

Expert Review Comments on the IPCC WGI AR5 First Order Draft – Annex I

Comment No	Chapter	From Page	From Line	To Page	To Line	Comment	Response
AI-1	Atlas	0				There have been numerous complaints by WG II authors about the baseline period selected here, though I understand the reasons for doing so from a WG I perspective. The point here is that it would be very important indeed, I think, to be able (for each region and globally) to be provided with the offset relative to other more standard baselines being used in impact studies (e.g. most commonly 1961-1990; quite common nowadays 1971-2000, sometimes also the AR4 WG I baseline 1980-1999, but occasionally even 1981-2100), either observed (since these are already historical periods, but I suppose the authors here don't want to be troubled with messy observational data - you could at least ask the Chapter 2 folk for the temperature offsets?) or modelled (since many scenarios have been developed using model outputs for the baseline and future, as here). Thus information for each region can then be aligned with any scenario adopted in the studies reported in WG II. These "offset" values could be placed in a single Table near the front of this Annex. [Timothy Carter, Finland]	Rejected. This is not technically possible as offsets are spatially varying and would also effect the overshadowing of regions where changes are small. However, different baseline periods may be offered by web sites which can serve up CMIP5 model output processed using the Atlas algorithms.
AI-2	Atlas	0				A more general comment reflects a considerable number of requests received by Chapter 21 (regional framing) in WG II from regional authors and reflects the difficulty of assessing the information contained in the time series temperature and precipitation change graphs shown for each region (w.r.t. 1986-2005 baseline). The time series figures are somewhat informative, even though their plotting on a consistent scale means that details are lost, especially for precipitation change, for which figures suffer from the problem of percentage change inflation in dry regions. On balance, however, I think they should be kept this way (in common with earlier representations). The requests concern representations of full model information in the form of scatter plots similar to those offered by Ruosteenoja et al. (2003) and currently posted at the IPCC DDC: http://www.ipcc-data.org/sres/scatter_plots/scatterplots_home.html Continued (1/3) [Timothy Carter, Finland]	See response to AI-4
AI-3	Atlas	0				Continued (2/3) Aside from the desirability of updating these scatter plots on the DDC (which TGICA would like to do, but which could be transferred so much more readily if they appeared in an already "accepted" WG I atlas!), and with some different approaches to representing natural variability (Ruosteenoja et al. plotted ellipses based on unforced millennial runs from two GCMs), the basic information in such scatter plots would be comparable, though for different scenarios i.e. delta T (deg C) and P (percent changes) for each model considered in the multi-model ensemble (e.g. colour coded for each RCP, but models anonymous using the same symbol). That's the same data used in the time series figures, and could be plotted alongside the maps for each of the three future time slices presented. In addition, since the authors here have already considered natural variability, but based on ensembles rather than long unforced simulations, some effort could be made to portray the T and P multi-decadal variations expected under natural variability, per region. [Timothy Carter, Finland]	See response to AI-4
AI-4	Atlas	0				Continued (3/3) Note that strictly this is a joint distribution (hence the directional ellipses in the Ruosteenoja et al. paper), rather than two independent distributions of T and P. Either could be plotted, as long as the appropriate caveats are there. So, with only a little extra effort, a much richer set of results that are comprehensive while at the same time easier to interpret than the composite time series (my possibly biased judgement, but also that of many other persons who have used and requested such plots) could be presented. In fact, both the updated existing time series and scatter plots could be presented for the SOD. Moreover, it would be a considerable service to the AR5 if such scatter plots were made accessible as soon as possible to WG II authors, who can use them in interpreting scenarios used in regional IAV studies they are assessing. [Timothy Carter, Finland]	Rejected. The inclusion of scatter plots was discussed at LA3 and it was decided that, for reasons of space, they could not be included. However, such scatter plots may be offered by web sites which can serve up CMIP5 model output processed using the Atlas algorithms.
AI-5	Atlas	0				In spite of my detailed comments, I think the atlas can provide a useful overview of the CMIP5 outputs in a regional context, so I encourage the authors and reviewers to be open to at least some tweaking so as to achieve the added value that the atlas is designed to offer to the assessment, to make the most of the datasets generated for this exercise, and fully to reward the effort already expended by the author team. [Timothy Carter, Finland]	Noted
AI-6	Atlas	0				In the introduction, I saw the RCP3p (page 1-36) and I cannot find it in AI. [Francois DANIS, France]	Now properly labelled as RCP2.6
AI-7	Atlas	0				Although the second § of the introduction seems to try to explain that several kinds of Projections do exist (cf. "on the other hand", line 39 of p.1), that distinction may still not be very clear to the reader. Perhaps different names should be used for the several Projections (e.g. "CMIP5-based Projections" for the one of this Annex, and another name for other Projections) [Bernard De Saedeleer, Belgium]	Accepted - additional information is provided with cross-references to chapters 11 and 12

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AI-8	Atlas	0				Same as remark to Chapter 12. [François GERVAIS, France]	We do not ascribe likelihoods to the RCP scenarios. They are simply used as examples to facilitate the production of future projections under different levels of radiative forcing. This comment seems to confuse past forcing and response with future projections. For the purposes of assessing projections (which are dependent on assumptions regarding emissions or concentrations) there is no reason to expect that past or current trends will continue.
AI-9	Atlas	0				First of all, congratulations for the excellent work done by the Responsibles for doing the calculations and the drawing of figures, tables and maps of Annex I and Annex II. [Rubén D Piacentini, Argentina]	Noted
AI-10	Atlas	0				I surprised when I opened the file relates to Annex I: Atlas of Global and Regional Climate Projections. It is very excellent and increadable. [Fatemeh Rahimzadeh, Iran, Islamic Republic of]	Noted
AI-11	Atlas	0				You have considered left side for land and right for sea. It is good. But I found different scales for vertical scales for these figures at the top of figures for three attached file relates to Atlas(AI4, AI5,....). I suppose if they have similar scale for each region, the reader should recognize the difference between the variation between sea and land. [Fatemeh Rahimzadeh, Iran, Islamic Republic of]	Accepted. The same vertical scale is now used on the time series plots on each page.
