps from Australia and in their scales are too small to be able to read them. Check unit format: “%/decade”, “%/yr” and “mm/decade”. [Guiomar Rotllant, Spain]	Noted. This figures has been updated and fonts enlarged.
34295	223				Figure Atlas.37. Check unit format: “%/decade” and “ºC/decade”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
102415	225	1	225	11	Small font and circles in map. Difficult to read/comprehend. [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
34301	225				Figure Atlas.38. Improve labels inside the figures. Title abbreviations need to be explained. Scales need to be bigger to be able to read them. [Guiomar Rotllant, Spain]	Not applicable. This figure has been removed.
5745	228	1	228	21	Figure Atlas.40: Please, for better understanding the content of this figure, change order of panels in sub-figure a) and b) so that all precipitation and all temperature-related panels are in one row, respectively. [Joachim Rock, Germany]	Accepted. Figure is redrafted (now Atlas.24)
7389	228	1	229	8	Figure Atlas.40 is very complex and even for an expert difficult to understand. At the very least, I suggest a clear visual separation between the two global warming levels on the one hand and the RCP-based projections on the other hand in subfigures (g) to (j). Furthermore, in line 21, "six projected" needs to be replaced by "12 projected". [Hans-Martin Füssel, Denmark]	Accepted. Figure is redrafted (now Atlas.24)
34317	228				Figure Atlas.40. Check unit format: “%/decade” and “ºC/decade”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
102417	230	1	230	13	when using regions, please link to a figure showing these for an enhanced overview [Philippe Tulkens, Belgium]	Accepted. Figure is redrafted (now Atlas.24)
87767	230	5	230	5	Figure Atlas 41: do you mean the european part of MED? Or North Africa+ Southern europe [Wafae BADI, Morocco]	Taken into account. Results are for the entire MED box, as for every region. The discussion of spatial heterogeneity within the MED box is included in the discussion of the observational trends in this section
34321	230				Figure Atlas.41. Although evident, I will include the abbreviations in the legend: “Regional mean changes in seasonal mean temperature (T) and precipitation (P) for…”. Check unit format: “%/K” and “K/K”. [Guiomar Rotllant, Spain]	Accepted. Figure is redrafted (now Atlas.24)
110623	231	2	231	2	CORDEX is shown on the Regional boxplot legend - but CORDEX is not plotted on any of the panels. This is confusing - but perhaps CORDEX is going to be added to the figures? This seems true for all similar figures in this chapter. [Rachel McCrary, United States of America]	Accepted. CORDEX results have been added in the final version.
34329	231				Figure Atlas.42. Check unit format: “%/decade” and “ºC/decade”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
102419	233	1	233	8	Write where we are in the world despite lat/lon -> the colors overrule the coastline - it seems North America. [Philippe Tulkens, Belgium]	Accepted. Included mention to North America.
34331	233				Figure Atlas.43. Check unit format: “mm/yr”. In the figure, in the legend it is correct. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
102421	234	1	234	5	Write "North America" in caption [Philippe Tulkens, Belgium]	Accepted. Included mention to North America.
5065	234				Figure Atlas.44: Orientation of numbers on legend [Martina Stockhause, Germany]	Accepted. Changed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
34339	234				Figure Atlas.44. Change text orientation in scales. Check unit format: “mm/day”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
5747	235	4	235	11	Figure Atlas.45 b): Please change colours, figure is too pale and not legible. [Joachim Rock, Germany]	Not applicable. This figure has been removed.
55515	235	7			Figure Atlas.45 Pannel b. Improve the quality of the map? [Maria del Pilar Bueno Rubial, Argentina]	Not applicable. This figure has been removed.
110537	236	1	236	2	Thev font size is far too small to hope to be legible on panel titles but particularly the colour bars. Title is not self-describing [Peter Thorne, Ireland]	Not applicable. This figure has been removed.
5749	236	1	236	6	Figure Atlas.46: Please change colours, figure is too pale and not legible. [Joachim Rock, Germany]	Not applicable. This figure has been removed.
102423	236	1	236	8	Enlarge -> hard to read [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
34345	236				Figure Atlas.46. Increase font in the title of each map. [Guiomar Rotllant, Spain]	Not applicable. This figure has been removed.
44017	236				Page 236. Ditto [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. This figure has been removed.
34355	239				Figure Atlas.48. Although evident, I will include the abbreviations in the legend: “Mean observed trends of annual mean surface air temperature (T) and precipitation (P) for…”. Check unit format: “%/decade” and “ºC/decade”. [Guiomar Rotllant, Spain]	Not Applicable. Figure has been revised substantially and does not include temperature and precipitation trends
110539	241	1	241	2	You already showed this exact same figure [Peter Thorne, Ireland]	Noted. This figures was duplicated and has been removed.
80389	241	3	241	5	The region shown in the figure needs to be mentioned in the caption. This applies for all the other figures. [Paola Arias, Colombia]	Not applicable. This figures was duplicated and has been removed.
34367	241				Figure Atlas.49. Although evident, I will include the abbreviations in the legend: “Mean observed trends of annual mean surface air temperature (T) and precipitation (P) for…”. Check unit format: “%/decade” and “ºC/decade”. [Guiomar Rotllant, Spain]	Not applicable. This figures was duplicated and has been removed.
102425	243	1	243	8	Could look better -> Powerpoint look [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
34371	243				Figure Atlas.50. This figure need further explanation. [Guiomar Rotllant, Spain]	Not applicable. This figure has been removed.
102427	244	1	244	16	Seems to have a low resolution and/or needs a higher contrast [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
27457	245	1	245	6	We recommend to update the figure based on the published version of the paper. [Eric Brun, France]	Not applicable. This figure has been removed.
102429	245	1	245	8	Opposes many other figures by being very "non-busy". It is a contrast. [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
35153	245	4	245	6	Figure Atlas.52 In figure is written GCMs, instead of an ensemble of RCMs (green) as in legend, and it is not clear what is the difference between an ensemble of RCMs and RCMs? [Lilia Taranu, Republic of Moldova]	Not applicable. This figure has been removed.
102431	246	1	246	10	Seems to have a low resolution and/or needs a higher contrast [Philippe Tulkens, Belgium]	Noted. The figure has been updated and provided with higher resolution.
69023	247	0	247	0	In figure, change 'gribox" to "gridbox" [Seth McGinnis, United States of America]	Not applicable. This figure has been removed.
102433	247	1	247	15	Seems to have a low resolution and/or needs a higher contrast [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
102435	250	1	250	13	Seems to have a low resolution and/or needs a higher contrast [Philippe Tulkens, Belgium]	Not applicable. This figure has been removed.
44019	250				Page 250. The insert at the lower right is blocking what I might want to see behind the other image. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. This figure has been removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
5077	02gxTsDM				IA: I selected dataset 'CMIP6' historical. The figure caption says AR5. This is inconsistent; scatter plot does not show data. [Martina Stockhause, Germany]	Noted. The text "AR5" referred to the baseline period selected (baseline labels have been edited to leave only the period with no text). There was a bug that produced an empty scatter plot. It has been fixed in the final verson.
80055	0CFjGyGZ				IA: It should be explained what is the meaning of the stripes visible in some regions on maps like that one. [Heike Wex, Germany]	Accepted. Climate stripes are defined in the guidance material.
40403	0CFPoEvz				IA : In general, when charts are available (time series, scatter plot, etc) the Y axis go over the chart window which make it harder to read it. [TSU WGI, France]	Accepted. The layout has been updated.
40407	0CFPoEvz				IA : The digital map would be much nicer and easier to look at and work on if it could be extended to a full screen view or at least a bigger view, the small window is a bit restrictive for a world map [TSU WGI, France]	Accepted. An option has been included for full screen view.
106115	0HHriKJ7				IA For the ocean, the Atlas do not allows to get changes of surface salinity (SSS) and sea level (neither absolute nor relative). I know that the latter is particularly problematic....but is there any plan to add these two variables? Is there any plan to add values integrated across depth (e.g. mean temperature of the uppermost 100 meters) [Piero Lionello, Italy]	Noted. Information on sea level rise has been included in the final version.
5639	0MkLcKjG				IA: The layout of the map and timeseries plots means that the timeseries is too cramped vertically. [Louise Wilson, Australia]	Noted. Layouts have been revised but the general structure of the application has been maintained.
69039	0uaboK5q				IA: The y-axis title on the scatterplots often overlap with the y-axis labels. Also, it often extends above the plotting region into the regional analysis controls. [Seth McGinnis, United States of America]	Accepted. The layout has been updated.
102437	0ZJxez0A				IA: Easy to share via social media channels; but LinkedIn could be a good addition [Philippe Tulkens, Belgium]	Accepted. LinkedIn has been included.
89567	2ZmygamZ				IA: I tried to view sample maps under CORDEX Africa. It seems that the function for downloading the plots, stripes, etc. as pdf or png are not yet functional? [Faye Abigail Cruz, Philippines]	Noted. The new version has fixed several problems related to exporting/downloading results.
124947	342an9Qb		342an9Qb		In the Antarctica view for the Atlas, the mean temperature is very hard to read since the scale for the whole map (up to 37 degrees). Would there be a way for the viewer to change the map scales to better show the seasonal changes? [Trigg Talley, United States of America]	Accepted. An option has been included for selecting the scale of the plot (minimum and maximum value).
9893	3IqUfgiy				IA: If not already planned, it would be useful to have the climate indices defined in Table AVII.1 calculated for Observations and Climate models (historical & projections) [Véronique Mariotti, France]	Noted. Annex VI (former Annex VII) indicates the indices and CIDs which are included in the Interactive Atlas
26085	3qjaiU9E				IA: The legend of the plot overlaps other parts of the page. [Don Alfonso Pino Maeso, Spain]	Accepted. The layout has been updated.
82563	4Eu034A7				IA: at present observational trends are available only for 1980-2014. It would be useful to have alternative trend periods available for those data sets which are long enough to support them (e.g. Berkeley Earth). [Blair Trewin, Australia]	Accepted. An additional period (1961-2015) has been included.
26087	4YwcTX35				IA: The scatter plot is difficult to understand and overlaps other parts of the graph [Don Alfonso Pino Maeso, Spain]	Accepted. The layout has been updated.
81999	5H7w9Y7q				IA: In the grid-box-value pop-up, 'value' is separated by a comma instead of dot [Swantje Preuschmann, Germany]	Not Applicable. It cannot be reproduced. It might depend on the web browser locale configuration

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109213	5lH6yp1B				The hatching used here for non-sig change in precip (I assume, haven't found a key describing it yet) is really tough on the eyes and much more salient than the areas with significant change -- I suggest changing this, dimming it, and adding a key alongside the color legend on the side (which is very useful) [Steph Courtney, United States of America]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
66491	5Qqk7Xei				IA.: A map is empty, a bug? [Barbara Barzycka, Poland]	Accepted. The bug has been fixed.
106113	5swNK6fj				IA Possibly this is a general comment for the whole interactive Atlas. When I click on the map for getting the actual local value (I have done this for several locations) , I get a value of precipitation decrease with 4 digits after the comma (units: mm/month). This provides a false impression of very high precision. I suggest 1) to print a number of digits consistent with the precision of the value 2) to add an uncertainty range (e.g. P10-P90 as it is done for the regionally integrated values) [Piero Lionello, Italy]	Noted. The number of decimal digits of the results has been updated (typically including a single decimal digit).
38625	5yuu4XDz				IA: I could not reproduce Figure Atlas.55. There is no a variable called "Accumulated precipitation Relative delta" [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Rejected. "Relative delta" and "Relative change" are synonyms
111545	65CmKDtp				IA: There is no information on the map Ensemble mean - Mean temperature (T) Trend (deg C) - 1980-2014 - March to May [Volodymyr Osadchy, Ukraine]	Accepted. The bug has been fixed.
115573	6BM661s1				It will be great to make a dynamic legend that can change in function of the wiewed area and zoom [Hicham EZZINE, Morocco]	Rejected. We have prioritised developments that help to support assessment done in the report.
82015	6Dap0Ibb				IA: (Content) Inconsistency in the selection of Season-Tab: For example, CDD shows "1,917.9329 degreedays" over Africa. That would be about 5.25 years. The subtitle promises an annual value: "CMIP6 - Cooling degree days (CDD) Change (degreedays) - Long Term (2081-2100) SSP5 8.5 AR5 (1986-2005) - Annual". Therefore, I would expect the annual average over 20 years. [Swantje Preuschmann, Germany]	Rejected. Cooling degree days are not equivalent to days and those values correspond to normal annual values in this region.
93843	6MH3zm2R				IA: On Chrome, when the cursor hovers over the annual cycle plot, an "error" message shows instead of the plot. [Quentin Lejeune, Germany]	Rejected. We cannot reproduce the issue with recent browser versions.
93845	6MH3zm2R				IA: On all browsers, the scatter plot is hard to read due to the unproportionately big points and legends being popped up covering the entire plot. [Quentin Lejeune, Germany]	Accepted. The layout has been updated.
93847	6MH3zm2R				IA: It is not immediately clear that users can select multiple land masks. [Quentin Lejeune, Germany]	Rejected. The comment does not provide information on the suggested changes.
110625	6NWj44XE				IA: The metadata for this figure discusses what the atching patterns mean - however there are no hatches on the figure. I think a statement could be added for what it means when there is no hatcing to increase clarity. [Rachel McCrary, United States of America]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
66135	7bRGIQpy				Suggest adding a map projection: Robinson, centred on the Pacific. [Kushla Munro, Australia]	Accepted. Done
66483	7F5Sppq5				IA.: An empty map - a bug? [Barbara Barzycka, Poland]	Accepted. The bug has been fixed.
26091	7zeMQjsl				IA: The acronyms used in the time series should be explained [Don Alfonso Pino Maeso, Spain]	Accepted. Acronyms for percentiles are spelled out the first time they are used.
44271	8Ai1DKHq				IA: The geographic coordinates (latitude, longitude) of the corresponding pixel (user defined by mouse click) could also be included in the information provided in Table Summary, at least for CORDEX datasets. [Nektarios Chrysoulakis, Greece]	Rejected. The table summary provides information for regions, not for gridboxes.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66961	8Qh7V9wi				IA: I also do local climate change assessments in the state of Massachusetts, US. The Atlas would be an absolutely incredible resource IF there were another set of regions that subdivided the eastern North America into a northern part and a southern part. As is, it is completely unusable because it combines two completely different and distinct climatological regions: subtropical in the south and midlaitude in the North. Different climates, different seasonal cycles, different observed trends, different projections. If I knew that anyone were using that reigon, I would have to recommend against it. I know the current regions are already set and correspond to a lot of existing work but PLEASE, PLEASE consider adding another layer of map regions (as already done for the monsoon regions). I imagine the same comment applies to eastern Asia and likely other regions. [Mathew Barlow, United States of America]	Rejected. A limited number of region sets is included, supporting the assessment and choices made in the chapters. We are sorry about the limited options.
3989	8rpSOCSR				what means the hatched markings? [Sabine Baumann, Germany]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
3991	8rpSOCSR				generally, the handling is not self-explinatory. Not clear how to show the figure/diagram at the bottom. In my case, it appeared sometimes and sometimes not [Sabine Baumann, Germany]	Accepted. The bug has been fixed.
89571	9nUW2CiM				IA: I was just wondering about the choice on the significant figures of the variables displayed (decimal up to the ten thousandths), if this is aligned with the format used in the other chapters. [Faye Abigail Cruz, Philippines]	Noted. The number of decimal digits of the results has been updated (typically including a single decimal digit).
81971	9O1dUr3E				IA: (Usefulness) Dear Atlas Team, overall congratulations on the atlas. It turned out great and you can see that a lot of work was invested. I keep my fingers crossed that sufficient resources and capacities are available so that this atlas will have a lasting impact. [Swantje Preuschmann, Germany]	Noted. Thank you for the encouraging comments.
69051	9vvlCpJL				IA: The "Show Metadata" control only works on the default map. If you change the dataset, variable, period, or season, it no longer does anything. [Seth McGinnis, United States of America]	Accepted. The metadata control is now fully operational.
111533	9YrW7zIv				IA: For scatter plots pale blue and dark blue are not too much distinguished in figures. Maybe this pale blue is better change to green or pale green [Volodymyr Osadchy, Ukraine]	Noted. Colours have been selected following the IPCC style guidelines.
89551	a4deuhnP				IA: May be helpful to add an icon that allows the user to go back to the homepage (or do a refresh), and a Frequently Asked Questions tab? [Faye Abigail Cruz, Philippines]	Accepted. A Home link has been included. FAQs have been included in the documentation.
89555	a4deuhnP				IA: When I click on the icon to get local information (third from the bottom), for example over Australasia and southern South America, the text display looks "crowded". This doesn't seem to happen to the other areas. [Faye Abigail Cruz, Philippines]	Rejected. We cannot reproduce the issue with recent browser versions.
89557	a4deuhnP				IA: It might be helpful to have an option to add lat/lon information/grids over the maps, especially when downloaded as an image. [Faye Abigail Cruz, Philippines]	Accepted. An option to visualize lon/lat grids have been included.
89559	a4deuhnP				IA: Since the map can be moved around on the screen, perhaps add a button that helps re-center the map ? [Faye Abigail Cruz, Philippines]	Rejected. We have prioritised developments that help to support assessment done in the report.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
79639	a96Tg0K0				IA: I have been enjoying to use the ATLAS. It's a great platform. However, it is sometimes challenging to understand the accronyms for the models I am not very familiar with. Specially, there are a lot of model names and values in s floating label shown as the curser moves. [Rui Cheng, United States of America]	Noted. We have tried to simplify acronyms but have not solution for the names of models.
64731	all	0	0	0	The atlas in general simulation of the model is very good, but we have always met a cartographic problem in terms of gradual coloring in interpretation and can now be improved with the aim that the atlas readers to understand climate change are more popular scientifically and publicly among people and here are simulation models the final exit does not show between the degree of color a clear difference to climate change but rather to consider The map may have a weak and ineffective change in a way that calls for importance, but basically the opposite, there are programs to improve that outside the model or adjust the output in a higher technical cartography to reach the intended target of the atlas. The result is generally close in Regional Downscaling "Africa, for example" [Eman Abdelazem, Egypt]	Not applicable. There is no clear suggestion in the comments for changes in the Atlas.
64705	all				The atlas in general simulation of the model is very good, but we have always met a cartographic problem in terms of gradual coloring in interpretation and can now be improved with the aim that the atlas readers to understand climate change are more popular scientifically and publicly among people and here are simulation models the final exit does not show between the degree of color a clear difference to climate change but rather to consider The map may have a weak and ineffective change in a way that calls for importance, but basically the opposite, there are programs to improve that outside the model or adjust the output in a higher technical cartography to reach the intended target of the atlas. The result is generally close in Regional Downscaling "Africa, for example" [Eman Abdelazem, Egypt]	Not applicable. There is no clear suggestion in the comments for changes in the Atlas.
5079	aS64psDG				IA: download file as GeoTIFF has a png file extension; opening the file with irfanview requires changing the extention to tif. Title, legend missing on exported image. [Martina Stockhause, Germany]	Accepted. The bug has been fixed.
66137	b51CZ1Ft				Suggest investigating. Currently the observations do not produce a plot when a region is selected (although it does work if there's already a plot of the projections). [Kushla Munro, Australia]	Accepted. The bug has been fixed.
69027	bG3Qwhv7				IA: If you select "CORDEX Antarctica" for the dataset, the map projection automatically switches to Polar Stereographic (South), but changing the dataset to northern hemisphere region (e.g., CORDEX Europe) does not switch the projection back to Robinson. [Seth McGinnis, United States of America]	Accepted. Automatic change of projection has been disabled.
69041	bI3q0bbT				IA: CORDEX North America and CMIP5 are missing data for one or more simulations in the stripe plot view for regions in North America. Not sure if this is an error, or if the data just hasn't been loaded into the Interactive Atlas yet. [Seth McGinnis, United States of America]	Accepted. The bug has been fixed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
69043	bI3q0bbT				IA: Using the Safari browser, image files generated by the Export PNG button are named "example.com" instead of something like "CMIP5 - Accumulated precipitation (PR) (mm_month) - AR5 (1986-2005) Historical AR5 (1986-2005) - Annual (W.North-America)_climate_stripe.png" (Their contents are fine if you manually rename them.) [Seth McGinnis, United States of America]	Accepted. The bug has been fixed.
81981	BtqcqvfD				IA: (Development) If you click through Dataset/Model Projections, the projection does not jump back to Robinson after clicking CORDEX-Antarctica. [Swantje Preuschmann, Germany]	Accepted. The bug has been fixed.
80053	bvTKJanp				IA: A hint that MUCH more information can be obtained by clicking on separate regions should be written somewhere clearly visible - maybe in a pop-up-window in the beginning? [Heike Wex, Germany]	Noted. This is explained in the "guidance" and guided tour documentation included in the final version
111531	BxMhL28d				IA: Savng in pdf and png formats resulted in unusable files that any my editor can view [Volodymyr Osadchy, Ukraine]	Accepted. The bug has been fixed.
5119	c83Xt1r1				IA:Why CMIP6 does not include SSP2 4.5 for variable maximum of maximum temperatures? There is figure 11.1 (p.238, Chapter 11: Weather and climate extreme events in a changing climate), where projections of index maximum of maximum temperatures for SSP2 4.5 is depicted, but only for maximum daily maximum temperature (TXx land). There is no data for the next indices such as minimum of minimum temperatures (TNn), Frost days (FD), Cooling degree days (CDD), Heating degree days (HDD), Days with TX above 40ºC (TX40), Bias Adjusted TX40, Days with TX above 35ºC (TX35), Bias Adjusted TX35, Days with T above 21.5ºC (T21.5). [Larysa Pysarenko, Ukraine]	Accepted. The bug has been fixed.
69049	cEmHVhrn				IA: If you select a region to get regional plots, then select another region, then another, the title appends the names of the regions instead of replacing them. [Seth McGinnis, United States of America]	Rejected. When clicking in several regions the application defines an aggregated region and shows the regional information for the resulting composite. Thus, appending the names is correct here.
18107	Ch77Pb5Z				IA: It would be good to have a legend that explains what the hatching means for these types of maps. [Vlad Macovei, Germany]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
89565	cHm7yOKK				IA: For the images produced (I tried downloading as PNG), could the font size of the legend be increased and to include the lat/lon coordinates on the map? [Faye Abigail Cruz, Philippines]	Rejected. Lan/lon coordinates are not the standard for IPCC maps. These can be visualized in the Interactive Atlas but are not included in the exported figures.
69015	cIm0CNhq				IA: The regional analysis pane has a little four-arrows button that will maximize or minimize it. It would be nice to also have it cycle through the original position where it takes upa bout 1/3 of the page. Otherwise, you have to use the three-lines slider pull to put it back, which is inexact and hard to notice because it's located far away from the minimize/maximize control. [Seth McGinnis, United States of America]	Rejected. We have prioritised developments that help to support assessment done in the report.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
69053	Cqutpxd3				IA: In dual-pane comparison view, the "highlight range" effect of clicking on the scale bar is persistent. In normal single-pane view, it goes away as soon as you mouse over the map (probably because region highlighting is overwriting the display). I think it should be consistent regardless of the view. I would favor making it sticky regardless of the view, and keeping it active if you switch datasets (assuming the new range is compatible). [Seth McGinnis, United States of America]	Noted. This functionality has been revised and harmonized.
5109	CTAk6rNR				There is no information for “Ensemble mean - Mean temperature (T) Trend (deg C) - 1980-2014 - March to May (S.Asia)” [Anastasiia Chyhareva, Ukraine]	Accepted. The bug has been fixed.
111539	cViy2o3g				IA: There is no information on the map for this season December to February [Volodymyr Osadchy, Ukraine]	Accepted. The bug has been fixed.
82013	CyavT6bv				IA (Contents): Data set/observation/ensemble mean - There is no further explanation for the ensemble mean of observed data. It would be good if it is clear which data sets are used for the ensemble mean for the given variables as well as how the data is homogenized. If I see correctly, three observation data sets are used for observed TEMP/PREC. Does it make sense to use a model agreement and the signal-to-noise ratio measures for three data sets? [Swantje Preuschmann, Germany]	Not applicable. The ensemble mean has been removed for the observations.
66131	DDscNogf				Suggest displaying "Land mask" in the plot title on screen, as it is in the exported files. [Kushla Munro, Australia]	Accepted. The titles of the plots have been updated.
79467	dFIkkquh				Overall I find the interactive Atlas very well done and clear. Congrats. When displaying the relative change in precipitation the units appear as [mm/month %] but I think they should be simply [%]. Also the title below does not look great and it does not even fit in the page. Instead of including this long title, what if when selecting, for example, the variable instead of leaving "VARIABLE" a new title appear with the selected variable (e.g., "PRECIPITATION"). And same for the other fields: e.g., instead of PERIOD it would say whatever period was selected. Also, instead of having different CORDEX datasets, could we have only one and when selected it will show all the regions that have CORDEX infromation for the given variable, period, etc? It would also be useful to provide the number of members/simulations for each ensemble? For CORDEX that might be hard if showed in the same map. [Alejandro Di Luca, Australia]	Noted. The typo in the units has been fixed and the title has been redesign to make it human readable. CORDEX domains cannot be consolidated as proposed because there are regional overlaps. The number of members/models is now indicated in the title.
38999	dIzVigz2				Here, the data shown in the scatter plot (TX change) does not fit the map (days with T above 21.5°C) [Clemens Schwingshackl, Norway]	Noted. The layout of the panels have been updated.
105707	djFqAcsF				AI: On selecting "Export PDF" the fiile that is saved has an extension *.pdf.png, and the file is thus saved as if it is a png graphic. Removal of the .png extension, resulting in the file extension to become *.pdf allows for the file to beopened as a PDF file. The same thing happens when using the export plot to PDF icon. Perhaps a coding issue. The save as PNG correctly saves as a PNG graphic. Perhaps there is no need to have 2 instances of export to PDF (one in text and one as icon) or 2 instances of export to PNG. [Zelina Ibrahim, Malaysia]	Accepted. The bug has been fixed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
37711	dQi7E48Z				The export PDF button exports as png instead. The layout of the exported document is not appealing with a lot of blank space and small font. [Stephanie Arcusa, United States of America]	Accepted. The bug has been fixed and the layout of the exported figure has been updated.
69047	dQShwn06				IA: No values show on the scatterplot for model historical datasets. [Seth McGinnis, United States of America]	Accepted. The bug has been fixed.
110629	DXYx9j0X				IA: It is unclear to me how the confidence of the change is defined in this part of the atals. Is this a visualisation of what is stated in chapter 12 about each variable? Is this based on a stricg model agreement of some sort? For example for changes in snow and ice over North America at high latitudes in the center of the continet snow is projected to increase (Chapter 12 Figure 12.13) - but here both regions are stated as "high confidence of decrease". This seems inconsistent and these maps mask uncertainty. The metadata here would need to strictly define how these confidence intervals work (even if it is elsewhere stated in the IPCC) [Rachel McCrary, United States of America]	Noted. For the "regional information " hatching approaches have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend). For the "regional synthesis" (CID application in the SOD version) the confidence is directly the assessed one in Chapter 12 and TS.
110631	DXYx9j0X				IA: It is unclear to me how the confidence of the change is defined in this part of the atals. Is this a visualisation of what is stated in chapter 12 about each variable? Is this based on a stricg model agreement of some sort? For example for changes in snow and ice over North America at high latitudes in the center of the continet snow is projected to increase (Chapter 12 Figure 12.13) - but here both regions are stated as "high confidence of decrease". This seems inconsistent and these maps mask uncertainty. [Rachel McCrary, United States of America]	Noted. For the "regional information " hatching approaches have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend). For the "regional synthesis" (CID application in the SOD version) the confidence is directly the assessed one in Chapter 12 and TS.
86655	dZbjWezI	0	0	0	IA: The main/landing page would benefit from an explanation/guide to the atlas, or perhaps this could be a simple area with text at the top. This is particularly important given the sheer amount of datasets and variables available to explore - most of which will be unfamiliar to non-expert users. [Oyvind Christophersen, Norway]	Accepted. Guidance material has been included.
68983	E7sdxQTe				IA: the review codes are badly formatted for pasting into this Excel spreadsheet; they come in as large-font in white. [Seth McGinnis, United States of America]	Rejected. Review codes are only operational for the review process. We are sorry this is inconvenient.
68985	E7sdxQTe				IA: The maps need political boundaries. They should be optional (toggleable off and on), and it's fine to have them default to "off" to encourage users to think regionally, but for many, many users it is essential to be able to place the information relative to the state, provincial, and national greography. Especially since the map projections in use distort the shapes most people are accustomed to. [Seth McGinnis, United States of America]	Rejected. Political boundaries are avoided in WGI results, since they are not relevant for climate.
68991	E7sdxQTe				IA: Mouseover help text on controls is unreliable in Chrome. Sometimes it shows up right away, sometimes after a few seconds, sometimes not at all. [Seth McGinnis, United States of America]	Rejected. We cannot reproduce the issue with recent browser versions.
69001	E7sdxQTe				IA: the Robinson map projection would be much more useful if it were possible to switch the central meridian from 0 Long to 180 Long. (Or even better, -90, 0, 90, 180.) [Seth McGinnis, United States of America]	Accepted. Pacific centric Robinson projection has been included.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
69003	E7sdxQTe				IA: The currently available map views are very Euro-centric. The further you live from 0 Lon, the harder it is to get an undistorted view of your region. If I want to look at Japan, for example, my choices are to look at it with a lot of geometric skew on the Robinson projection, or to look at it upside-down on the polar stereographic projection. [Seth McGinnis, United States of America]	Accepted. Pacific centric Robinson projection has been included.
69033	E7sdxQTe				IA: When a region is selected, switching to one of the support pages (About, License, etc) and then switching back via the IPCC logo generates an error. [Seth McGinnis, United States of America]	Accepted. The bug has been fixed.
5105	EAKp94aV				When you switch on “Antarctica” dataset, Atlas projection is changed to Stereographic (south). When you choose any other region atlas’ projection is stayed in mode as for Antarctica automatically. Even refreshing of page doesn’t change it. User have to log out and log in again. [Anastasiia Chyhareva, Ukraine]	Noted. The projection can be changed at any moment by clicking on the "Select map projection" button on the right
102439	EgR9NGcR				IA: It is not clear what the crossed out areas in some maps represent, since there is no legend and the lines overlap with the colour legend [Philippe Tulkens, Belgium]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
66489	eR7gJ2RI				IA.: the drop-down menu of "Variable" opens under "Dataset". Sometimes it's diffucilt to navigate and change the variable as the menu hides. The menu of "Period" and "Season" opens just convinient, below the chosen menu button. [Barbara Barzycka, Poland]	Accepted. The bug has been fixed.
111541	ExVxVxeb				IA: There is no summary information on trend values for regions [Volodymyr Osadchy, Ukraine]	Accepted. Trend values for regions are now available in the time series plots.
5113	f0atndMP				There is no information for “Ensemble mean - Mean temperature (T) Trend (deg C) - 1980-2014 - September (S.Asia)” [Anastasiia Chyhareva, Ukraine]	Not applicable. "Ensemble" mean information has been removed for observations.
81987	f1Hd1t5D				IA: (Development) The given Uncertainty Measures by Nikulin et al. are essential. It would be good to have them always visible in the legend if they are relevant. Even if they are explained in 'About', the explanation cannot be found intuitively. [Swantje Preuschmann, Germany]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
112251	FDmLCLqk				When the CMIP6 dataset is selected, the annual Cycle plot produces an error when the mouse is moved over the annual cycle plot region. This does not seem to happen for other datasets. [Helge F. Goessling, Germany]	Accepted. The bug has been fixed.
37709	fgjqZ0sf				The table summary does not display properly. It is not possible to scroll down to see the full table. [Stephanie Arcusa, United States of America]	Accepted. The bug has been fixed.
5121	FGp971Uz				IA: It would be better to mark the borders of countries for more readability. [Larysa Pysarenko, Ukraine]	Rejected. Political boundaries are avoided in WGI results, since they are not relevant for climate.
111551	fiOjLPyh				IA: The scale for the map of min temp is not appropriate (small range) since almost all Eurasia is in one yellow color while Australia is black. The same is for max temp for this season particularly, but others have not good scale too [Volodymyr Osadchy, Ukraine]	Accepted. An option has been included for selecting the scale of the plot (minimum and maximum value).
66147	fJkUV3mv				Suggest adding the period average (e.g. 2021-2040) of the ensemble mean to the rollover text. [Kushla Munro, Australia]	Not Applicable. The period is already shown in the figure caption.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
86657	Fm0oO7lq	0	0	0	IA: A general comment about the drop-down menus (unable to get review codes for these). These list a high number of datasets and variables, a large number of which are named/labelelled in a way that will be hard to understand for non-expert users. Please consider having information-buttons next to each item that you could click to find an explanation of what the item (dataset/variable etc.) is. Alternatively one could have pop-up windows when you hold the mouse over the item (like the current ones that pop-up, repeating the name of the dataset/variable etc. - could the text in these be changed?). At the very least abbreviations should be spelled-out. [Oyvind Christophersen, Norway]	Accepted. Information buttons have been included for the variables drop-down menus.
66145	FMuaFoSF				If IT resourcing allows, suggest adding regional graphics to the "duplicate map" split screen format. [Kushla Munro, Australia]	Rejected. We have prioritised developments that help to support assessment done in the report.
40855	FraFw7c8				Suggest to add a function of land mask for the convenient comparison of model results with observation. And adding a graph for the difference between model and observation would be better. Add the clarification of the hatches on the map of observation and its trend in the ‘about’ item. [TSU WGI, France]	Noted. 1) a land mask filter is available for the regional information visuals, 2) Hatching approaches have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
81979	FTFGquH5				IA: (Development) The atlas remembers the zoom settings, which is useful for comparison. Nevertheless, a "back to global view" button would also be helpful. [Swantje Preuschmann, Germany]	Rejected. The number of buttons/functions in the application is kept to a minimum for the sake of clarity at the cost of not including some auxiliary functionalities.
5071	Fz8ppExw				IA: rename tab 'period' to 'scenario/period', otherwise it is not clear where to change the scenario. [Martina Stockhause, Germany]	Rejected. The "value and period" panels allows to select the time-period and scenario or the global warming level, so it accommodates both dimensions of analysis.
5073	Fz8ppExw				IA: 'click on map' button: Round the value displayed. A value like 3.6732 deg C indicates a precision, which is not in the data nor the whole creation process of a future projection. [Martina Stockhause, Germany]	Noted. The number of decimal digits of the results has been updated (typically including a single decimal digit).
82561	FZkrRIzx				IA: temperature trend values for model projections (at least the ones I looked at) appear to be total change between two periods, but observational data set changes appear to be in degrees per year - this should be made clear. [Blair Trewin, Australia]	Noted. The titles of the figures include now this information. Trends are now expressed as value per decade.
5081	GiU0p1jK				IA: download file as png results in a damaged file, which cannot be opened. [Martina Stockhause, Germany]	Accepted. The bug has been fixed.
110627	Gkr1BiFU				IA: I attempted to plot the x-y scatter plot of mean temperature change vs heating degree days - this does not work with the automatic scaling when averaged over W North America using CMIP5. [Rachel McCrary, United States of America]	Accepted. The bug has been fixed.
89549	gl0pUkmn				IA: Will it be possible to create multi-panel plots (similar to some figures in the WGI Chapters) in the next version of IA? [Faye Abigail Cruz, Philippines]	Rejected. This could be done in some particular cases, but not in general.
81977	GrrLgSPh				IA: (Development) If possible, please implement more tooltips (mouse-over) [Swantje Preuschmann, Germany]	Noted. New tooltips have been included for additional information.
5111	GvVOLV2L				There is no information for “Ensemble mean - Mean temperature (T) Trend (deg C) - 1980-2014 - June (S.Asia)” [Anastasiia Chyhareva, Ukraine]	Accepted. The bug has been fixed.
79295	GWevIg5Z				IA: the meaning of the colored bands (1 and 2 std? Or IQR and 5-95% range?) are currently not explained, adding a legend would be helpful. The same comment applies to the vertical grey bands in the time series plots. [Wim Thiery, Belgium]	Accepted. Legends have been included for the regional visuals.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66141	gWJcGY4U				Suggest adding the meaning of hatching and cross-hatching to the legend. [Kushla Munro, Australia]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
66143	gWJcGY4U				If IT resourcing allows, suggest adding PDF download format. [Kushla Munro, Australia]	Noted. Exporting as PDF has been included.
79303	GYvLouOl				IA: Why are there no time series/annual cycle/scatter/table/stripes plots for the CORDEX data sets? [Wim Thiery, Belgium]	Rejected. The products are also available for the CORDEX datasets, but for regions that overlap with the domain.
109227	h43UZsas				Overall atlas comment - I understand the model names are attached to the data on purpose (transparency/reproducibility), and maybe this is already a planned change for future versions, but consider not automatically showing the model -- either a toggled option, or ideally a button similar to the current review code button, would be best to provide the option for model sources but not overwhelm the average viewer (or since the codes may look like nonsense or an error, it could undermine perceptions of the tool overall). Either that or provide a more obvious "model used" or other text. [Steph Courtney, United States of America]	Rejected. The text panel with model names and annual values have been removed. Model names are retained to identify individual models in other regional visuals.
110633	hbR1bkWv				IA: I suggest the atlas include an way to easily reference how these different climate impact drivers are calculated - either through a scroll over, a definitions page, or referencing where in Chapter 12 they are found. [Rachel McCrary, United States of America]	Accepted. A documentation section has been included in the Interactive Atlas.
69007	hcXYlR8U				IA: Region highlighting gets "stuck" when you're looking at timeseries, etc. for a region. If you click on a region to show the timeseries, that region stays highlighted. If you move your mouse over the map, other regions will highlight as you move over them. If you then move your mouse off of the map without leaving a second highlighted region, it will remain highlighted. Even worse, if you click on a new region, the plot changes and the new region will be highlighted, but the old region still remains highlighted. (And so on with a third, fourth, etc. region.) This is very confusing. I think the best fix would be to turn off dynamic highlighting while showing a timeseries / annual cycle / etc plot, and set the region highlight based only on what plot is showing. [Seth McGinnis, United States of America]	Noted. The user interface supports time series for combined regions. You can get the combined data for several regions by clicking one by one on all the desired regions (the results is shown for the bigger combined region).
66485	hhMrI1mt				IA.: Export PDF is not working properly, it exports to PNG; [Barbara Barzycka, Poland]	Accepted. The bug has been fixed.
81989	hIS8oDl7				IA: (Development) There is no return to the current view when you are in e.g. 'About'. If you click on Back, IPCC-Logo, or Interactive-Atlas the view jumps to the default setting CMIP5 - Mean temperature (T) Change (deg C) - Long Term (2081-2100) RCP 8.5 AR5 (1986-2005) - Annual [Swantje Preuschmann, Germany]	Noted. The auxiliary information "about", "license", etc. now opens in new tabs.
80431	Hl7jFoGG				IA. Addition of a 'pre-industrial' baseline would be highly policy-relevant and help address the widespread confusion regarding Assessment Report baselines and the Paris Agreement target baseline among non-expert users. [John Clarke, Australia]	Noted. A preindustrial baseline (1850-1900) is available in the final version.
113721	hMRr29Zx				IA: Once in "duplicate map" mode, one should have an option to scale each map individually as well. [Agnieszka Kowalczyk, Poland]	Rejected. Both maps are synchronized to facilitate regional analysis.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
105695	hOPfDk5X				AI: Scatter plot, on first selection, and which pops up about 50% of window or less. Area allocated for display of graph needs to be rethought. The captions for the Y axis overruns the the space avalable for display and becomes illegible. The space allocated for symbol legend captions is not enough. Perhaps it may be useful to allow for text wrapping in both cases, or dynamic resizing of the graph, when the window size is less than optimal. [Zelina Ibrahim, Malaysia]	Accepted. The layout has been updated.
57463	hp2gjUX7				It would be useful if we could choose to visualize each particular model in the plume plot together with the ensemble average. This would be useful to assess the behavior of the global model relative to the average and to evaluate added value of a nested RCM. Different colors and line types and a legend can be used for that. The individual values might be obtained by clicking on a perticular model/time point. [Daniel Martinez Castro, Cuba]	Noted. Individual models can be highlighted in the time series.
57465	hp2gjUX7				Tha title "Period" does not totally correspond with the content of the entry. Could it be substituted by "Periods and scenario" . [Daniel Martinez Castro, Cuba]	Noted. "value and period" is used instead. Scenarios are only for model data, not for observations.
38995	HWfj8YhJ				Why is it only possible to select 1980-2014 as perdiod for the observations and not the full time period covered by the respective observational product? [Clemens Schwingshackl, Norway]	Noted. Observational trends are available for the periods used in the Atlas (1980-2015 and 1961-2015). These two periods are available for all/most of the datasets and therefore allow assessing multiple lines of evidence.
81973	hyU74wZa				IA: (Guidance): A landing page would be helpful. Welcome and introduce the user to the IPCC Atlas, e.g. via the guiding questions: What, how, why. (possibly iconographic). Make it independent of reading chapter Atlas.7. [Swantje Preuschmann, Germany]	Noted. A documentation section including guidance has been included in the final version.
66125	Id9EjFSh				Suggest investigating. There appears to be functionality issues when changing projection and certain dataset views, during which the Atlas gets stuck in a particular projection and it cannot be changed without refreshing the page. [Kushla Munro, Australia]	Rejected. We cannot reproduce the issue with recent browser versions.
80051	IjKdtdoX				IA: Please check the temperature values on the y-axis - I have numbers from 0 up to 800 (it's said it's in deg C), with highes values at 700!!!??? (In other versions of the "annual cycle" (for other regions) I even got negative numbers (6OXdjng5) - that's certainly the same problem, so I didn't open up a new comment for that. And I just realized that this also seems to be an issue for precip - annual cycle, e.g. here: zv6iaAmY . [Heike Wex, Germany]	Accepted. The bug has been fixed.
80047	ijO7pleV				IA: This is certainly a layout and programming issue, but I only saw the upper one of the figures that appeared here and only by chance discovered that more were shown blow. Not sure how to solve this, but something needs to be done so that people won't miss information. [Heike Wex, Germany]	Accepted. The bug has been fixed.
93853	IkGjurQO				IA: The full title (CMIP5 - Mean temperature (T) Change (deg C) - Long Term (2081-2100) RCP 8.5 AR5…) does not show. [Quentin Lejeune, Germany]	Noted. The title gets shortened "..." when the window size is reduced, but the full title is displayed when hovering over the title.
93855	IkGjurQO				IA: For the time series and annual cycle plot hover-over legend, the model ensemble mean should come first. [Quentin Lejeune, Germany]	Rejected. The functionality to display information for individual years has been disabled to promote good practices.