AI-12	Atlas	0				Chapter 3 of the IPCC SREX report (2012) provided revised definitions of regions for assessments, based on inputs of regional experts. These are particularly relevant in South America and Europe. In South America, the traditional "Giorgi" regions ignore the impact of the Andes for climate on the continent, an issue that is addressed in the revised definitions from the SREX. In Europe, the distinct features of continental European climate are considered, which is also justified by the number of publications specifically distinguishing the Mediterranean, central European and northern European climate regions. For these various reasons, I would strongly recommend that the AR5, and in particular the Atlas, use the improved specification of geographical regions introduced in the SREX. This would also help considering the regional assessments from the SREX (SPM Fig. 4a & 4b; Chpater 3 Figs. 3.5 and 3.7; Tables 3.2 and 3.3) in the AR5. [Sonia Seneviratne, Switzerland]	Accepted. The SREX regions, with the addition of polar regions and regions in the S. Pacific are used in the SOD.
AI-13	Atlas	0				An impressive attempt and it is nice to see the time series done using yearly averages. However, the overriding impression is that in the historical period, the ensemble is very variable. Problem is that all time series are plotted, and one cannot assess whether this perception of large model variability is from one poor model which is too variable or all models being roughly equally variable. Maybe a grey box-whiskers (akin to the coloured ones on the right of the plot), plot to left of top left panel, estimated from 1900 to 1950 may help to show whether spread is from one outlier model or from all models in general. Also, it would have been even better if the interannual observed time series could be overplotted on the historical time series as this would have acted as a form of verification even though it would have needed very careful explanation. I have done this in a paper I am about to submit to Nature Climate Change and the comparison is very informative. [David Sexton, UK]	Rejected. The comparison with observations is left to Ch09, recognising that it is a multi-variate problem that cannot be adequately represented here.
AI-14	Atlas	0				Please describe how multimodel results are combined, put on a common grid, and presented in, e.g., maps (incl. grid information etc). Please check and ensure consistency of approach across chapters, especially for Chapters 9, 11, 12, 14 and, of course, Annex I: Atlas [Thomas Stocker/ WGI TSU, Switzerland]	A common re-gridding procedure, selection of models and ensemble members has now been adopted across Ch 11, 12 and the Atlas. It is briefly described in the text.
AI-15	Atlas	0				Please consider to establish consistency with SREX regions. The SREX Chapter 3 author team carefully discussed and revised the AR4 regions to develop a more physically based separation of regions, eg, the South American regions. [Thomas Stocker/ WGI TSU, Switzerland]	Accepted. SREX regions now used in SOD
AI-16	Atlas	0				Subregions have to be displayed in AI.3 either within the current figure, or add an additional panel excluding page numbers etc. [Thomas Stocker/ WGI TSU, Switzerland]	Figure showing SREX regions added
AI-17	Atlas	0				We note that in the case of North Asia (eg, Fig AI.64-69) not the entire region is shown in the maps provided. It would be preferable to show the full region as this is what forms the basis for the time series shown.	This issue has now been solved with the introduction of the SREX regions.

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						[Thomas Stocker/ WGI TSU, Switzerland]	
AI-18	Atlas	1	2	1	2	For example, the word "Projections" in the title is confusing : should it be "CMIP5-based Projections" ? [Bernard De Saedeleer, Belgium]	Rejected. The title of the Annex is now fixed.
AI-19	Atlas	1	23	1	23	CMIP5: give a reference for further information on this Project ? [Bernard De Saedeleer, Belgium]	Rejected. CMIP5 is discussed widely in the other chapters and in the paper cited.
AI-20	Atlas	1	27	1	27	Why was the reference period of 1986-2005 chosen? [Neil Kaye, UK]	This was a decision made at LA1 based on a number of considerations.
AI-21	Atlas	1	27			about All, "only anthropogenic source" is in contradiction with the sentence that follows (line 30) where the natural feedback is also taken into account. [Francois DANIS, France]	Rejected. This comment seems out of place here.
AI-22	Atlas	1	29	1	29	"2 variables" : please mention directly these : "2 variables (temperature change and relative precipitation change)" [Bernard De Saedeleer, Belgium]	Rejected. The variables are stated above and below.
AI-23	Atlas	1	30	1	30	replace "precipitation," by "precipitation." [Bernard De Saedeleer, Belgium]	Accepted.
AI-24	Atlas	1	30	1	32	please precise what RCP mean as it is widely used [Bernard De Saedeleer, Belgium]	Accepted.
AI-25	Atlas	1	30	1	32	please give a reference for the details of the RCPx.y scenarios, or explain them shortly here, if possible. For example, what does 2.6 mean and under which aspect is it different from 4.5 ? [Bernard De Saedeleer, Belgium]	A cross-reference to Chapter 1 and 12 is now included
AI-26	Atlas	1	33			about All "... not representative of ..." either needs more explanation or the "not" is wrong. [Francois DANIS, France]	Rejected. This comment seems out of place here.
AI-27	Atlas	1	35	1	35	please precise shortly on which topics the background is about, as it is important : "12 and 14, e.g. on xxx and yyy." [Bernard De Saedeleer, Belgium]	Rejected. Cross-references are now included in figure captions
AI-28	Atlas	1	40	1	40	replace "CMIP5 model output " by "CMIP5 models output" ? [Bernard De Saedeleer, Belgium]	Rejected. Not gramatical
AI-29	Atlas	1		1		The preamble text hits the right tone, this is good! [Bruce Hewitson, South Africa]	Noted
AI-30	Atlas	1		1		Table 14.1 from Chapter 14 should be included in Annex 1, especially since this table is never even referred to in that chapter [George Kiladis, USA]	Rejected. Table remains in Ch 14.