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102441	lIlk6mi8				IA: Good map navigation through right side bar; especially useful is the 'duplicate map' function for comparison and visualisation purposes [Philippe Tulkens, Belgium]	Noted. Thank you for the positive comments.
69029	IljgWMlB				IA: The "Variable" dropdown is aligned with the left-hand side of the plot area, rather than extending straight down from the Variable box. For obs datasets, this makes it very difficult to mouse from the box down into the dropdown without it losing focus and closing. [Seth McGinnis, United States of America]	Accepted. The bug has been fixed.
26089	IlqLjXtH				IA: The table summary should have an option of Excel download [Don Alfonso Pino Maeso, Spain]	Accepted. The table can be exported in CSV format which is compatible with Excel.
38621	InK796O4				IA: The label of the y-axis exceeds the limit of the area of the graph so that the visualization is not good and if the graph is exported the label is not complete. If you maximize the window, it does work. [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Accepted. The layout has been updated.
105699	iuSgEsS0				AI: Table Summary. Recommend to label both the X and Y axes (temperature and percentage frequency/observations). Also the total number of values (N) should de noted on the graph if percentage frequency is given. [Zelina Ibrahim, Malaysia]	Not applicable. Table summaries have been simplified.
32263	J6Yt573W				IA: In the plot of annual cycle temperature, the y-axis unit is wrong [Eric Brun, France]	Accepted. The bug has been fixed.
111549	J9S6YeSP				IA: there is no information on the map Ensemble mean - Maximum temperature (TX) Trend (deg C) - 1980-2014 - December to February [Volodymyr Osadchy, Ukraine]	Accepted. The bug has been fixed.
81991	JKGDSsaF				IA: In 'About', Section 'Baseline and future periods' C(elsius) is missing at "warming levels (1.5º, 2º and 3º, currently..." [Swantje Preuschmann, Germany]	Accepted. The new about section has been edited accordingly.
3611	jQ980caD				The table summary for oxygen do not have enough bins, which gives a strange look to the plot. [Mathilde Jutras, Canada]	Not applicable. Table summaries have been simplified.
3613	jQ980caD				In default view I can't see the bottom of the plots for 'Medium Term' or any plots below ('Long Term'). It was not clear at first that I could extend this box upward. It might be good to be able to scroll down this box. If these issues are related to my browser, I am using firefox in Linux. [Mathilde Jutras, Canada]	Accepted. The layout has been updated.
79297	jsg1DbUa				IA: The 'show metadata' symbol is usually associated with the 'share' function, please consider using a different symbol for 'show metadata' and replacing the 'share' button by the by the symbol with two lines and three dots. [Wim Thiery, Belgium]	Noted. There are several sensible choices for the icons. We have changed the metadata icon according to the underlying framework used.
71643	K1AwFzZg				It is unclear as what the cold spells and high confience of decrease means. Does this mean that there is likely to be a decrease in cold spells across the globe? The main confusion for this is that in report most mentions of cold are linked with increased cold events, and there may be confusion from others on this. A suggestion would be to disclaim what this scale means in this instance. [Jessica Hargreaves, Australia]	Noted. For the "regional synthesis" (CID application in the SOD version) the confidence is directly the assessed one in Chapter 12 and TS.
89613	kb5hpKG5				IA: Just to note that the icon for "metadata" (fourth from the top) looks similar to a "share" icon so there might be some potential confusion. [Faye Abigail Cruz, Philippines]	Noted. We have changed the metadata icon according to the underlying framework used.
89615	kb5hpKG5				IA: May I ask if variables listed in the Technical Annex VII (e.g. climatic impact driver indices) will be added for display here? [Faye Abigail Cruz, Philippines]	Noted. Only a selection is included in the Interactive Atlas. This is now indicated in the Technical Annex.

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111527	Kc0T0ygX				IA: In the Annual cycle plot there are title of Y-axis in mm/month, but numbers start from 1000. At the same time, in the sliding window numbers are in mm/day for different months Should be harmonized [Volodymyr Osadchy, Ukraine]	Accepted. This has been harmonized
115575	kG6WfrU5				It will be interesting to have a possibility to overlay the countries boundaries [Hicham EZZINE, Morocco]	Rejected. Political boundaries are avoided in WGI results, since they are not relevant for climate.
105703	kjClS6ln				AI: Annual Cycle. A legend explaining the different coloured shade bands would be useful. [Zelina Ibrahim, Malaysia]	Accepted. Legends have been included for the regional visuals.
79301	kYfFufan				IA: I would suggest providing more customised default views for the CORDEX data sets, e.g. for CORDEX-Antarctica the same projection may be kept but a more zoomed-in view, for Europe tha Lambert projection may posisbly be considered. [Wim Thiery, Belgium]	Rejected. We have prioritised developments that help to support assessment done in the report.
102443	l4qsvEPi				IA: Local information' feature is extremely useful to extract information on regional level, including time series, scatter plots, annual cycle, info [Philippe Tulkens, Belgium]	Noted. Local information is only provided for the global map (precise local values), but are not used for regional information visuals. These are built only for the pre-defined regions in order to promote good practices.
19429	LcDIE				IA: The overall atlas looks informative and interactive. But considering the dataset, I would recommend that we also include the Cordex data for Southeast Asia and Central Asia. [RISHIRAJ DUTTA, Thailand]	Accepted. New CORDEX domains have been included.
81985	lh1aalIZ				IA: (Design) The icon at Variable only refers to the temperature - intuitively the precipitation is lost. After selecting a precipitation variable, the caption is too explicit, e.g. (99PR). It is no longer descriptive/visible that it is a precipitation variable. [Swantje Preuschmann, Germany]	Noted. Variables are now grouped as atmospheric, oceanic or drivers but are all treated equally.
93849	LNdKOHqA				IA: After every click, the user has to recenter the map. [Quentin Lejeune, Germany]	Rejected. We cannot reproduce the issue with recent browser versions. After clicking the underlying region should be highlighted and the regional results updated to consider the enlarged area.
93851	LNdKOHqA				IA: An option to select all land masks (global) would help the user navigate global impacts better. [Quentin Lejeune, Germany]	Accepted. An option to select all regions has been included.
37707	Lq6ftrDT				The scatter plot does not display properly. The graph is small and the axes extend too far out. [Stephanie Arcusa, United States of America]	Accepted. The layout has been updated.
32259	lQGrp7af				IA: When we choose the variable (Frost Days – Value), the caption shows a "0 to min" box. It is strange and shouldn't be shown. [Eric Brun, France]	Accepted. This has been fixed.
82003	lqY5Rd6i				IA: (Design and Content): I'm a bit ambivalent about whether the scalebar is ingenious or irritating. The scalebar marks, e.g. 1, 3, 5, Max, at the positive temperature change and shows a continuous colour coding. If I hover with the mouse over the scalebar, seven concrete steps are shown, which nevertheless have continuous colours (sequental colours would be helpful). So I cannot visually match colour levels with the world map, although I only see one red per grid box. A mixture of sliding colours and fixed steps is a great idea - but the practicability is difficult. [Swantje Preuschmann, Germany]	Accepted. Flexible definition of the colorbar and ticks for segmenting have been implemented in the new version.
112257	lrh364B8				It would be useful if the range of the colourbar for the maps could be adapted manually (from some range-based automatic colourbar range). As it stands, for example, the colourbar for temperature-change is cut off at +5C, which is not enough for something like 2100 vs. today, in particular in the Arctic. [Helge F. Goessling, Germany]	Accepted. Flexible definition of the colorbar and ticks for segmenting have been implemented in the new version.

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89547	LuFTtLpu				IA: I'm very impressed with the IA. I think many people will really find this useful. It would be nice to add some links (cross-reference) to the relevant chapters in WGI in case the reader would like to read further on the associated assessment of changes displayed. On the other hand, coordination may be needed to ensure that relevant WGI Chapters cross-reference the Interactive Atlas. [Faye Abigail Cruz, Philippines]	Noted. A new section on "documentation" has been added to the landing-page. This will cross-reference online material from chapters when it is ready.
69005	lzhzc7Pq				IA: When viewing a regional analysis (timeseries, scatter plot, etc), the big list of individual model values should not hover near the mouse position. It's useful information to have, but having it follow the mouse is very distracting and frequently obscures what you're trying to look at. I think it would be better for it to be over the map or off to the side instead of over the timeseries plot. [Seth McGinnis, United States of America]	Accepted. This functionality has been disabled.
80049	mwZxUNYe				IA: I tested some warming set-up here, and the time 1950-2100 is respectively shown here: 4kgYhNdQ . But for which time is the annual cycle that I see here (at mwZxUNYe)? - Also: I am missing a legend explaining the meaning of the differently colored lines/bands. [Heike Wex, Germany]	Noted. The atlas displays information for future periods using both time-slices (near-, mid- and long-term periods) and warming levels (1.5º, 2º and 3º, currently computed for the RCP8.5/SSP5-8.5 scenarios). In your case, the period corresponds to the 2º of warming level.
110949	N4SUMwWt				IA: I don't think the information page (which I couldn't find a code for) contains enough information, and dislike that I have to go to the Atlas and Annexes to fine information about what I'm looking at. I feel like some of that basic information should be more accessible or easily linked from an faq page, for example. [Melissa Bukovsky, United States of America]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
38987	N83F8mWT				No values are shown here. Same for March-May with the Berkeley dataset [Clemens Schwingshackl, Norway]	Noted. This has been fixed
19431	nAwvI				IA: Data stripes observed in the precipitation data needs a further look. Also, recommend to include a FULL EXTENT button next to the zoom buttons. In the download button, it is suggested to include a JPEG option as well. [RISHIRAJ DUTTA, Thailand]	Rejected. We have prioritised having a simple set of functionalities and developments that help to support assessment done in the report.
81975	nbHDM1yk				IA: (Design) The lines of text in the pop-up windows (About, Instructions, Licence, etc.) is responsive in one column and might run across the entire screen, which is difficult to read. For further development, columns with up to 10 words are more natural to read. [Swantje Preuschmann, Germany]	Reject. The design is responsible to accommodate different platforms.
111535	nFxpBK8m				IA: When changing periods in annual cycle plot nothing is happen - no change in graf and numbers. The same is for other variables [Volodymyr Osadchy, Ukraine]	Accepted. This has been corrected and the annual cycle corresponds now to the selected period.
68999	NM8JeLj7				IA: polar stereographic map projections would be much more useful if it were possible to rotate around the pole. [Seth McGinnis, United States of America]	Rejected. We have prioritised developments that help to support assessment done in the report.
82021	nNVOhQl7				IA: (Content) information on model resolutions are rare. [Swantje Preuschmann, Germany]	Rejected. It is not clear which specific change the comment is asking for.

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110945	nxBp1rN8				On this 2deg change form, I can't see the y-axis guidelines through the darker grey shading, which makes trying to figure out where I am on the y-axis, given an x-location under the grey much harder. Please do not obscure these lines. As it is, I can't use the mouse to help with this, as placing it on the plot results in a giant text box of important information that obscures most of the plot. [Melissa Bukovsky, United States of America]	Noted. The time series plot has been modified in the new version, but shading is kept to inform of the reference period used in the map and regional information.
110947	nxBp1rN8				IA: Could the giant floating text box that appears when you hover over the time series plots (and other regional average plots) be something that opend up in a right-hand panel instead, so it doesn't obscure the plot? Or make it so one can move the pop-up box to a specific screen location (out of the way but still visible), or give an option to close it and reopen it with a button. It's really distracting and covers too much plot, when all I want to do is use the mouse to help my eyes navigate over the data. I find all this information that pops up when you click on a region to be a really nice addition otherwise. [Melissa Bukovsky, United States of America]	Noted. The time series plot has been modified and the floating text box with annual information has been removed to promote good practices.
105705	NxlcqmOG				AI: Time Series. A legend explaining the different coloured shade bands would be useful. [Zelina Ibrahim, Malaysia]	Accepted. Legends have been included for the regional visuals.
80429	nycCW28x				IA. It is not clear if there is an intention to provide instructions and methods for non-technical users. It is highly likely the Atlas will be accessed by non-scientists. The details in the Atlas chapter are too technical for general users such as policy makers. [John Clarke, Australia]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
80057	NZQVgqqm				IA: No matter which period I choose, the title of the plots that I get always includes "AR5 (1986-2005)" (and this appears twice when I choose this period). - In fact, it is always there (I just checked different datasets and variables), so I wonder if this is on purpose, or just "hard-wired" somewhere where it should be removed from??? [Heike Wex, Germany]	Accepted. This has been fixed.
80427	O83niBcQ				IA. It would be valuable to include an option to set the scales of the scatterplot to a common range to facilitate comparisons. [John Clarke, Australia]	Accepted. A common range is now used for variables with the same units.
82009	ob1bC9iV				IA (content): The explanation of datasets could be enhanced. e.g. set a link to the more in-depth data explanation. Further, neither in the Atlas Chapter nor in the IA EWEMBI is explained: EWEMBI (E2OBS, WFDEI and ERAI data merged and bias-corrected for ISIMIP) [Swantje Preuschmann, Germany]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
69017	OeKB5Lxo				IA: The regional time series analysis needs a key indicating what the different lines and bands of color mean. My guess is that the dark band is the 25-75 IQR and the pale one is 10-90th percentile, and that the dark line is the mean and dotted lines are individual models, but that's just a guess and it took me a few minutes to figure it out. I'm not sure this necessarily needs to go on the graphic itself, but I couldn't find the information elsewhere. [Seth McGinnis, United States of America]	Accepted: Legends have been added for all regional visuals. Your guess was right except for the black line, which is the median and not the mean.

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69021	OeKB5Lxo				IA: All of the information about the Interactive Atlas from section 7 of the Atlas document needs to be available from the Interactive Atlas. If including a link to section 7 of the Atlas in PDF form is all that's feasible, that woudl suffice, but it would be better to extract and highlight up front all the information about the atlas controls, symbology, etc. and put it in the Instructions page linked at the top of the Interactive Atlas. Everything in the FAQs in section 8 of the Atlas should also be included in the Instructions page. [Seth McGinnis, United States of America]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
69025	OeKB5Lxo				IA: The three-connected-dots symbol used for the "Show metadata" tool needs to be changed. That symbol means "Sharing" to anybody who uses an Android phone. [Seth McGinnis, United States of America]	Accepted. The symbol for metadata has been modified, using the same symbol as the framework used.
109211	ohImN65d				IA: Received an error on this page and every other time I went to hover over the annual cycle graph for a region and the scatter plots and table summaries were not displaying correctly in general (since it's widespread I'm assuming this is known/common and I won't provide more comments) [Steph Courtney, United States of America]	Accepted. This has been fixed.
111529	oLUrx2Si				IA: For this page I cannot see at my screen the full graph with the three periods, the ast is not visible. I tried to export pdf or png and both didn't work for me [Volodymyr Osadchy, Ukraine]	Noted. The export option for tables is as CSV file (numbers) in the final version
79287	On7JQMfo				IA: in the map caption and color bar title, I would suggest changing '(deg C)' to (°C)' [Wim Thiery, Belgium]	Noted. This has been adjusted
79289	On7JQMfo				IA: non-expert users may not know the meaning of technical acronyms shown on the maps (e.g. CMIP5, AR5, AR6, WGI, RCP). One possible solution to this problem could be to have explanatory text boxes appearing when hovering your mouse over the term. Another option could be to add a 'glossary' page to the atlas, possibly with a link at the top of the page. [Wim Thiery, Belgium]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters (and glossary) when it is ready.
79291	On7JQMfo				IA: regarding the color bar: While a continuous color scale may render a nice map, it is more difficult to extract quantitative information for a particular location. Perhaps the choice between a continuous or discrete color scheme could be an option for the user to choose from? In that context, it could also be useul to consider adding 'pointy ends' to the color bar to denote pixels with values outside the depicted range. See also https://books.google.be/books?id=eeRDAAAAQBAJ&pg=PA116&lpg=PA116&dq=color+bars+continuous+versus+discrete&source=bl&ots=AICLhgblhm&sig=ACfU3U1ZfC4G4dh0yERnZ53GVvu8Ut6Rpg&hl=en&sa=X&ved=2ahUKEwiPgIP4perpAhWRKewKHdKsDMkQ6AEwEnoECAYQAQ#v=onepage&q=color%20bars%20continuous%20versus%20discrete&f=false [Wim Thiery, Belgium]	Accepted. An option has been included for selecting the scale of the plot (minimum and maximum value) and also the ticks/segments for a on-the-fly segmentation so when clicking in the colorbar the maps will show the corresponding areas for that segment.
52775	OSJAnuLl				Interactive Atlas: The legend in Climate Impact Drivers-Mean Precipitation shows spelling mistake "confdence." The file “CMIP5 - Mean temperature (T) Change (deg C) - Long Term (2081-2100) RCP 8.5 AR5 (1986-2005) - Annual.png” could not be opened. [Monika Sikand, United States of America]	Not applicable (this component of the interactive atlas was a mock-up)
81995	ou9DjqBz				IA: the 'grid-box-value' pop-up shows e.g. the temperature value with 4 digits behind the decimal point. Please limit to a maximum of 2 digits after the decimal point. [Swantje Preuschmann, Germany]	Noted. The number of decimal digits of the results has been updated (typically including a single decimal digit).

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69045	P0yV79L5				IA: "Y Axis Magnitude" on scatterplots doesn't do anything; it just says "Value", and the only option is the same range as the X-axis. This makes many pairs of variables (e.g., temperature and precip) pretty useless. [Seth McGinnis, United States of America]	Note. This has been fixed in the new version.
102445	p2n7rVMc				IA: The overall scope is clearly presented and explained, but technical details such as ‘uncertainties’ are not easy to comprehend by e.g. policy-makers/ general educated public. [Philippe Tulkens, Belgium]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
66127	P3A0MzcW				We appreciate that the Interactive Atlas successfully negotiates the communication trade-offs to convey complex data in a useable format. To further reduce ambiguity to a non-scientific reader, and if IT resourcing allows, suggest the Atlas would benefit from “mouse over text descriptions”, ideally with links to relevant sections of the AR6 (in addition to the metadata viewer). [Kushla Munro, Australia]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
66129	P3A0MzcW				We appreciate that the Atlas is useful to policymakers in the sense of clearly viewing different model projections for a region and time series. However, in order to be accessible to all policymakers, suggest that the Atlas include languages beyond Spanish and English. [Kushla Munro, Australia]	Noted. The translation to other languages has been implemented using English and Spanish as examples but extension to all official languages will be undertaken aligned with the translation of the documents of the report.
80425	P70HMxXi				IA. Y Axis selection seems incomplete in this display. TX is displayed by default but the list of options under 'Y Axis Variable' is restricted to: CDD, HDD & PR99. [John Clarke, Australia]	Noted. The same variable is considered initially for X and Y axis in the new version (corresponding to the diagonal). The list of Y variables allows to choose from the full list of variables (with compatible regional values).
52615	PbAD0Nor				IA: I suggest to add a time scale to the stripe representation (so that you do not need to move along the plot to see the year) [Gema Martínez-Méndez, Germany]	Accepted. An explanation has been included in the title and an x-axis with years has been included
81997	Pd3BUWz6				IA: (Development): the 'grid-box-value' pop-up is preserved when you change the variable/dataset/etc. It would be great if the variable in the grid-box-value changes then also. Otherwise, close it automatically. [Swantje Preuschmann, Germany]	Accepted. Fixed to close automatically when changing the configuration
44269	plQ9Zd3x				IA: CORDEX projections for additional variables could also be included in the Interactive Atlas. Some of them are particularly important in specific cases, as for example the minimum temperatures and the cooling degree days for Mediterranean cities. [Nektarios Chrysoulakis, Greece]	Accepted. CORDEX information has been expanded to cover the same list of variables.
66149	PlXiq8YJ				If IT resourcing allows, suggest including the option to plot the (ensemble mean) observations on top of the model historical data. [Kushla Munro, Australia]	Not Applicable. Ensembles are no longer used for observations (only individual datasets)
44273	PMU86HEp				IA: The "Export PDF" function, although correctly leads to PDF format, the exported files seem to be saved in PNG format (the only option for the corresponding file name), causing some confusion since these files can't be directly opened. [Nektarios Chrysoulakis, Greece]	Accepted. This has been fixed in the new version
115571	pQR2FGBj		F8ma7L2g		Export to GeoTiff is an interesting functionality since it allowed to have a file that it can be directly used in GIS. However, the GeoTiff functionality does not work. [Hicham EZZINE, Morocco]	Accepted. This has been fixed in the new version