AI-31	Atlas	1		103		Having discussed the type of materials presented with some VIA/WG2 type people ... the sort who might logically be going to the Atlas, the following comment arises: With regard to the map figures and interpreting the pattern response, then using only the percentile ranges for the projected change in temperature is a largely functional approach as its (mostly) all warming, and so in most cases the interpretation resolves to a question of magnitude and not about the direction of change. However, for precipitation, showing only the range becomes a problem. The models spread spans the +/- range to such a great degree that for major regions in any given figure, and for may subregions all one can take away from the percentile maps is that it might get drier or wetter ... which is not particularly helpful. It may well be that for a given area the multi-model spread is so evenly around the zero that this is the correct interpretation. However, it may just as easily be that the shape of the multi-model distribution is strongly skewed ... and knowing this would be useful information. VIA users are operating in a risk management mode, and so knowing something of the multi-model tendency / propensity is very informative. I don't have a simple solution of how to do this, but it would be very helpful to consider some way of showing the central tendency of the multi-model response. [Bruce Hewitson, South Africa]	Accepted. The median is now included in the SOD.
AI-32	Atlas	1				Comment to all top diagrams: please use the same range (minimum to maximum) for one region and element; eg: Northern Europe – temperature change – all seasons -10°C to 15°C; those diagrams should be comparable on one page [Frank Kreienkamp, Germany]	Accepted and implemented for the SOD
AI-33	Atlas	1				Comment 1 on all map based figures: please use colour scales with equal range: eg: each colour represents 1 °C --- NOT at same places 0.5 then 1 or based on rainfall 2.5 then 5 then 10 then 20 then 40 % --- this	Rejected. Non-uniform contour intervals are selected in order to show the full range while highlighting small

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						current pictures are not a good practice [Frank Kreienkamp, Germany]	changes in some regions
AI-34	Atlas	1				Comment 2 on all map based figures: please use other colour scales; the used colour scales (especially those used for temperature) are misleading: the central values (representing no signal) should have no colour or should have at least the same colour --- there should be no dark(light)ness optimum within the colour scale: have a look at: Brewer, C.: Color Use Guidelines for Data Representation. Proceedings of the Section on Statistical Graphics, American Statistical Association, Alexandria, VA, 55-60, 1999. --- Brewer, C.: Design Better Maps: A Guide for GIS Users, ESRI Press. ISBN 1589480899, 2005. --- Brewer, C., Hatchard, G. W., and Harrower, M. A.: ColorBrewer in Print: A Catalog of Color Schemes for Maps, Cart --- Spekat, A. and Kreienkamp, F.: Somewhere over the rainbow - advantages and pitfalls of colourful visualizations in geosciences, Adv. Sci. Res, 1, 15-21,2007 (www.adv-sci-res.net/1/15/2007) [Frank Kreienkamp, Germany]	Accepted. We now adopt a consistent set of colour scales across maps in the Atlas, Chapters 11 and 12.
AI-35	Atlas	1				The current version fails to fulfil scientific standards - please use wmo-standard conform time periods (30yr); 20yr periods exclude to much decadal variations --- good reasons to use 30 instead 20 years can be found throughout up to date scientific literature [Frank Kreienkamp, Germany]	Rejected. We have adopted a standard anomaly period of 1986-2005 for a number of reasons.
AI-36	Atlas	1				Comment 3 on all map based figures: each step in a colour scale should at least cover the model internal variations (or model uncertainty) and so on.. eg. If the model internal variation is 10% for rainfall then the smallest step for the colour scale is 10% ... changes smaller than those 10% should not be given a signal colour code (chap 9 page 63 line 50 to page 64 line 3) [Frank Kreienkamp, Germany]	Rejected. We have chosen the same colour scale for each map (dependent on variable) and indicate the magnitude of internal variations with hatching.
AI-37	Atlas	1				I think that it is very important to provide maps for all scenarios. A large part of the inter-scenario change could perhaps be obtained by scaling the maps, but it does not seems logical to scale one of the lowest scenarios to obtain information about the higher ones, and these maps will frequently be shown as they are. For the global maps, the time series provide little additional information. Users will want to have maps of the worst case scenarios, as these are relevant for risk analysis, and the only way to provide them with this information is to include it - so maps are required for RCP 8.5 results (to save space, the printed version may include additional scenarios for the global maps only, while the regional ones would be provided in electronic form only). [Philippe Marbaix, Belgium]	The maps for the other scenarios are in the supplementary material and cannot be printed due to space considerations.
AI-38	Atlas	1				I was pretty dismayed by the outline presented in the ZOD, but the FOD is such an enormous improvement that it gives me hope that some use will come of this considerable effort. [Dáithí Stone, United States of America]	Noted
AI-39	Atlas	1				From the point of view of someone interested in detection and attribution as well as representing the detection and attribution activities of WGII, one of my main reactions of the Atlas is its irrelevance for D&A, given the lack of any counterfactual scenario for the past (or the future) and any observational information. [Dáithí Stone, United States of America]	Noted
AI-40	Atlas	2	1	2	2	I was not able to locate this Supplementary Material, but I guess it will be made available at a later stage [Bernard De Saedeleer, Belgium]	Available from IPCC web site.