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66487	PqS3Vv4f				IA.: My suggestion for scatter plots: maybe a button for adjusting Y and X axis to some min-max range of the data on a scatterplot would improve the design of scatter plots? To limit the "white area" of a scatter plot, which, in some cases is 90% of the plot. [Barbara Barzycka, Poland]	Noted. Scatter plots have been redesign to better accommodate different units and ranges.
38623	PvpfeHKP				IA: It is not said that if you click on more than one region you will add that region to the current selection. You need to click again on the region previously selected and then you could select another one. This functionality is useful to obtain aggregated results for more than one region directly on the IA. However, it would be useful if this is stated within section Atlas.7.2 [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Noted. This has been explained in the guidance material for the new version.
5107	PvPkNhox				In “Dataset” menu you have options just for: CMIP5, CMIP6, Africa, Antarctica, Europe, North America, South America, South Asia. There are no options for Asia, Australia and Oceania [Anastasiia Chyhareva, Ukraine]	Thank you very much for the suggestion. Data for these regions have been added.
69013	pVtIuyQw				IA: For obs data, the Table Summary for a region shows nothing. [Seth McGinnis, United States of America]	Noted. Only time series is enabled for regional information for observations in the new version.
89561	QBbjce9u				IA: Suggest to orient the color bars horizontally at the bottom to minimize crowding the center along with the options/icons. Alternatively, perhaps an option to display the color bars either horizontally or vertically? [Faye Abigail Cruz, Philippines]	Rejected. We have prioritised developments that help to support assessment done in the report.
89563	QBbjce9u				IA: I noticed that it’s not possible to save an image comparing the two maps? Is it useful to have this option to do so? [Faye Abigail Cruz, Philippines]	Rejected. Exporting options are defined for individual panels.
5117	qE3kQysQ				IA: In Dataset -> model historical CMIP6 when choosing poligon Central Europe on map -> Scenario (historical) and period WMO -> Variable mean temparature ->Table summary -> there are 2 historical scenarios: 1980-2014 and config.period.WMO (1981-2010 as mentioned in tab "Period"), but in a headline is "CMIP6 - Mean temperature (T) (deg C) - WMO (1981-2010) Historical AR5 (1986-2005) - Annual (C.Europe)". The lengths of periods in table and in the headline don't coincide: 1980-2014 in a table and 1986-2005 in headline. When changed period to AR5 (1986-2005), the headlines changed to "CMIP6 - Mean temperature (T) (deg C) - AR5 (1986-2005) Historical AR5 (1986-2005) - Annual (C.Europe)" (in case of choosing historical scenario and period AR5) and AR6 (1995-2014) there was headline "CMIP6 - Mean temperature (T) (deg C) - AR6 (1995-2014) Historical AR5 (1986-2005) - Annual (C.Europe)" (in case of choosing historical scenario and period AR6). In both cases neither periods nor values in table have changed (it remained period 1980-2014 and config.period.WMO). The same situation is for model historical CMIP5. [Larysa Pysarenko, Ukraine]	Noted. This has been fixed.
105701	qGEX2ieU				AI: Annual Cycle. The area allocated for display of graph needs to be rethought. The captions for the Y axis is incomplete and dissapears. Perhaps it may be useful to allow for text wrapping in both cases, or dynamic resizing of the graph, when the window size is less than optimal. [Zelina Ibrahim, Malaysia]	Accepted. The layout has been updated.
82019	qJnwE3xA				IA: (Content) When showing the stripes and hovering with the mouse, the pop-up shows "Mean Temperature" and not "Temperature Change". [Swantje Preuschmann, Germany]	Accepted. This has been fixed

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68993	qoGyMMj9				IA: I was very confused when the controls at the right jumped to the middle in the two-paned comparison view. I think it would be better to leave them where they are and just make the map panes slightly narrower to make room for the data controls on either side. [Seth McGinnis, United States of America]	Rejected. The controls are shared for both panels and this is why the are located in the centre.
68995	qoGyMMj9				IA: The export and metadata buttons disappear in dual-pane comparison view. Not sure whether that's intentional or if they're being hidden under other controls. If it is intentional, I recommend instead keeping them in the same position and disabling them. [Seth McGinnis, United States of America]	Noted. These functions are implemented only for individual panels.
68997	qoGyMMj9				IA: In dual-pane view, if you try to change the map projection, the Northern stereographic view button is hidden under the "zoom out" button. [Seth McGinnis, United States of America]	Accepted. This has been fixed.
5087	QqE1hW46				IA: I recommend to put the review code somewhere on the exported PDF to be able to identify the image with a time of creation and IA software version in case of support questions at a later date. You then could also easily identify manipulations of figures. [Martina Stockhause, Germany]	Rejected. The IA will be frozen and there would be a single version, so tracking is not useful. A tracking system would be part of a errata if this is agreed for the Interactive Atlas.
45089	qqSc8eJN				IA1. The headliner is confusing. “Interactive Atlas” and “Climate drivers” should be given a prominent place and be adjacent one to the other. All the other “Instructions” etc. are secondary and can occupy less prominent spots, and less space. . It would be nice if “Instructions” referred to “How to use …” instructions. These could preferably be in the form of a short introductory video. A “How to interpret “ video might also be useful. [Christophe Deissenberg, Luxembourg]	Accepted. The Interactive Atlas has been redesigned and the new landing page includes regional information and regional synthesis (CIDs in the SOD version).
45091	qqSc8eJN				IA: The button “Click on the map to display local information” is badly placed, poorly denominated, and confusing as it remains unchanged whether it is activated. A (green-red) switch “Local information on/off” situated in the main menu bar would be much more convenient. [Christophe Deissenberg, Luxembourg]	Rejected. The "local" information tools has been described as "Click on the map to display gridbox values." The button is blue shaded when it is active and the placement in the toolbar seems reasonable for us.
45093	qqSc8eJN				IA: 3. The “two maps” button is likewise poorly designed and poorly placed. It would be more appropriate to have a switch on the main menu bar that always remains apparent. [Christophe Deissenberg, Luxembourg]	Rejected. The controls are shared for both panels and this is why the are located in the centre.
45095	qqSc8eJN				IA:The change in the menu placement (horizontal vertical) when one switches from one to two screens is confusing and could easily be avoided. So is the change in the position, the number, and the content of the menu buttons! E.g., in the two-screen configuration, the thermometer button refers to the temperature, which is intuitive. In the one-screen configuration, it also refers to many unrelated items …which are to be found under the not very intuitive graph button in the two-screen configuration. Etc. Etc. Consistency and logic are crucial for most users! [Christophe Deissenberg, Luxembourg]	Rejected. The menus are placed vertically to gain space in the shrunk dimension. The controls are placed in the centre of both panels because they are synchronized. There are many alternative options but all of them have pros an cons.
45097	qqSc8eJN				IA: What happens when one selects two or more different regions is unclear. It would be more convenient if selecting one additional region deselected automatically the current one (currently one needs to click the X) , while Ctrl + Click could be used to select simultaneously two or more regions. [Christophe Deissenberg, Luxembourg]	Noted. This is explained in the "guidance" and guided tour documentation included in the final version.

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66495	R9MhpFiw				IA.: I'm very impressed by the IA, its functionality and collected data. Really, great job! However, a "lay audience" might find it difficult to understand or to find information, which could be interesting for them. I would suggest to: (1) add a drop down menu with basic, the most important maps for a general audience; (2) add a button "i" (information) where one can find either information on what/how is presented on a map/plot or a hyperlink to such information or relevant chapter of the IPCC report (I know, it's a lot of work!...) (3) if not the information button, then maybe a detailed information webpage, maybe video tutorials?... [Barbara Barzycka, Poland]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready. A guided tour has been also included to explain the basic functionalities.
66497	R9MhpFiw				For scientists, a simple hyperling to the main source of data (database?) could be useful. [Barbara Barzycka, Poland]	Noted. The links to the datasets (ensembles with multiple members) are available in the metadata information. This has been described in the "documentation" page as part of the FAQs.
40409	RAsV1kX2				IA : When dowloading in PDF, the actual download file is in PNG format [TSU WGI, France]	Accepted. This has been fixed.
40411	RAsV1kX2				IA : When dowloading the PNG of the chart, the quality of image othe IPCC logo looks lower than the graph and a bit croped [TSU WGI, France]	Accepted. This has been fixed.
69011	ry7wUdRJ				IA: Many impacts users' concerns focus on very small geographic areas that often fall within a single GCM gridbox. They want information about that specific region. The crosshair tool button gives an average value for a single gridbox, but that information is presented as a static popup, not in the context of the other analyses. If feasible, it would provide signficant value to impacts users if the value for an active popup was overlaid on or added to the timeseries and other analyses that show up when you click on a region. [Seth McGinnis, United States of America]	Rejected. The assessment done in WGI refers to particular pre-defined regions sufficiently large to properly characterize climate information over homogeneous climatic areas. The use/assessment of gridbox information is not supported by the WGI assessment and, therefore, only information at this scale is just informative.
82023	sLBCeWkq				IA: (Design): The Climatic Impact Drivers is very valuable.This level is too little visible and not sufficiently explained. [Swantje Preuschmann, Germany]	Noted. This tool has been expanded according to the developments done in the TS and SPM and has been linked side by side with the "regional information" in the landing-page, thus increasing the visibility.
69037	sQ8GbjBK				IA: The obs datasets that only have one variable (temp for EWEMBI and BERKELEY, precip for GPCC and GPCP) should be labeled as T-only or P-only. Otherwise, the switching between variables is confusing for users who are not familiar with the datasets by name. [Seth McGinnis, United States of America]	Rejected. This have advantages and disadvantages so we prefer to keep consistency across datasets.
110941	sur8kzNX				IA: I can zoom in using the +/- or moving 2 fingers up and down on the track pad, but I can’t seem to move the page around to scroll over to the part I want to see once I’m zoomed in, please fix this or make it more intuitive. [Melissa Bukovsky, United States of America]	Noted. The tack pad controls have been revised.
110943	sur8kzNX				IA: The bottom of a projection map should explicitly state how many simulations are used in the ensemble. [Melissa Bukovsky, United States of America]	Noted. Information on the number of simulations have been included.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
85087	sZvawqUY				IA: Comment provided by Jennifer Weeks: Time series plots e.g. CMIP6- Mean temperature (T) (deg C) - Historical AR5, when hovering over peaks or troughs, the text box hovers too close to the mouse, and makes the rest of the graph hard to view. For example, it is hard to see where the other peaks and troughs are when the box is hovering over the time series. Would it be better to have the box hovering above the time series instead of to the left or right of the mouse? [Stacey New, United Kingdom (of Great Britain and Northern Ireland)]	Not Applicable. The text box showing ensemble information for a particular year has been removed.
71259	T29NYRAg				Axis label and values are overlapped. (same comment for other plots) [Kenji Taniguchi, Japan]	Accepted. The layout has been updated.
81983	t58LBvDu				IA: (Design) Even if it is a figure caption, the description of the map in the atlas should appear as a title above the map to follow the reading logic from top to bottom.I see the conflict with the pop-ups of the selection fields. At least it would be nice if the selection would remain more obvious. [Swantje Preuschmann, Germany]	Reject. The title is relevant both for the map and for the regional visuals, so it is placed in between both.
66139	T8Wd2C07				If IT resourcing allows, suggest it be made possible to download (as a CSV file) the data extract used to produce the regional plot. [Kushla Munro, Australia]	Rejected. We have prioritised developments that help to support assessment done in the report. However, some sort of reproducibility is feasible from the GitHub repository (and the data will be publicly available via IPCC-DDC).
9891	tdauJF50				IA: As mentioned above for Annex VII, it would be interesting to have the fire weather index calculated and available on the Interactive Atlas, for Observations and Climate models (historical & projections). This will provide useful information to manage the widfire risk in the future. Ex : Ex : https://www.eea.europa.eu/data-and-maps/indicators/forest-fire-danger-3/assessment [Véronique Mariotti, France]	Rejected. We considered computing the Fire weather index (FWI) but it is complex to compute and their use in WGI report is scarce.
79293	TER10JHH				IA: regarding the regional warming stripes: Perhaps the inclusion of a y-axis label (e.g. 'climate model') could ease the interpretation of the meaning of the rows? Whitout hovering your mouse over the plot, the lines could also be interpreted as individual pixels within the region. [Wim Thiery, Belgium]	Noted. A title has been included explaining the plot.
110637	TPMFOdKN				IA: From Atals 7.2 Page 124, lines 33-43 - There is a discussion of some indices neededing to be bias corrected. It says the IA will show both adjusted and raw output - but from this page, there is at the moment no way to see if this is bais corrected or raw. This is an inconsitency - but perhaps one you allready plan to adjust. [Rachel McCrary, United States of America]	Not Applicable. Both raw and bias adjusted information is included in the SOD version for some indices (TX35, TX40).
111543	tulQh0aP				IA: In the title "Mean temperature (T) Trend (deg C)" trend should be dec C per decade (or year?) [Volodymyr Osadchy, Ukraine]	Accepted. This has been fixed.
39005	tYGfnaZu				Again, TX is shown in the scatter plot while it should be the number of days above 35°C. [Clemens Schwingshackl, Norway]	Not Applicable. TX refers to maximum temperature.
3595	U6MSyToV				The y-axis title of figures in 'Scatter plot' sometimes exceeds the allowed area. [Mathilde Jutras, Canada]	Accepted. The layout has been updated.
3597	U6MSyToV				Also, the range of the x-axis is not appropriate (it seems to be set to be the same as the range for temperature (y-axis), but oxygen concentrations are much lower). [Mathilde Jutras, Canada]	Accepted. The layout has been updated.
3599	U6MSyToV				Sometimes the y-axis title touches the tick values (see for example the scatter plot for mean temperature (value) for the region of eastern USA.) [Mathilde Jutras, Canada]	Accepted. The layout has been updated.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
3601	U6MSyToV				Maybe this is normal at this stage, but the download button does not work (it loads empty files). [Mathilde Jutras, Canada]	Rejected. We cannot reproduce the issue with recent browser versions.
3603	U6MSyToV				It could be interesting to be able to load the stripes plots (with labels for years in that case). [Mathilde Jutras, Canada]	Noted. Years in the x-axis have been included in the stripe plots
3615	U6MSyToV				More generally, this is a great tool for policy makers. I love it! [Mathilde Jutras, Canada]	Noted. Thank you for the positive comments.
112253	uALUoEA5				In the scatter plots, the x-axis range is automatically changed to be the same as the range for the y-axis quantity, which is not useful in most cases. Rather, the x-axis range for a given quantity should not change when the y-axis quantity is changed. [Helge F. Goessling, Germany]	Accepted. The layout has been updated.
112255	uALUoEA5				In the scatter plots, the y-axis label protrudes beyond the lower plot region and into the map, at least when the lower region is not enlarged by clicking the "Maximize Window" button [Helge F. Goessling, Germany]	Accepted. The layout has been updated.
86659	UFHuqlB7	0	0	0	IA: A general comment about the number of options (datasets, variables, baselines, scenarios, periods etc.) to explore in the IA: Please think carefully about the number of options available to explore and who the user will be for this tool (what messages/findings do you wish to convey). If the user is intended to be scientists, then maybe the number of options is fine (although please consider explaining more what the different datatets/variables etc. mean for those from different disciplines who might not be familiar with particular datasets or variables etc.). However, if the IA is to be useful for non-experts (such as civil servants, people working in NGOs or the public), the IA could benefit from simplification and displaying fewer options. This makes it easier to navigate to discover key trends and findings. The IA is an extremely valuable tool to convey findings, though making it too complex will deter certain users. [Oyvind Christophersen, Norway]	Noted. The new Interactive Atlas includes now two tools: regional information (the app with multiple options to visualize observations and model projections) and regional synthesis (with simpler synthesis information building on the CID synthesis information in the TS and SPM). Moreover, a new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
66133	ugJyVqFC				Suggest investigating. "Export PDF" delivers a pdf file with a ".png" file suffix. [Kushla Munro, Australia]	Accepted. This problem has been fixed.
3681	ujZ3SqTk				IA: When I selected a point on a map for seeing a particular value for some season/period/scenario and then changed season/period/scenario, the map also changed automatically, but value in label for this particular point remained the same (did not change). So, if I wanted to observe changes in the particular point I had to mark this point on the map, see the value, then close the label, choose another season/period/scenario and only after that click on this point again to see renovated value. [Larysa Pysarenko, Ukraine]	Accepted. This has been fixed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
79299	Uk5vdwbd				IA: For the maps showing variables at 1°C, 2°C, 3°C of warming, it is not clear whether this represents warming with respect to the selected baseline period (e.g. 1995-2014) or with respect to pre-industrial conditions as defined in the SR1.5 (i.e. 1850-1900). Intuitively, one expects these warming levels to be with respect to pre-industrial conditions, but the fact that the baseline is still visible in the caption suggests that the results are relative to the selected baseline period. Note that in the latter case, the maps may be easily misinterpreted by non-expert users. Perhaps adding the 'pre-industrial' reference period, e.g. 'SR15 (1850-1900)', as an optional baseline period and selecting this baseline by default when the user selects maps for warming levels may avoid misinterpretation (and the user can still decide to change the default baseline to the AR5, AR6 or WMO baseline). [Wim Thiery, Belgium]	Noted. The warming is always expressed relative to the chosen baseline. This has been explained in the documentation.
69009	uY9dOoWV				IA: It would be good to have some kind of "reset" button that takes you back to the default view when you first started. [Seth McGinnis, United States of America]	Noted. A home button has been included.
17397	v9GeMJ6Z				IA: Looking at the Stripes display for a region: I suggest you, at the minimum, specifically tell the viewer to use the cursor to hover over the display to read the data points, but nevetheless I think it would help to also have the year indicated along the bottom, the Ensemble or model indicated on the left side, plus a colour-temperature key. [Graham Weedon, United Kingdom (of Great Britain and Northern Ireland)]	Noted. A title and labels for the x-axis with years have been included.
17399	v9GeMJ6Z				IA: I assume the point of showing the Stripes display is to let the viewer infer trends. Inspection is not sufficient: linear regression is required to find out if there is a significant trend (via P). However, as time series the result is only meaningful if the regression allows for (i.e. most simply: pre-process to remove) the autocorrelation. In the case of the trend for the ensemble the critical P value must be increased because combining data from multiple cases amounts to multiple testing (use a Bonferroni-type adjustment of the critical P). The P value should be included within the hover-over display. [Graham Weedon, United Kingdom (of Great Britain and Northern Ireland)]	Noted. Climate stripes plots have been included as a diagnostic tool to visualize trends in the data in a user-friendly form and to check ensemble homogeneity.
106111	vaNwv9UT				IA Possibly these comments applies to all maps of the interactive Atlas. 1) the boundaries of the AR6 regions are not clearly marked 2) in the downloaded map (png) the boundaries of the AR6 regions are not present. I suggest 1) to improve the visibility of the boundaries in the map 2) to add (better as an option) the boundaries in the downloaded graphic files [Piero Lionello, Italy]	Noted. Visibility of boundaries has been improved. The export options are aligned with the IPCC style guidelines for representing maps of future projections.
26079	vHlYGwaf				IA: Please explain whether non colored areas denote absence of data/results (this is applicable to other climartic impact drivers. [Don Alfonso Pino Maeso, Spain]	Noted. The regional synthesis (CID page in the SOD) has been redesigned and informative legends have been included.
66479	VIcgQ1RZ				IA:First of all, excellent icea with the Interactive Atlas! My comment to improve funcionality: It would be useful to add a scrollbar to the bottom panel or an action of scrolling up and down by arrows on a keybord (in case someone wants to see both map and the graphs but cannot reach the bottom graphs). [Barbara Barzycka, Poland]	Noted. Thank you. The design is implemented to be responsive so it works well in tables and mobile devices.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
66481	VIcgQ1RZ				IA.:I am able to select several regions (Arctic, Europe etc.) by clicking on them, a button "unselect all" would improve functionality. [Barbara Barzycka, Poland]	Accepted. A button for selecting all/none has been included.
38639	Vm6l0V4s				It could be good a button to view or hide a grid of coordinates [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Accepted. This option has been included (in the projections group of buttons).
38641	Vm6l0V4s				It could be good if the "Grid value" button has two options, 1) adding the coordinates manually, or 2) clicking on the map [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Rejected. We have prioritised developments that help to support assessment done in the report.
38643	Vm6l0V4s				It would be great if for a single point you can obtain the information for all the Dataset, variables, periods, and seasons. It not functional that you need to use the "Grid value" button multiple times to obtain a complete report for a single point. [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Rejected. Assessment of a single gridbox is not supported by WGI. Therefore, only basic information is provided for gridboxes in order to promote good practices.
38645	Vm6l0V4s				The base map could show the world's countries. User could be oriented easier navigating the IA [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Rejected. Political boundaries are avoided in WGI results, since they are not relevant for climate.
80423	VqLiseiB				IA. Precipitation change in mm is useful, however in our experience, % change is usually preferable as it is independent of the baseline value. This facilitates users applying the projected change to scale local observations anywhere within the region (absolute change should not be applied in this way). [John Clarke, Australia]	Not Applicable. Values are shown in mm/day but changes are already shown as %.
80421	vukxsPop				IA. Suggest "Mean +/- Sigma" is too technical. "Mean +/- Std.Dev." would be preferable if space is limited. [John Clarke, Australia]	Accepted. Done
105697	W3yDGRK8				AI: Stripes map. It may be useful to denote the current year by making a vertical line on the X axis in a bolder format. [Zelina Ibrahim, Malaysia]	Accepted. Labels have been included in the x-axis with years.
38997	we98NQl6				For the scatter plots I would find it nicer if the x- and y-ticks were set at some "round" number (e.g., 14.8°C or 15°C instead of 14.776°C) [Clemens Schwingshackl, Norway]	Accepted. Decimal digits have been reduced (to avoid a false impression of detailed significance) and harmonized.
66151	weAw8MZO				If IT resourcing allows, suggest including a function to enable the user to select "all regions" and plot the global signal. [Kushla Munro, Australia]	Accepted. Done
66493	WEpTtdGW				IA.: A map is empty, a bug? [Barbara Barzycka, Poland]	Accepted. This bug has been fixed.
111547	wltzY0YU				IA: there is no information on the map Ensemble mean - Minimum temperature (TN) Trend (deg C) - 1980-2014 - December to February [Volodymyr Osadchy, Ukraine]	Accepted. This bug has been fixed.
93857	WOIhgwab				IA: When downloaded as png, there's not legend, x axis title is cut off. [Quentin Lejeune, Germany]	Accepted. Exporting has been improved.
93859	WOIhgwab				IA: When downloaded as pdf, it still downloads as png. [Quentin Lejeune, Germany]	Accepted. This has been fixed in the new version
111537	WtTrUclV				IA: In scatter plot there is not enouph numbers on X-axis - just one [Volodymyr Osadchy, Ukraine]	Accepted. The layout has been updated.
102447	wy0kj0Ld				IA: Metadata info box is very informative, but more targeted at experts; Metadata not available for all datasets [Philippe Tulkens, Belgium]	Accepted. Metadata now covers all products.
26093	Wzucty2b				IA: Please explain the meaning of stripes. [Don Alfonso Pino Maeso, Spain]	Accepted. An explanation has been included in the title and an x-axis with years has been included
26095	Wzucty2b				IA: The webpage should be available in more languages other than English and Spanish. [Don Alfonso Pino Maeso, Spain]	Noted. The translation to other languages has been implemented using English and Spanish as examples but extension to all official languages will be undertaken aligned with the translation of the documents of the report.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
69035	x6ULIuhm				IA: Time series plots for season DJF are missing data for 2014 (CMIP6), 2015 (CMIP5), or 2005 (North American CORDEX), possibly others. (Past experience tells me that kind of this problem is often due to incorrect handling of year-end boundaries at file boundaries, possibly related to different GCM calendars.) [Seth McGinnis, United States of America]	Accepted. This problem has been fixed.
66113	x7RkVoGG				Suggest expressing historical temperature data as anomalies. Currently, mapping historical temperatures as absolute values rather than anomaly, is not intuitively easy for most readers to interpret. This is especially true since the projections are expressed in anomaly terms rather than absolute values. This would also be consistent with the rest of the WGI report. [Kushla Munro, Australia]	Rejected. The representation of historical model data is aligned with the representation of observations. Trends are not included since they are not representative for a single realization. Therefore, only values are shown.
66115	x7RkVoGG				We appreciated that regional variables can be mapped/plotted for global temperature thresholds of 1.5, 2 and 3 degrees. [Kushla Munro, Australia]	Noted. Thank you for your comments.
66117	x7RkVoGG				Suggest that if observations and/or projections included the subsurface ocean, then oxygen would be useful and meaningful for the user. Currently, ocean surface oxygen is not very meaningful as it is dominated by oxygen saturation (i.e. ~ temperature). [Kushla Munro, Australia]	Not Applicable. Surface oxygen has been removed from the list of variables.
66119	x7RkVoGG				We appreciate the ability to compare two maps side-by-side. [Kushla Munro, Australia]	Noted. Thank you for the positive comments.
66121	x7RkVoGG				Suggest choosing a single baseline for most users. The availability of three different baselines for projections has the potential to cause serious problems for users. Some variables, periods, regions may be more or less sensitive to the choice of baseline. But unless it is CLEARLY communicated and understood, there is potential for misunderstanding and possibly misuse of the results. Perhaps, if there is a user mode for "advanced" users, the choice of alternative baselines may be appropriate. [Kushla Munro, Australia]	Rejected. The main motivation for the Interactive Atlas is supporting and expanding the assessment done in the chapters. A strong limitation in the chapters is using a single baseline which is not suitable for impact studies. Therefore the possibility to transfer results across different baselines is maintained.
66123	x7RkVoGG				Suggest clarification. Currently there is a mismatch between the AR6 WGI reference regions and the CORDEX domains. This is going to cause confusion for many users. Suggest separate atlases or sub-atlases for CORDEX domains versus WGI reference regions. This would provide for more internally consistent analyses and interpretations. [Kushla Munro, Australia]	Noted. Only a subset of relevant reference regions (those covered by each domain) are active for CORDEX domains.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82005	X8MXxZge				IA: (Scope, Design, Development) In one example I see colour differences in four adjacent boxes with a temperature change of 1.6804, 1.6005,1.4721,1.3984 K. The colour richness looks nice, but is not interpretable for a statement. In my understanding, for a decision-maker, it is more intuitive if he can see which warming level is exceeded. The choice of the levels depends on the message to be received by the reader. For example, one could orientate oneself on an initial statement of SR1.5: Half a degree Celsius makes a difference. (Also, as far as I know, the model accuracy for temperature changes within +/- 0.5 K.) Depending on the stated goal of the map a possible scaling for the temperature change signal could be: <0; 0; ≤ 0.5, ≤ 1.0, ≤1.5, ≤2.0, ≤2.5, ≤3.0, ≤ 3.5, ≤ 4.0 See e.g. https://www.atlas.impact2c.eu/en/climate/temperature/?parent_id=22 [Swantje Preuschmann, Germany]	Noted. There are different visualization tools intended for different purposes. Global maps are relevant for all variables, not only for temperature. The GWL plot and summary tables provide specific information focusing on Global Warming Levels. Moreover, a flexible colour scale/bar has been implemented so users can define the range and choose a segment of the range of colours. This allows implementing indirectly the desired functionality.
111111	xazBf				IA: Once I go to climate drivers, there seems to be no way to get back to the gridded projections (main page), except to use the browsers back button or somehow cause an error that redirects you. [Melissa Bukovsky, United States of America]	Noted. A home button has been included.
71641	XBu03pOl				When looking at the plots for each of the boxes on the mapfor all of the various datasets and variables it would be useful to have information on the x and y axis of the stripes. [Jessica Hargreaves, Australia]	Accepted. An explanation has been included in the title and an x-axis with years has been included
79305	xCx9y9ch				IA: It would be very useful if the ISIMIP2a-b global-scale impact projections (www.isimip.org) could be featured in a similar interactive atlas, potentially as part of a joint WG I - WG II effort. The ISIMIP modelling community has worked very hard to develop global-scale impact projections, and currently 80 different impact models have provided their input for phase 2b. The ISIpedia project is already working in the direction of an interactive visualisation of the data: https://www.isipedia.org/ but will have a focus on providing interactive results associated with individual publications. [Wim Thiery, Belgium]	Rejected. ISIMIP sectoral projections are relevant to WGII but are not in the scope of WGI.
80045	XcynTHfR				IA: I am unsure if the Climatic Impact Dirvers should be commented on as well - as no review code can be requested there. But I wanted to comment on that nevertheless: please add the time span for which the indicated changes are given. (Are these past changes, or changes forecasted for the future? For which time ranges???) [Heike Wex, Germany]	Noted. The new Interactive Atlas includes now two tools: regional information (the app with multiple options to visualize observations and model projections) and regional synthesis (with simpler synthesis information building on the CID synthesis information in the TS and SPM). Moreover, a new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
85089	XIPnzEdO				IA: Comment provided by Stacey New: Climate impact drivers - the menu of variable is not fully visible in the browser window, I had to zoom out to 80% to be able to see all of the variables in the drop down menu. When in 100% I cannot see the following variables: heavy snow and ice storm, hail, snow avalanche, marine heatwave and ocean and lake acidity. [Stacey New, United Kingdom (of Great Britain and Northern Ireland)]	Noted. The regional synthesis in the new version (former CIDs page) includes the CID synthesis information in Chapter 12 and in the TS and SPM, which relies in multiple lines of evidence (mostly literature). This tool has been updated including more informative legends and guidance (About link).

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
85091	XIPnzEdO				IA: Comment provided by Stacey New: It is not clear how to get back to the initial interactive page once on the climate impact drivers page. Could a link be placed in bewteen the licence and climatic impact drivers links? [Stacey New, United Kingdom (of Great Britain and Northern Ireland)]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters when it is ready.
85093	XIPnzEdO				IA: Comment provided by Stacey New: Could the time series, annual cycle, scatterplot, table summary and climate stripes when selected be shown in a separate tab or on the side instead of at the bottom, maybe the world map could shrink? Currently if you expand the bottom toolbar to view these graphics they hide the world map behind, I think it would be useful to be able to view both at the same time. [Stacey New, United Kingdom (of Great Britain and Northern Ireland)]	Rejected. The requested functionality would require synchronizing different windows, which is problematic. This is why the synchronized views are included in two panels of the same window.
85095	XIPnzEdO				IA: Comment by Stacey New and Jennifer Weeks: The interactive atlas was a joy to use and it will definitely be used in our work as Climate Service Scientists. Thank you for creating such an important and extremely useful tool. [Stacey New, United Kingdom (of Great Britain and Northern Ireland)]	Noted (and appreciated). Thank you for your kind comments, and also for taking the time to test and suggest improvements on the tool!
38627	xn6b8l4N				IA: it would be easier if the order of the figure caption follows the order of how the options need to be selected (Dataset, Variable, Period - Scenario/Baseline/Period, season). [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Noted. The caption has been edited to be human readable.
38629	xn6b8l4N				IA: Figure Atlas.54 shows a different caption if you attempt to reproduce the graph, it could be confusing. [ANGELICA MARIA MONCADA AGUIRRE, Colombia]	Not Applicable. This figure has been removed.
110635	XNCNQwBi				IA: I have found the interactive Atlas to be glitchy in google chrome. For example on this page, I see there is a little time series plot at the top - where I suspect I should be able to change the time period, however that does not work. I am only able to see the list with the different climate impact indices - so I don't know what timepereiod this change is based on nor what ensemble this is from. . Also, from the Atlas section 7.2 it looks like I should be able to look at these climate impact indices for the different CMIP ensembles, but that is not possible as well. [Rachel McCrary, United States of America]	Noted. The regional synthesis in the new version (former CIDs page) has been completely redesigned.
26081	XZNqlzlu				IA: There is no information on oceanic regions for ocean/lake acidity. [Don Alfonso Pino Maeso, Spain]	Noted. The variables included in the Interactive Atlas are a limited subset selected to support the assessment done in the chapters. This has been selected in coordination with the chapters.
26083	XZNqlzlu				IA: There is a typo (confdence instead of confidence) [Don Alfonso Pino Maeso, Spain]	Accepted. Fixed
93841	y34CcMTw				IA: The titles of the map get cut off/do not fit in the given map. [Quentin Lejeune, Germany]	Noted. This has been redesigned.
93837	yAeMY6xc				IA: It is not immediately clear that the window (two rectangles) sign leads to the compare function. [Quentin Lejeune, Germany]	Not Applicable. The comment has no indications on the suggested change. We didn't find a better alternative.
93839	yAeMY6xc				IA: On the left-hand side temperature bar, it is not possible to select a range of temperature (e.g., 0-4), but only at a 1 degree step. [Quentin Lejeune, Germany]	Accepted. Flexible range and ticks for segmentation have been implemented for colour range/bar in the new version
82017	YeHj9N5z				IA: (Development) When fading in the "stripes", the colour bar is hidden or does not exist. [Swantje Preuschmann, Germany]	Noted. The original design by Ed Hawkins et al. doesn't include a colorbar
5115	yeO8za1H				There is no information for “Ensemble mean - Mean temperature (T) Trend (deg C) - 1980-2014 - October (S.Asia)” [Anastasiia Chyhareva, Ukraine]	Not Applicable. Ensembles are no longer used for observations (only individual datasets)