AI-41	Atlas	2	4	2	9	For the multi-model mean the data must have been interpolated to a common grid – please specify the method used (e.g. bi-linear, conservative, ..) and cite the library used if appropriate, to aid reproducibility. [Martin Juckes, UK]	A common approach has been adopted and is described under 'Technical Details'
AI-42	Atlas	2	6	2	6	change the phrase "The First Order Draft of the Atlas" into "The present Atlas", as it will no longer be a draft in a later stage ? [Bernard De Saedeleer, Belgium]	Accepted
AI-43	Atlas	2	7	2	7	please precise what you exactly mean by "ensemble", eg. by changing "31/51/26/51 scenario experiments" into "31/51/26/51 scenario experiments (called ensemble herein)", or something like that [Bernard De Saedeleer, Belgium]	Accepted. This is now made clearer by the use of one ensemble member per model.
AI-44	Atlas	2	8	2	8	please give a reference for the details of the RCPx.y scenarios, or explain them shortly here, if possible. For example, what does 2.6 mean and under which aspect is it different from 4.5 ? [Bernard De Saedeleer, Belgium]	Rejected. RCPs are described elsewhere and cross-references are now included
AI-45	Atlas	2	8	2	8	please give a few words on what you mean by "concentration-driven experiments" ? [Bernard De Saedeleer,	Accepted. A brief description is supplied

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						Belgium]	
AI-46	Atlas	2	13	2	13	"Historical data were used" : 1) I guess this mean "measurements" ? 2) it is not clear how these were used: for validation purposes of the CMIP5 models ? Perhaps give a little bit of details / explanation / reference to applicable Chapters ? [Bernard De Saedeleer, Belgium]	Rejected. We refer to Ch 9 for an extensive discussion of model evaluation.
AI-47	Atlas	2	18	2	18	I am not sure that the expression "consensus view" is right, perhaps use "consensus" (alone) or "common view" ? [Bernard De Saedeleer, Belgium]	Accepted
AI-48	Atlas	2	23	2	23	replace "noise of natural variability" by "noise due to natural variability" ? [Bernard De Saedeleer, Belgium]	This sentence is now deleted
AI-49	Atlas	2	24			What is the aspect in which this is "better"? [Dáithí Stone, United States of America]	This sentence is now deleted
AI-50	Atlas	2				Table AI.1 : header : perhaps add one column with the "Owner" / "Institution" of each model ? [Bernard De Saedeleer, Belgium]	Rejected. This is complicated by the fact that different institutions run the same model and some models are community efforts.
AI-51	Atlas	2				Table AI.1 : most of the cells contain "1" experiment, but sometimes more than 1, e.g. CSIRO-* has "10" on the whole row. When several experiments are conducted, is it possible to shortly explain why several experiments were conducted, and roughly what differs between them ? It seems to be related to line 20 p AI-2 "multiple initial conditions". [Bernard De Saedeleer, Belgium]	We now use only one ensemble member from each model.
AI-52	Atlas	2				Table AI.1 : invert lines "Number of models", and "Number of experiments", and add a line below the inmcm4 row, to make the total "Number of experiments" to appear more clearly ? [Bernard De Saedeleer, Belgium]	Rejected. Table now reformatted
AI-53	Atlas	2				Table AI.1 : replace "Number of models" by "Number of models used among the 17" ? [Bernard De Saedeleer, Belgium]	Rejected. Table now reformatted
AI-54	Atlas	2				Table AI.1 : error : the "Number of models" should be 17 instead of 12 for the "Historical" column. [Bernard De Saedeleer, Belgium]	Table now changed
AI-55	Atlas	2				Table AI.1 : error : the "Number of experiments", should be 50 instead of 51 for the "Historical" column. [Bernard De Saedeleer, Belgium]	Table now changed
AI-56	Atlas	2				Table AI.1 : "Number of models" : perhaps say a few words why sometimes not all the 17 models were used, but only 12 or 10 ? [Bernard De Saedeleer, Belgium]	Accepted
AI-57	Atlas	2				Table AI.1: Please check number of models. The number of models under the Historical column should be 17 instead of 12. [Tsz-cheung Lee, Hong Kong]	Table now changed
AI-58	Atlas	3	3	3	3	please define "ensemble member" somewhere above at the beginning. (it would also help understanding "ensemble member" appearing also at line 26 p3, line 31 p3, line 20 p2, etc.) [Bernard De Saedeleer, Belgium]	Accepted. Defined above table.
AI-59	Atlas	3	7	3	7	Seasons : perhaps say a few words on the hemispheres N < > S ? [Bernard De Saedeleer, Belgium]	Other than pointing out the obvious that winter and summer correspond to different months in the N and S hemisphere, we are unsure what to say here.
AI-60	Atlas	3	7	3	13	Is there any reason why this needs to be the same across all continents? JFM, AMJ, JAS, and OND would make more sense over Africa. Four seasons for precipitation would be strongly preferred by me. [Dáithí Stone, United States of America]	We have tried to obtain a table of seasons vs continents for the precip plots but so far this has proved to be impossible. Other seasons may be available on web sites which which can serve up CMIP5 model output processed using the Atlas algorithms.
AI-61	Atlas	3	15	3	22	Why stick with boxes over land that have little relevance for impacts? How about dividing according to existing political-economic divisions (there are many options, consulting the WGII regional chapters might help)? And why land, considering that a substantial fraction of vulnerable territorial interests of many states is in their Exclusive Economic Zone? You are not weighting according to any spatial distribution of interests over land, so why give zero weighting to marine interests? (Admittedly marine precipitation may be largely irrelevant and	Rejected. WG1 does not distinguish political regions. We now adopt the SREX regions.

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						could be masked out.) Observational considerations are irrelevant because you are not considering the distribution of historical or future observations here. [Dáithí Stone, United States of America]	
AI-62	Atlas	3	24	3	28	It might be worth emphasizing that you are not doing an temporal averaging or smoothing across years. [Dáithí Stone, United States of America]	Accepted. Now described in section on data processing
AI-63	Atlas	3	27	3	28	I do not understand what the text in the parenthesis means exactly (" The seasons December-February and October-March are counted towards the second year in the interval") ? -- Which interval ? [Bernard De Saedeleer, Belgium]	Text now revised
AI-64	Atlas	3	27	3	28	The second year of the interval 1986-2005 is 1987. So it sounds like all DJFs and ONDJFMs are allocated to 1987... [Dáithí Stone, United States of America]	Text now revised
AI-65	Atlas	3	28	3	29	You are (with good justification) very careful not to plot the mean/median map. Why do it here in the time series then? [Dáithí Stone, United States of America]	We now do plot the median.
AI-66	Atlas	3	31	3	31	which ensemble members ? [Bernard De Saedeleer, Belgium]	Accepted. Now clarified.
AI-67	Atlas	3	32	3	32	"have again been computed" : remove "again" ? [Bernard De Saedeleer, Belgium]	Sentence now removed
AI-68	Atlas	3	37	3	53	For the record, let me say this is a vast improvement upon the maps highlighted in the AR4. [Dáithí Stone, United States of America]	Noted
AI-69	Atlas	3	40	3	40	"it should again be emphasized" : why again ? - where has it already been mentioned ? (give the reference/link) [Bernard De Saedeleer, Belgium]	Accepted. Reference to text above.
AI-70	Atlas	3	41	3	42	Plotting the 20th and 80th percentiles and not the mean/median is an excellent idea. [Dáithí Stone, United States of America]	We now also include the median.
AI-71	Atlas	3	43	3	45	Hatching: there is a long phrase describing how mathematically these areas were determined. But what does it mean exactly, physically ? Something like "areas for which the results are less/not relevant because cannot be distinguished from noise" ? It should be worth to explain briefly how we can interpret these hatched areas. [Bernard De Saedeleer, Belgium]	Rejected. It is left to the reader to interpret the meaning based on their particular application.
AI-72	Atlas	3	43	3	45	The hatching on the maps seems to represent the opposite of what it meant in the previous report. In AR4 Stippling denotes areas where magnitude of multi-model ensemble mean exceeds intermodel standard deviation. In this report hatching indicates where the multi model mean is less than twice the standard deviation of model-estimated natural variability. This may cause confusion! [Neil Kaye, UK]	Noted. Hatching and stippling has been revised w.r.t. previous reports.
AI-73	Atlas	3	43			Supposedly the colour scale differs between temperature and precipitation though. [Dáithí Stone, United States of America]	Noted
AI-74	Atlas	3	47	3	47	"serial autocorrelation" : what do you mean ? It looks loike a pleonasm. Is it "autocorrelation" or "serial correlation", or "lagged correlation"? [Bernard De Saedeleer, Belgium]	This is the usual phrase.
AI-75	Atlas	3	49	3	49	change the phrase "for this First Order Draft" by "for the present Atlas", as it will no longer be a draft in a later stage ? [Bernard De Saedeleer, Belgium]	Accepted
AI-76	Atlas	3	55	3	55	"for scenarios other than RCP4.5" : where are the different scenarios described ? [Bernard De Saedeleer, Belgium]	These are available on the IPCC web site.
AI-77	Atlas	3	56	3	57	I was not able to locate this Supplementary Material, but I guess it will be made available at a later stage [Bernard De Saedeleer, Belgium]	These are available on the IPCC web site.
AI-78	Atlas	3				There is no mention in the section about spatial maps as to how they have been smoothed so they don't appear blocky. May be useful to mention the interpolation method that has been used. [Neil Kaye, UK]	This is now described.
AI-79	Atlas	5	5	5	5	About "Figure AI.1: Explanation of the features of a typical time series figures presented in the Annex". i) Sorry, my English is not perfect, but I think that if there is only one figure, it must be "a typical time series figure" and not "a typical time series figures"; ii) the explanation of the percentiles and mean values in the box	This figures has been revised.

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						at right, are not correctly related to the arrows with the corresponding horizontal segments of the (red) error bar, mainly the following ones: "5%-tile", "25%-tile" and "Median"; iii) the same stands for the arrow that goes from "Ensemble mean" to "RCP6.0" horizontal orange line; iv) since the median curve is the orange one, corresponding to RCP6.0, it must be included in this figure and in all similar figures, so that it appears at the front (and all the segments of the curve for the different years can be seen). In this figure (and in other figures of the same kind) the blue (less probable) RCP2.6 result has been drawn as if it was the most important one; v) it would be important to include in each geographical region of the World a mean annual map, not only the seasonal or half a year maps. [Rubén D Piacentini, Argentina]	
AI-80	Atlas	5				Fig. AI.1 : the origin of the 5 arrows on the right (percentile) is not accurate / perhaps the rectangle has moved ? [Bernard De Saedeleer, Belgium]	This figure has been revised.
AI-81	Atlas	5				Fig. AI.1 : if possible, find a mean to illustrate that the 2080-2099 mean information on the right corresponds to the last period of the 1900-2100 plot (like a U-shape linking the 2) [Bernard De Saedeleer, Belgium]	The meaning of this comment is unclear.
AI-82	Atlas	5				Fig. AI.1 : caption : perhaps find another word than "features" ("labels" ? - not OK for curves ..) - same for Fig. AI.2. [Bernard De Saedeleer, Belgium]	Rejected. Cannot think of a better term
AI-83	Atlas	5				Fig. AI.1 : replace "ensemble mean" by "Thick lines: ensemble mean" + define "ensemble mean" somewhere in the text ? [Bernard De Saedeleer, Belgium]	Accepted. Ensemble mean now defined in text.