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5641	yJacuaPz				IA: Why are three decimal places shown? Is this adding clarity to the scatter plot? This may be uneccesary. [Louise Wilson, Australia]	Accepted. Decimal digits have been reduced (to avoid a false impression of detailed significance) and harmonized.
89545	YjUzcsdu				IA: In the "About" page, if possible to add links to the website of the observation datasets used for reference/further information about the data source. May also cross-reference with Technical Annex I on observation datasets. [Faye Abigail Cruz, Philippines]	Noted. A new section on "documentation" has been added to the landing-page. This includes guidance material, FAQs and will cross-reference online material from chapters and annexes when it is available online. A guided tour has been also included to explain the basic functionalities.
3605	YnYUaoty				For ocean variables (oxygen and pH), we don't know what depth in the water column the values refer to. Is it the surface? A weighted average? The total change in the water column? (if so, what are the values for actual values and not change. [Mathilde Jutras, Canada]	Accepted. This variable is now named "pH at surface".
3607	YnYUaoty				There is no legend for the hashed regions. [Mathilde Jutras, Canada]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
3609	YnYUaoty				For many variables, observed tendencies happen in specific basins. The regions we can select on the map are set by latitude, and may encompass multiple oceans (e.g. Atlantic and Pacific). Because of this, we don't see any tendencies in the time series or in the stripe plots, although I think we would if we were to select only one basin at a time. For example, deoxygenation does not have the same trend in the Pacifc and in the Atlantic. [Mathilde Jutras, Canada]	Noted. The regions included in the Interactive Atlas are (some of) those used in the assessment report. Therefore they are not intended for all purposes.
89617	z3m1NdC7				IA: Are there plans to have an option to download the data as csv/text files? [Faye Abigail Cruz, Philippines]	Rejected: There is already an option to export the numbers: the GIS (GeoTIFF) option.
5075	Z5OIhGNK				IA: changing the dataset does not refresh the displayed value. This still shows the value for Fz8ppExw [Martina Stockhause, Germany]	Rejected. The bug could not be reproduced.
80419	ZAkghXuD				IA. The Australian contintent should be divided into four regions, not three. The existing 'C.Australia' region spans the temperate to sub-tropical east as well as the central and western desert regions. This masks important variation in projected change of up to 0.4°C in tasmax in CMIP5 GCMs (0.7°C when CCAM RCM results included in ensemble). A scheme approaching the four 'super-cluster' regions used in Climate Change in Australia (https://www.climatechangeinaustralia.gov.au/en/climate-projections/about/modelling-choices-and-methodology/regionalisation-schemes/) would be more appropriate. These regions are available in shapefile format or as CMIP5 GCM masks from my Team, if that would be of use. I have compiled a simple comparison of multimodel means/medians between our Eastern Australia and Rangelands super-clusters, which can be downloaded from https://cloudstor.aarnet.edu.au/sender/?s=download&token=55f54a1f-2d87-41e6-9157-a55274811cdd , if useful. [John Clarke, Australia]	Noted. The reference regions have been updated, including Eastern Australia

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124949	Zfovqzed				When clicking through the various analyses types (i.e., Time Series, Annual Cycle, Scatter plot, etc.), there doesn't seem to be enough room on horizontal screens for the entire plot and/or table of information. The y-axis for the scatter plot extends past this row into the above image of the globe showing the projections and regions. Also, when one hovers over the icons for time series, annual cycle, etc., these labels do not show up, which would be helpful. [Trigg Talley, United States of America]	Accepted. The layout has been updated.
124951	Zfovqzed				When selecting the variable Precipitation under CMIP6 model projection, what does the cross-hatching mean? The legend only shows colors for relative changes, but it is unclear what the cross-hatching means. [Trigg Talley, United States of America]	Noted. Hatching approaches for uncertainty representation have been redefined (consistently across the WGI report; see Cross Chapter Box Atlas.1) and the different options have been included in the new version (including informative legend).
5637	zkjFoXxL				IA: The regions over Australia are too broad and do not follow similar regions. There should be a region in the arid centre, and the coastal regions to the east and west should have their own regions. [Louise Wilson, Australia]	Noted. The reference regions have been updated, including Eastern Australia
110819	ZMLUIzIh				Atlas should values and changes for minimum minimum temperatures over 0˚C - in other words the Atlas should show where over temperatures have rise above freezing. 0˚ is a key temperature threshold, a tipping point for features in the cryosphere. In particular it is a key threshold for snowpack and glaciers in high mountain areas that provide critically important water supplies for several regions. For example, in 2015 the average overnight winter temperature in California's Sierra Nevada rose above 0˚C for the first time on record. The Sierra Nevada snowpack provides 30% of the State's water supplies, and that year snowpack reached historic lows driven in part by a record warm temperatures. [Hunter Cutting, United States of America]	Accepted. Flexible definition of the colorbar and ticks for segmenting have been implemented in the new version.
39003	ZqrkljEs				The colorbar limits for the number of days above 21.5°C should be adjusted to see better the gradients in low latitudes. [Clemens Schwingshackl, Norway]	Not Applicable. This variable has been removed
82007	ZRwUV1tH				IA: (Content): Scenario and Baseline should not be subcategories of the Period tab. [Swantje Preuschmann, Germany]	Rejected. The "value and period" panels allows to select the time-period and scenario or the global warming level, so it accommodates both dimensions of analysis.
89569	ZuRJKhJF				IA: When displaying maps using the 2-panel option, the title seems to be concatenated. Is it possible for the title to be reformatted in this case? [Faye Abigail Cruz, Philippines]	Noted. Titles have been reformatted.
9895	zvvnvsoS				IA: It could be useful to have an "Information" icon, such as a "i logo" when the user wants to quickly have the definition of a variable (ex : https://coastal.climatecentral.org/map/10/10.0723/3.5989/?theme=sea_level_rise&map_type=coastal_dem_comparison&contiguous=true&elevation_model=coastal_dem&forecast_year=2030&pathway=rcp85&percentile=p50&return_level=return_level_10&slr_model=kopp_2017) . It can be straightforward for many variables but not for all, i.e. cooling degree days can be defined against different reference temperature: is it 18°C here, 22°C, 26°C ? [Véronique Mariotti, France]	Accepted. Detailed information on variables have been included in tooltips which can be consulted online by clicking in the "?" icon.
5085	zy2Wc24Y				IA: export png reported an error; same for export of PDF [Martina Stockhause, Germany]	Noted. Export options have been revised and checked in the final version.

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40405				5	IA : INSTRUCTIONS PAGE: In the section "Instruction" in line 5, the second to last word should be "include" instead of "incldues" [TSU WGI, France]	Editorial – copyedit has been completed prior to publication
5061					It is currently not possible to get from figures in the report to the underlying data or information how to create the figure with the interactive atlas. A reference to the used source data (data citation) is also missing in Tables Atlas.1, Atlas.3, Atlas.A.2 in the reference list esp. for results from SR1.5 / HAPPI-MIP, CMIP5, CMIP6 and CORDEX. [Martina Stockhause, Germany]	Noted. The Interactive Atlas allows the export of figures in GeoTIFF format (this includes the number underpinning the figure and can be easily imported from a GIS client or from any scientific framework). Tables have been moved to the corresponding Technical Annex (and proper data citation has been included).
5063					The software reference for the atlas is provided. However, it should be cited correctly. According to zenodo the software reference should be:"Maialen Iturbide, Jose M. Gutierrez, Joaquin Bedia, Ezequiel Cimadevilla Alvarez, Rodrigo Manzanas, David Huard, & Özge. (2020, February 28). IPCC-WG1/Atlas: WGI Atlas (Version v1.0-sod). Zenodo. http://doi.org/10.5281/zenodo.3691646 ." [Martina Stockhause, Germany]	Taken into account. This has been fixed in the final version.
5083					IA: The claim for reproducibility requires to give additional information on the input datasets and the provenance information apart from the Atlas software link. [Martina Stockhause, Germany]	Noted. Provenance is implemented including information (DOIs) on the particular datasets used. This information is expanded in the GitHub repository including specific details on ESGF versions used, etc.
34381					General. The Interactive Atlas is a useful tool and with open access. To present it is very important. However, the first part of the chapter (mainly section 5) is highly repetitive with data presented in former chapter. I have my doubts whether there are necessary, might be better to add the additional data in the former chapters. [Guiomar Rotllant, Spain]	Not Applicable. Section 5 includes region by region assessment of mean changes which is not done in other chapters.
34383					General. Typographic, semantic and references errors has not been checked. [Guiomar Rotllant, Spain]	Editorial – copyedit has been completed
35157					IA GUIDANCE:The Atlas's section 7 clearly describes the needs of development the interactive Atlas. [Lilia Taranu, Republic of Moldova]	Noted. Thank you.
35159					IA SCOPE: All datasets, reference regions, and reference periods – including warming levels as well as the reasons for their choice clearly and transparently is described in the Atlas chapters. [Lilia Taranu, Republic of Moldova]	Noted. Thank you.
35161					IA CONTENT: The Interactive Atlas effectively complement the Atlas chapter material (in particular Sections 4 and 5), and material in other chapters for example presenting illustrative some of (ETCCDI) extreme indices (Chapter 11) and a selection of climate impact drivers used in Chapter 12, and may also be useful for IPCC WGII Impacts, Adaptation and Vulnerability. [Lilia Taranu, Republic of Moldova]	Noted. Thank you.
35163					IA DESIGN: The interactive Atlas has a very friendly design with high level functionality and the ability to highlight the different regions, that is important for countries in which there are no technical abilities and financial resources available for developing their own regional climate change scenarios for vulnerability, impact and adaptation assessment. [Lilia Taranu, Republic of Moldova]	Noted. Thank you.

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35165					IA PROVENANCE: The provenance information provided by the Interactive Atlas (including examples of metadata and open code for reproducibility provided) is allow flexibility of options for extended analysis, ensuring not only the accessibility and reproducibility of results, but also building trust on the information provided. [Lilia Taranu, Republic of Moldova]	Noted. Thank you.
35167					IA DEVELOPMENT: Additional available sectoral indices (i.e. agriculture, health, water resourses, forest, tourism) could be added to support policy decision for adaptation and climate monitoring. [Lilia Taranu, Republic of Moldova]	Noted. The Interactive Atlas builds on indices assessed in WGI chapters, including some sectoral relevant indices (CIDs) used in Chapter 12.
35169					IA USEFULNESS: The Interactive Atlas is a great product allowing the visualization and exporting data in different formats (maps, time series, annual cycle, table summary, and stripes) that is very useful for impact, vulnerability, and adaptation studies, developing policy or projects relevant to climate change. [Lilia Taranu, Republic of Moldova]	Noted. Thank you.
40027					Confidence levels in some places are too strong lack support for regional precipitation trends. For instance, increasing annual rainfall in north-western Australia since 1950s and decreasing rainfall in the northeast of the South Island of New Zealand over 1950–2004 are assigned with very high confidence. Never seen such a high confidence level for the trend of precipitation. [TSU WGI, France]	Taken into account. Confidence assessment of observed precipitation trends revised where appropriate and especially in the Australasia section.
40427					Inconsistent treatment of topics across (sub)region. Attribution results seems to be missing for many regions such as Europe, America and Small islands etc. [TSU WGI, France]	Taken into account. Where available relevant attribution evidence included in all regional sections.
40853					Suggest placing the Introduction of the interactive Atlas in the front. As a really novel aspect of the AR6 report, many readers may want to read the report while browsing the website of IA. So it is better to put the introduction in the front. [TSU WGI, France]	Accepted. The introduction to the Interactive Atlas has been moved to the front (section 2, after an introduction).
44005					Most atlas figures are good and will be widely used in future. But why do you not have figures S1 and S4 from Stjern et al. at https://www.atmos-chem-phys.net/18/621/2018/acp-18-621-2018-supplement.pdf? Many readers now have wide screen or dual monitors can read two pages side by side as in a printed volume. You could have all the captions on the left hand page, in their entirety as verbose as you choose and all the images on the right. This would avoid having to split a caption to a following page where people can no longer see the image and maybe not remember the first part of the caption. [Stephen Salter, United Kingdom (of Great Britain and Northern Ireland)]	Rejected. The Atlas includes information supporting the assessment and therefore builds on consistent lines of evidence. Therefore, individual models are not displayed in the Atlas.
61163					Some figures are drawn with country borders and others not. Better to focus more on the IPCC regions and ensure more homogeneity across the chapter graphics including the interactive Atlas [Khalid EL RHAZ, Morocco]	Noted. See #93539

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61165					Need for more information about extremes and sector-linked indices (i.e. CLIMPACT indices) in the interactive Atlas [Khalid EL RHAZ, Morocco]	Noted. The indices included in the Interactive Atlas support the assessment done in the chapters and, therefore, they are selected in agreement with the different chapters. Some sectorial indices (CIDs) are included to support the assessment of Chapter 12, but the inclusion of an extended list of indices is beyond the scope of the Atlas. WGII is producing an Atlas and more sector-relevant information would be available there.
61167					Figure Atlas.41 and Figure Atlas.12: does MED here means the Mediterranean region? If so, why listing it within Europe [Khalid EL RHAZ, Morocco]	Taken into account. In the European section it is clarified in the introduction that the MED region includes parts of both Europe and Africa. Assessments on this region are mostly done for the European part of the area defined by the region domain. Where relevant, a specific reference to European and African sub-domains are indicated (e.g. in Fig Atlas.23). Also, the MED region features in Fig Atlas.16 in the Africa section and is introduced in the Africa section (Atlas.4.1.1) as an African region.
61169					- Figure Atlas.1: Mediterranean region is included in Europe, why not in Africa???!!! [Khalid EL RHAZ, Morocco]	Not applicable. Figure Atlas.1 no longer contains information about the reference regions.
61171					- In the Executive summary (lines 4-6): observed changes of temperature in some regions are reported. Why not others like north-west Africa which shows the same warming rate (Figure Atlas.13) [Khalid EL RHAZ, Morocco]	Taken into account. Information on temperature trends now standardised in the ES statements with all regions included.
71257					(Not for specific data) Coastal line has difficulty seeing. [Kenji Taniguchi, Japan]	Noted. The borders of the continents have been made more prominent (using different colours when hard to see)
78237					The atlas is a very interesting feature and will make the data more understandable for policy makers and others. [Dagmar Nadja Henner, Austria]	Noted. Thank you.
81965					Please add a Pacific-centred map projection. [Dan Zwartz, New Zealand]	Accepted. This possibility has been implemented in the new version.
81967					An option of right-hand clicks for pop-ups would be handy e.g. to explain specific datasets, variables as you are choosing them…..or even better if you click the four options and produce a map that some text comes up saying “this map represents XXX….”. This information is currently a bit remote under “About”. [Dan Zwartz, New Zealand]	Noted. A "?" link for more information has been included in appropriate places in order to provide further information on specific elements.
81969					Once a map is viewed can the data be downloaded so it can be overlaid with other spatial information e.g. EEZ boundaries, species distributions. [Dan Zwartz, New Zealand]	Not applicable. The Interactive Atlas already allows exporting the maps in GeoTIFF format (this is a GIS format providing the actual numbers and can be loaded in any GIS client and overlaid with other layers)
93537					Very nice Interactive Atlas. More focus on extremes is needed; they have generally great negative impacts on societies. Also other variables and sector-linked variables may be very useful for impacts assessments. [Omar Chafki, Morocco]	Noted. The Interactive Atlas builds on indices assessed in WGI chapters, including key extreme indices assessed in Chapter 11. These indices are selected in collaboration with the relevant chapters.
93539					Some figures are drawn with country borders and others focuses more on the regions (IPCC regions) and do not show any borders, which is more appropriate for regional assessments. So please avoid making borders where no really needed or at least use the correct borders. This will allow more homogeneity across the chapter including with the interactive Atlas and help for larger use of the Atlas graphics. [Omar Chafki, Morocco]	Accepted. Country borders are not used in the updated figures.