AI-84	Atlas	5				In figure A1.1 it may be worth adding a note that the baseline is 1986-2005 just to ensure it is obvious to people that the baseline used is already 0.7C above preindustrial levels. This means that the 2 degrees level on the graph is in fact 2.7 degrees above preindustrial. [Neil Kaye, UK]	Accepted. Added section on this to main text.
AI-85	Atlas	6	4	6	4	About "Figure AI.2: Explanation of the features of a typical spatial maps presented in the Annex". i) The same comment as the one above for Figure AI.1, for I think that if there is only one map represented in this Figure AI.2, it must be "a typical special map" and not "a typical special maps"; ii) the selected time intervals are quite complicated. For example, the largest one is from 1986-2005 (with a mean value of year 1995.5) up to 2080-2099 (with a mean value of year 2089.5). This corresponds to a total time interval of 2089.5 -1995.5 = 94 years. It would be of more significance for understanding different centuries and for comparison purposes to consider the beginning and the end of the present 21th century; iii) it would be clearer if the error boxes placed at the right of the figure were made for the end of the represented period (2100), as was done for example in AR4-WGI, Figure SPM.5 and not for the 2080-2099 period. At first glance, these boxes seem to correspond to the end of the present century and not to the last two decades. [Rubén D Piacentini, Argentina]	Rejected. The intervals have now been changed
AI-86	Atlas	6				Fig. AI.2 : for consistency, an arrow should go from "Colour scale ..." to the colorscale itslef. [Bernard De Saedeleer, Belgium]	This seems obvious to us. There is no need for an arrow.
AI-87	Atlas	6				Fig. AI.2 : caption - line 4 : replace "maps" by "map". [Bernard De Saedeleer, Belgium]	Noted
AI-88	Atlas	6				Fig. AI.2 : caption : Hatching: there is a long phrase describing how mathematically these areas were determined. But what does it mean exactly, physically ? Something like "areas for which the results are less/not relevant because cannot be distinguished from noise" ? It should be worth to explain briefly how we can interpret these hatched areas. [Bernard De Saedeleer, Belgium]	Rejected. It is left to the reader to interpret the meaning based on their particular application.
AI-89	Atlas	6				In figure A1.2 the pale green representing 0 to 0.5 degrees could look very similar to the pale orange representing 1 to 1.5 degrees to someone who was colour blind. Suggest removing the pale green category and having yellow represent 0 to 0.5 and all other categories shifting one category downwards. The purples and blues would also look similar to colour blind people but this is not so much a problem as the categories are so far apart numerically. [Neil Kaye, UK]	Noted. Standard colour schemes have now been adopted.
AI-90	Atlas	7	2	7	2	This map (Fig AI.3) is exceedingly misleading, as it implies that the analysis undertaken has been only for the coloured regions shown, when in fact these have been subdivided into continental or ocean sub-regions. Please show ALL regions on this map. I am assuming that these sub-regions match those used in chapter 11 of the AR4 (Table 11.1), which are a modification of the original "Giorgi regions", originally based on consultations within WG II during the TAR (in a plenary session of one of the LA meetings - check the TSU/LA minutes if anyone kept them under Neil Leary's watch!), and reflected in an analysis of multi-model projections	We now show two figures

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						(pre-CMIP3 model simulations) conducted for WG II ahead of the AR4 by Ruosteenoja et al. (2003), which the authors will be aware of. The only departure requested by WG II authors in the AR4 was for the addition of information for a region covering the Middle East, which was provided separately by Ruosteenoja et al. using the same model dataset used in the original publication (region: 15 - 38 degN; 36 - 61 degE). I notice that for the atlas, the Middle East is also defined, but is missing its northern part, which is somewhat disappointing. Continued (1/2) [Timothy Carter, Finland]	
AI-91	Atlas	7	2	7	2	Continued (2/2) So there is precedent for using these regions, but please ensure that they are compatible with the WG II-defined regions (state this explicitly) and show them on the global map. Then I think you can ward off inevitable criticism, and Chapter 21 authors can offer more wholehearted support in the context of the WG II assessment. [Timothy Carter, Finland]	We now use SREX regions
AI-92	Atlas	7		7		I question the use of regions such as Northern South America and Southern South America, since they do not have any geographical representativeness. NSA mixes various regions with climates and geography that can not be mixed, since they show different climates and impacts: the Arid north of Peru and Ecuador, the Andes, the wet Amazon basin and the semiarid Northeast Brazil. Analyses based on the CMIP3 data show that the future changes on those regions are different. The future shows for drier Amazonia and Northeast Brazil and wetter Northwest coast of South America, and an average of all those regions would not have any meaning. I suggest, as I have done in the past with the Chairs of WG1 and 2 the use of the regions used in the SREX report (See Chapter 3 of it). J. Marengo, INPE, Brazil [Jose Marengo, Brazil]	We now use SREX regions
AI-93	Atlas	7				Fig. AI.3 : the names of the regions differ slightly from those used in the following pages (e.g. "North America (West)" < > "Alaska, NW Canada (57.5°–67.5°N, 170°–105°W)"): perhaps unify the name of the regions? [Bernard De Saedeleer, Belgium]	We now use SREX regions
AI-94	Atlas	7				Fig. AI.3 - line 10 : and Central Africa? [Bernard De Saedeleer, Belgium]	We now use SREX regions
AI-95	Atlas	7				Fig. AI.3 - on the map : the 6 maps on pages p.56-61 seem to correspond to only south Africa : why is this label on the North part then? [Bernard De Saedeleer, Belgium]	We now use SREX regions
AI-96	Atlas	7				Fig. AI.3 - on the map : change "p.38-41" by "p.38-43" [Bernard De Saedeleer, Belgium]	Noted
AI-97	Atlas	7				Fig. AI.3 - on the map : try to add a label "p.8-13" somewhere for the whole world? [Bernard De Saedeleer, Belgium]	We feel that including the page numbers in the label below is enough