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93541					In the Executive summary (lines 4-6): observed changes of temperature in some regions are reported. But the rationale behind listing some regions is not clear (the intensity of the changes, significance? …) we find region with (0.2-0.3°C per decade) and other with at least equivalent if not more trends (and impacts) are not listed (i.e. north-west Africa) (please see Figure Atlas.13) [Omar Chafki, Morocco]	Taken into account. Rationale for findings reported in the ES has been clarified and trends in all relevant regions reported.
100381					Is ti possible to include Consecutive Dry Days (CDD) in the IA? [Claudine Dereczynski, Brazil]	Accepted. CDD has been included as a new index (this has been agreed by the drought cross-chapter group)
100423					IA: I tried to select many regions in South America: for instance SES and SSA in order to cover the complete Argentinian territory and get local information and projections but I wasn't able to do it. Is it possible to do so? [Lincoln Alves, Brazil]	Noted. The Interactive Atlas already allow to select multiple regions. We haver revised this functionality.
105963					AI: Guidance - the information in the Atlas chapter provides sufficient information to begin use of the Atlas. I suggest that this material be repeated in the Instructions section in the Interactive Atlas itself under some menu list. Later also it would be useful to have some short tutorials - not necessarily for the AR6 report but to increase user interaction. [Zelina Ibrahim, Malaysia]	Accepted. A new section "user guidance" has been introduced to properly describe the use and limitations of the interactive Atlas
106529					AI: Content - It is not so easy to see the results that are being discussed in the Atlas chapter on the Interactive Atlas. For example the text might state a significant trend, however the trend line eg skKAbvwb, does not have statistical regression or analysis, or like for EnXqAMt0. [Zelina Ibrahim, Malaysia]	Noted. The links between the Atlas chapter and the Interactive Atlas have been strengthen in the FGD.
106771					An important aspect of the Atlas is the regional/local details provide in the assessment. Section Atlas 2.2 presents new subregions, from recent literatures, used to summarize information on trend and projected climate. This is a significant advance compare to AR5, as several new subregions are defined for in-depth assessment. SR1.5 already provides information over some of these new sub-regions. However, assessments of observed trend and future projections across some sections in Atlas don't really follow these new subregions. Instead, comments seems to be shape to previous AR5 subregions. Therefore, some new subregions are missed in the assessment [Wilfried Pokam, Cameroon]	Noted. The new subregions are now introduced in each regional section but the assessment is made according to the available literature and not necessarily focusing on the subregions.
107371					AI: Design - the icon use is sometimes a bit confusing. I use an Android phone and the Atlas Show Metadata icon is a Share icon in Android. The Atlas Share icon is like some Recycle icons. The increase bottom window pane icon which consists of 3 parallel lines is a Menu icon in Android. Some thoughts should be given to the icons used, as some is not so obvious. [Zelina Ibrahim, Malaysia]	Rejected. There are many sensible choices for icons all with pros and cons. In general we have received good feedback on this so we keep the same icons.
107433					AI: Design - the top menu to access different parts of the Atlas is a bit confusing. The "Interactive Atlas" menu on the top left is the home button and is a different font size and on a different line compared to the top right menu for About Instructions etc. [Zelina Ibrahim, Malaysia]	Noted. This has been redesigned.

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107795					AI: Design - There is Climatic Impact Drivers Menu on the top right and this leads to a page with a slightly different style to that of the Interactive Atlas. Of course the data set is more limited, but even the caption titles are different. I also do not know what the graph icon on the top left is meant to do. On the Interactive Atlas, the same graph icon represents Period. [Zelina Ibrahim, Malaysia]	Noted. The CID synthesis information have been redesigned for the FGD. The SOD version was just a mock-up.
108305					AI: Usefulness - I think the IA is a fantastic tool to have and needs further development. It will be a wonderful opportunity to have university and school children to be able to explore the information. At the moment the Atlas is still as its early stage. A possible comparison could be made with: - the software Ocean Data View (ODV) at https://odv.awi.de/ - the UNEP Ocean Dat Viewer at https://data.unep-wcmc.org/ Which could also be potential sources of datasets. [Zelina Ibrahim, Malaysia]	Noted.
108947					AI: Development - The current data sets are primarily from WGI work and there was stated a possibility for inclusion of data sets that could be useful for WGII purposes. Many of the base data sets may be obtained from UN or World organisations such as the World Bank data sets. Useful data related to vulnerability and exposure could be population, GDP, education, health, energy usage, Internet penetration etc. The possibility for users to do contour plots (such as in the ODV software) would be useful. [Zelina Ibrahim, Malaysia]	Noted. The main goal of the WGI Int+M1636eractve Atlas is supporting the assessment done in WGI. However, there have been several meetings with WGII in order to include information and functionalities useful for WGII, handshaking with WGII activities.
108949					AI: Scope - The description of scope in the Atlas chapter appears to be sufficient. [Zelina Ibrahim, Malaysia]	Noted. Thank you.
115577					Other languages will be welcome [Hicham EZZINE, Morocco]	Noted. This possibility has been included in the design of the Interactive Atlas and the actual implementation would align with the translation timeline for the WGI report.
115937					FAQ Atlas.1 Explain misuse? [Valerie Masson-Delmotte, France]	Noted. See #115865
115939					FAQ Atlas.4 I do not think references are required for FAQs. [Valerie Masson-Delmotte, France]	Noted. See #115865
117039					The text of the atlas is almost twice longer than its target length. Very serious considerations are needed to sharpen the assessment and avoid duplication with other regional chapters. I suggest to develop an Annex which would build across chapters on observed, detected trends, attribution (and role of modes of variability), projected trends in a synthetic, table format and could be refered to across chapters. This could avoid a lot of duplication (note that the previous printed atlas was an Annex). This would need to be fully traceable to the assessment and literature. Please consider carefully the outline, information already provided in other chapters (eg ch 1, ch 10) so as to shorten the text of the atlas to provide rigor, transparency and traceability to the methodological choices of the interactive atlas. [Valerie Masson-Delmotte, France]	Accepted. Atlas text streamlined and focused on its core assessment responsibilities of mean climate change and model evaluation over the regions. Tables are used to summarise past and future mean changes including links to other chapters where appropriate.

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117161					Congratulations for impressive work on the interactive atlas and on the text. The most challenging aspect is to understand how the atlas supports the assessment of other chapters, and how the assessment of other chapters is used in the regional syntheses. An Annex could be used to develop transparency and traceability on that (especially related to the detection of trends, attribution, projections, regional model evaluation). The atlas could have synthesis tables (as chapter 11) and possibly a limited (1 page) text explanation/ discussion on each key figure. I am concerned that some of the current assessment is directly related to the expected assessment of WGII regional chapters. [Valerie Masson-Delmotte, France]	Taken into account. Atlas text streamlined and focused on its core assessment responsibilities of mean climate change and model evaluation over the regions. Links to other chapters included where appropriate. Any material which is the remit of WG II regional chapters removed.
117163					I appreciate the amount of work done compared to the previous version, and make suggestions so that the atlas is best integrated as a concise text document and ar rich interactive online version within the AR6 report. [Valerie Masson-Delmotte, France]	Noted: Thank you.
117165					Another concern for the section Atlas5 is how to relate the literature assessed to the exact content and use of the atlas. Could the text include a sort of tutorial, explaining how the atlas can be used to support a regional assessment, rather than doing the regional assessment apparently independently of information in the interactive atlas? I hope that you understand my concerns, which are related to : the length and sometimes descriptive aspects of the section 5 of the atlas; the link to the assessment of other chapters; and the use of the atlas information. [Valerie Masson-Delmotte, France]	Taken into account. Atlas text streamlined and focused on its core assessment responsibilities of mean climate change and model evaluation over the regions.
117167					I do not understand the choice of case studies, one overlaps with chapter 10 but what about the other two choices, why a focus on two examples for the Arctic? [Valerie Masson-Delmotte, France]	Not Applicable. The case studies were chosen to support the assessments for the Arctic region. But due to overlap and discussions in cross chapter meetings these case studies have been removed from the Arctic section.
117169					I would suggest to restructure the flow of information in the document. I would suggest to have the following order : section A1; A6; A2; A3: A7 as the core content of the altas. The regional assessments were not part of the intended scoping, I would suggest to strongly shorten these parts, maybe through a brief introduction of key features and very synthetic tables supporting the key regional findings. The text linked to section Atlas.5 is around 90 pages currently. I suggest to strive to 1 page per region / domain (altogether around 20 pages, so 4-5 times shorter). [Valerie Masson-Delmotte, France]	Taken into account. The structure has been revised with A7 and A6 combined into a new A2, A2 and A3 combined with A1 as a general introduction. The rationale for the regional sections to assess mean climate change and model evaluation over the regions was agreed in LAM2 as this material required inclusion in the report and no other chapter was prepared to take on a comprehensive region by region assessment of mean changes and model evaluation.
117175					A harmonisation of approaches to stippling, hatching etc needs to be implemented for all WGI figures. [Valerie Masson-Delmotte, France]	Accepted. Uncertainty representation has been harmonized across the WGI report building on Cross-Chapter Box Atlas.1.
117177					In the interactive online atlas, there are typos on the page "climate impact drivers", for the caption (confdence instead of confidence) [Valerie Masson-Delmotte, France]	Editorial – copyedit has been completed prior to publication
117179					The definition of warming levels is not in GMST in the AR6 but in GSAT, please check [Valerie Masson-Delmotte, France]	Accepted. The approach for defining warming levels have been coordinated with other chapters.
117181					what is the reason for a fixed period for calculation of mean values or trends (1980-2014)? Why no possibility to have a longer perspective? [Valerie Masson-Delmotte, France]	Noted. A new additional period (1961-2015) has been included in the new version.

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117183					what is the reason for a fixed period for calculation of mean values or trends (1980-2014 for maps, 1950 for time series)? Why no possibility to have a longer perspective? I could test the functionalities described in Atlas72 but it is hard to understand how the current atlas supports the assessment of ch 10, 11, 12. [Valerie Masson-Delmotte, France]	Noted. In the interactive Atlas we use the most recent period used in Ch2, since some of the regional datasets used are limited to this period; however, we have included an additional longer period in the new version. The new version includes a new design to better reflect the dimensions the Interactive Atlas is supporting: 1) regional information, with indices relevant to Atlas, Chapter 11 and Chapter 12; 2) regional synthesis, with CID synthesis information supporting Chapter 12, the TS and the SPM. A new section has been included to provide user guidance and to describe how the Interactive Atlas supports the assessment done in other chapters (including examples bases on chapter's case studies).
124853					For precipitation variables, certain of the green shades make it hard to see the coastal boundaries. This is especially true for change plots when significance hatching is present. For these green-scale plots, recommend changing the coastal boundary lines to a different color, such as orange or red, for visibility. [Trigg Talley, United States of America]	Accepted. The colour of coastal boundaries has been revised to make them more visible
124855					Users would like to have the ability to enter a latitude-longitude and obtain plotted-field information at that site. As it is now, one has to use trial and error with the map-click function to get to the site of interest. [Trigg Talley, United States of America]	Noted. The possibility to display the coordinates has been included in the new version.
124857					Users cannot get the y-axis magnitude to change in the scatter plots. A "change" box pops up, but it doesn't respond to clicking. [Trigg Talley, United States of America]	Noted. This has been fixed in the final version.
124859					For climate-impact driver maps, the colors don't vary, locked in high-confidence-increase, even while the caption at bottom of the maps does vary as expected. [Trigg Talley, United States of America]	Noted. This has been fixed in the final version.
124861					While the Atlas is an innovative and valuable addition to the WGI report, the potential outputs (data, plots, etc.) generated by the interactive feature were not systematically reviewed. The Atlas text mentions this on page 123, lines 9-11, but does not clarify the significance for the status of these outputs. While the authors have made a great and commendable effort to standardize the methodology for the interactive feature, it remains that a plot generated from an acceptable dataset is not necessarily perfect and there is a potential to be inadvertently confusing or ambiguous. The rigorous review process for IPCC reports is designed to address this very fact. For example Chapter 9 (page 9-35) notes well-known biases in CMIP5 models' tropical precipitation and mean SST. However, there is no explanation of this bias or distinction between tropical vs. extratropical in regional plots using CMIP5 temperature and precipitation generated by the interactive feature. Therefore outputs generated by the interactive feature should include a disclaimer that they are based on datasets assessed in the IPCC report but have not themselves been reviewed in accordance with IPCC rules and procedures, and are not IPCC products. [Trigg Talley, United States of America]	Rejected. Many of the figures in the FGD chapters included in the final report are also derived from datasets or models assessed in the report but the final versions are significantly updated compared to those reviewed in the SOD with new models and datasets and the maps and summary statistics generated by the Interactive Atlas are no different. All of the indices and algorithms used to generate the Interactive Atlas outputs have been assessed in the underlying chapters in the report.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
124863					[ACCESSIBILITY] Given the great length of the WGI report, recommend a minimum of derivative content in the text of the Atlas chapter. In particular, the authors could consider reducing length of the summaries of previous findings. These sections add quite a bit of length to the chapter and are by definition duplicative. Perhaps the previous findings could be shortened by integrating into a best understanding of changes in each region, noting whether these come from AR5, AR6, or the recent Special Reports, along with a discussion of improvements in modeling. The North America section is a good example of this. Likewise the executive summaries for Europe and N America do a good job of focusing on improvements from AR5 to AR6/CMIP5 to CMIP6. [Trigg Talley, United States of America]	Taken into account. Atlas text streamlined and focused on its core assessment responsibilities of mean climate change and model evaluation over the regions.
124865					The information generated by the interactive Atlas would indeed be useful for WGII and WGIII, as mentioned on page 7 of the Atlas. However, if WGII and WGIII are to include this information, it would need to be either published separately as literature to be assessed, or be fully reviewed in accordance with IPCC review procedures. The danger is that, since the products generated by the interactive feature are not fully reviewed adherent to the IPCC review procedure, they would not be available to be cited as IPCC products. [Trigg Talley, United States of America]	Rejected. Many of the figures in the FGD chapters which will be included in the final report are also derived from datasets or models assessed in the report but the final versions will be significantly updated compared to those reviewed in the SOD with new models and datasets and the maps and summary statistics generated by the Interactive Atlas are no different. All of the indices and algorithms used to generate the Interactive Atlas outputs have been assessed in the underlying chapters in the report.
124867					The RCPs reported are inconsistent. A number of regional sections highlight only results from RCP8.5 without discussing how sensitive projections are to emissions levels and scenarios. It would be helpful to report findings for two contrasting RCPs. The section on North America does a good job of focusing on trends that hold for all emissions scenarios. [Trigg Talley, United States of America]	Noted. Several scenarios (or several global warming levels) are used in the assessment in the final draft
124869					[ACCESSIBILITY] Given the great length of the WGI report, suggest a minimum of derivative content in the text of the Atlas chapter. This is particularly relevant for Chapter 12, as the text of the Atlas overlaps with Chapter 12 extensively. There is a danger that readers will consult Chapter 12 for regional information and not be aware of the additional information in the Atlas. If these two chapters cannot be combined, the chapters should be very clearly cross-referenced. [Trigg Talley, United States of America]	Accepted. A detailed description of the remits and links of the different regional chapters has been included in Chapter 10. The Atlas includes assessment of mean changes and overlaps with other chapters have been removed. Cross-references have been included in all regional chapters.
124871					Linkages between chapters and the Atlas need to be clarified and more robustly documented. There should be a reconciliation of scientific findings especially given the very different review process for the Atlas, which is cumbersome and complex. There are also not enough cross-references to check these statements in the underlying chapters of the WGI report. [Trigg Talley, United States of America]	Accepted. A detailed description of the remits and links of the different regional chapters has been included in Chapter 10. The Atlas includes assessment of mean changes and this is now properly cross-referenced in all regional chapters.