AI-98	Atlas	7				Fig. AI.3 - in order to facilitate the navigation within the Atlas, I suggest to 1) add titles at the top of each page - 2) add a table - 3) add colors somewhere on each of the next pages of the Atlas -- I detail those 3 suggestions in other Excell cells of this sheet -- one cell by suggestion) [Bernard De Saedeleer, Belgium]	We feel that the maps are already cluttered and prefer not to add further text
AI-99	Atlas	7				Fig. AI.3 - in order to facilitate the navigation within the Atlas, I suggest to 1) add titles at the top of each page. As the caption is very similar for each page of the Atlas, I would highlight the difference between the pages by adding a title in larger Font, like " World - Temperature change - [Dec-Feb]" (region - variable - period). This would also allow to print larger Maps, is the authors ever choose to suppress the common part in the caption (but it is perhaps better to keep the caption on each page). [Bernard De Saedeleer, Belgium]	We feel that the maps are already cluttered and prefer not to add further text
AI-100	Atlas	7				Fig. AI.3 - in order to facilitate the navigation within the Atlas, I suggest to 3) add colors somewhere on each of the next pages of the Atlas -- the color of the page would remind the color on the summary of the regions (p. AI-7): Antarctica in blue, etc. The color could appear in a kind of banner on the right of the page, or a color of the title of the page in larger Font, like " World - Temperature change - [Dec-Feb]" (region - variable - period), if the authors choose to add this title. [Bernard De Saedeleer, Belgium]	This is not technically possible
AI-101	Atlas	7				Fig. AI.3 - in order to facilitate the navigation within the Atlas, I suggest to 2) add a table (replacing the text lines 3--18 at p.7) with the following characteristics -- 1st row : / Temperature (over 4 cells) / Humidity (over 2 cells) - 2nd row : Region / Dec-Feb / etc - 1st col : region (World, etc.) - a cell then contains only the reference : "AI-4 p.8" for an easier/quicker navigation [Bernard De Saedeleer, Belgium]	We were not able to implement this suggestion in the SOD
AI-102	Atlas	7				it is a big step backward to go from the regions carefully defined for the SREX to the regions defined here. For almost every part of the world, the SREX definition of regions capture much more of the important variation. In	We now use SREX regions

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						addition, the SREX regions in many ways represent the state of the art for IPCC. The map shown here is a step backwards. [Christopher Field, USA]	
AI-103	Atlas	7				In figure A1.3 there is reference to the Sahara region being on pages 56-61, these are the same page numbers as the Southern Africa region, however maps of the Sahara do not appear on these pages although the graphs of the Sahara do. [Neil Kaye, UK]	The SREX regions will be distributed differently over the pages.
AI-104	Atlas	8	6			Fig. AI.4 - caption "RCP scenarios" : explain/give details or a reference [Bernard De Saedeleer, Belgium]	Accepted. Now described in text.
AI-105	Atlas	8	8			Fig. AI.4 - caption "RCP4.5 scenario" : what is this scenario consisting of ? explain/give details or a reference [Bernard De Saedeleer, Belgium]	Accepted. Now described in text.
AI-106	Atlas	8	8			Fig. AI.4 - caption : wording "20% and 80% percentile" (line 8) and then "20th (left) and 80th (right) percentile" (line 10) : please unify the wording. Line 10 is more correct, I think. [Bernard De Saedeleer, Belgium]	Rectified
AI-107	Atlas	8	8			Fig. AI.4 - caption : "partial CMIP5" : what do you mean by "partial" ? [Bernard De Saedeleer, Belgium]	Only a partially complete archive at this stage
AI-108	Atlas	8	9			Fig. AI.4 : caption : Hatching: there is a long phrase describing how mathematically these areas were determined. But what does it mean exactly, physically ? Something like "areas for which the results are less/not relevant because cannot be distinguished from noise" ? It should be worth to explain briefly how we can interpret these hatched areas. [Bernard De Saedeleer, Belgium]	Rejected. It is left to the reader to interpret the meaning based on their particular application.
AI-109	Atlas	8				Presenting the temperature maps as 20th and 80th percentiles provides most users with very little information. There are two main reasons for this. First, the information about the tails makes sense mainly in the context of the median. Without the median, the reader has no conceptual anchor. Second, the use of 20th and 80th percentiles for illustrating spread is rarely used. 25th and 75th percentiles (inner and outer quartiles) are common. The atlas would be much more useful with more common intervals. The maps would be much more useful with median, inner quartile and outer quartile, for the annual mean. Plus, instead of 24 maps, the information will be contained in 9. [Christopher Field, USA]	Accepted. We now also include the median and have changed to use the 25th and 75th percentiles.
AI-110	Atlas	8				Presenting the temperature maps for four seasons provides most users with very little information. People running impact models will need the data in digital form and in the time step for their model. Other users will care about a very broad picture (annual mean) or a specific month. [Christopher Field, USA]	Noted. There may be
AI-111	Atlas	8				Much of the value in the atlas will come from the digital data. Casual users will enjoy looking at the pictures, but researchers in the IAV community need the digital data. Connecting the digital data to the atlas will dramatically increase its value to the reserach community. Time resolution is, of course, a question. But for data presented as temperature and precipitation only, monthly time resolution should be fine. Models that require higher time resolution will also require more climate variables. Digital versions of the monthly maps with 25th, 50th, and 75th percentile will provide a dramatic improvement for users of simple models in the IAV community to reflect the role of climate uncertainty in their analyses. [Christopher Field, USA]	Will be made available in varous forms. It is possible that there will be a web site which can serve up CMIP5 model output processed using the Atlas algorithms. But this will not be an IPCC-sanctioned product.
AI-112	Atlas	8				Much of the potential value of the atlas will come from enabling AR5 research from the IAV community. This potential will materialize only if the digital version of the atlas is made available prior to the completion of the WGI report. The concept of a handoff from WGI to WGII will be dramatically realized by making the digital version of the atlas available to the IAV research community in the first half of 2012. Appropriate caveat emptor warnings can ensure that users of the digital data understand its status and limitations. [Christopher Field, USA]	It is possible that there will be a web site which can serve up CMIP5 model output processed using the Atlas algorithms. But this will not be an IPCC-sanctioned product.
AI-113	Atlas	8				In figure A1.4 the graphs are on different scales on the y-axis, at first glance it may appear that the land and ocean warm at the same rate, even though the land is actually warming twice as much. Keeping the y-axis consistent would aid comparison. This applies as a general comment throughout the atlas as the y axis on the pairs of graphs always seems to be on a different scale. [Neil Kaye, UK]	The vertical scales on these time series plots will be made the same in the SOD
AI-114	Atlas	8				In figure A1.4 there do not appear to be any thin red lines for the rcp 8.5 scenario, there only seem to be thin orange lines and the 2 sets of thin blue lines. Are the ensmble members missing for rcp 8.5? Looking throughout the document there don't seem to be any thin red lines on any of the graphs in the document. Maybe this is because the thin red lines look identical to the thin orange ones, if this is the case I suggest	A common set of colour code for the different RCPs will be adapted for the SOD throughout the report.

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						making the orange a bit more yellow. [Neil Kaye, UK]	
AI-115	Atlas	9				Fig. AI.5 and others will be more complete with the median field. [Ramon de Elia, Canada]	We now also include the median.
AI-116	Atlas	9				seasonal representation not useful (see comment above) [Christopher Field, USA]	See reply above.
AI-117	Atlas	12				As for the temperatures, the choice of 20th and 80th percentiles do not provide nearly as much information as median, inner quartile and outer quartile of annual total. Plus, this would reduce the number of maps from 12 to 9. [Christopher Field, USA]	We now also include the median.
AI-118	Atlas	12				In figure A1.8 the colour scale includes both shades of brown and green, this may cause confusion in interpretation for colour blind people. It might be possible just to keep the wetter regions in shades of blue. [Neil Kaye, UK]	Accepted. A revised colour scale is now used.
AI-119	Atlas	14				Changing the orientation of the map arrangement makes this figure more difficult to interpret. As for the global maps, median, 25th, and 75th percentiles for annual mean would be more useful. Plus, it would reduce the number of maps from 24 to 9. [Christopher Field, USA]	We now also include the median.
AI-120	Atlas	14				In Figure A1.10 the orientation of the maps has timesteps going horizontally from left to right in other figures the timesteps go vertically from top to bottom. This Shift makes it very confusing for the reader and occurs throughout the atlas presumably based on whether the maps are in portrait or landscape orientation. It would be easier to interpret if the layout were more consistent. [Neil Kaye, UK]	Orientation: the maps would be too small to be useful in the default orientation.
AI-121	Atlas	14				In Figure A1.10 the text above each map is about half the size of the text above the comparative maps in figure A1.4. The size of the text above and below the maps varies throughout the atlas and should probably be consistent even if it means putting the text over 2 lines. [Neil Kaye, UK]	It has not been possible to implement this suggestion
AI-122	Atlas	18				Changing the orientation of the map arrangement makes this figure more difficult to interpret. As for the global maps, median, 25th, and 75th percentiles for annual mean would be more useful. Plus, it would reduce the number of maps from 12 to 9. [Christopher Field, USA]	Orientation: the maps would be too small to be useful in the default orientation.
AI-123	Atlas	20				Presenting the temperature maps as 20th and 80th percentiles provides most users with very little information. There are two main reasons for this. First, the information about the tails makes sense mainly in the context of the median. Without the median, the reader has no conceptual anchor. Second, the use of 20th and 80th percentiles for illustrating spread is rarely used. 25th and 75th percentiles (inner and outer quartiles) are common. The atlas would be much more useful with more common intervals. The maps would be much more useful with median, inner quartile and outer quartile, for the annual mean. Plus, instead of 24 maps, the information will be contained in 9. [Christopher Field, USA]	We now also include the median and the percentiles have been changed to the 75th and 25th.
AI-124	Atlas	20				On the regional maps, the meaning of the big rectangular boxes within regions is not specified in the figure captions. In fact, I could not find it anywhere. [Christopher Field, USA]	This should now be clear from the figure which shows the SREX regions
AI-125	Atlas	20				My suggestion for replacing the 4 seasons at 20th and 80th percentiles with annual means at 25th, 50th, and 75th percentiles applies to all regions. Note that this dramatically decreases the length of the atlas while increasing its value. [Christopher Field, USA]	We now also include the median and the percentiles will be changed to the 75th and 25th.
AI-126	Atlas	24				My suggestion for replacing the 2 seasons at 20th and 80th percentiles with annual means at 25th, 50th, and 75th percentiles applies to all regions. Note that this dramatically decreases the length of the atlas while increasing its value. [Christopher Field, USA]	We now also include the median and the percentiles will be changed to the 75th and 25th.
AI-127	Atlas	25				About AI1: The numbers of the RCP scenarios pass from 2.6 to 26, etc. Probably a mistake. Following pages as well. [Francois DANIS, France]	Noted
AI-128	Atlas	26				In figure A1.22 the text above the graphs does not fit, this may well occur throughout the document. [Neil Kaye, UK]	Noted
AI-129	Atlas	38		43		I would like to see similar maps and time series not for NSA and SSA but for the different regions as shown in the SREX report. Those new regional figures will for sure be more useful for the Chapter 27 of WG2 (Central and South America) than as they are now on the Atlas. J. Marengo, INPE, Brazil [Jose Marengo, Brazil]	We now use SREX regions