

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
82041	0	0	0	0	Use short sentences and put the key information at the top of the paragraph. Everything is so wordy and long-winded. Scientists aren't the target audience. [Dan Zwartz, New Zealand]	Taken into account. We have tried to simplify the language of the FAQs by collaborating with a scientific writer. Please also note that each FAQ is introduced by a summary paragraph.
109209	0	0	0	0	Overall I am very impressed with the FAQs and accompanying graphics. I could see these being valuable as a stand-alone document, though I'm not sure the chapter is intended that way, but keeping these graphics very accessible in terms of language and synthesized concepts balances the reports out excellently. [Steph Courtney, United States of America]	Noted with thanks. FAQs feature in both their respective chapters (e.g. FAQ3.1 in chapter 3) and as a collection of FAQs/booklet.
55269	0		0		General comment on FAQs: There are a number of FAQs for which figures were not included in the SOD. Since governments will not have another opportunity to review the FAQs, we are disappointed that the figures were incomplete. We strongly urge the IPCC to establish a robust interal review process that will ensure the final figures are high quality and suitable for the intended audiences of FAQs. IPCC FAQs are extremely valuable when written well and complimented by easy to interpret visuals. [Nancy Hamzawi, Canada]	Noted. We apologise for this delay. This is partly due to the fact that the final figures have been drafted by a graphics designer, which is a process that takes time but improves the quality of the final figures. Note however that the figures were drafted in time to be included in the internal draft and therefore thoroughly reviewed internally.
55271	0		0		General comment on FAQs: Recommend a more consistent style for the FAQs. At times, in some FAQs, the language is too colloquial for IPCC. Some FAQs propose very simplified schematics/inforgraphics that are more appropriate for outreach products than for IPCC FAQs. Presume all FAQs will have short answers in their final versions (e.g. Ch. 11 FAQs currently do not unless the first para is meant to be the short answer (this was unclear)). [Nancy Hamzawi, Canada]	Accepted. We have worked hard on improving the consistency across the set of FAQs: all the final figures and texts were reviewed by communications experts and very clear guidelines were provided to the authors.
55273	0		0		General comment on FAQs: Results in a few of the current draft FAQs are not consistent with assessed conclusions of the WGI report (see detailed comments). We trust this will be corrected in the final draft. [Nancy Hamzawi, Canada]	Accepted. The final FAQs have been checked for consistency with the rest of the report.
55275	0		0		General comment on FAQs: It would be very helpful if each FAQ concluded with (or embedded) a brief list of key relevant sections of the WG1 report from which information was drawn to write the response. Pointers to relevant Boxes and other FAQs on related topics could also be included. The FAQs are designed as communication products so additional help to users about where to find other supporting information, would be useful. [Nancy Hamzawi, Canada]	Rejected. We have followed past practices and the previous FAQs do not contain any callout (see for instance SR1.5 FAQs https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_FAQ_Low_Res.pdf). We do not think it makes much sense to refer to other parts of the reports as the chapters are meant for specialists while the FAQs are meant for a lay audience. Note however that we have included more references to other FAQs where relevant.
132237	0				Chapter 11 was not consulted on the FAQs 8.2 and 8.3 which address changes in extremes (droughts, floods). [Sonia Seneviratne, Switzerland]	Taken into account. All drought/aridity assessments have been cross-checked with Chapter 11 for the final draft.
111761	0				FAQ are 95 pages. It is essential that there is at the beginning an index with links to all FAQs [Alessandra Conversi, Italy]	Noted. The FAQs didn't have any table of content for the SOD review because they were extracted from the chapters (where they feature in the table of content). However, the final booklet with the FAQs and the website should include a table of content.
132243	0				FAQ 8.3: As mentioned in my comment to the whole chapter 8, this FAQ does not seem to be in the right chapter, since drought is addressed mostly in chapter 11. In addition, the figure is on water cycle changes (changes in runoff and soil moisture), i.e. on changes in climatologies, not in changes in droughts. A more suitable title would be "What are changes in land water availabilty and why?" or "Will climate change lead to less water being available on land and why?". The angle of water availabilty is interesting enough for the readers without going specifically into drought which requires more background and would need to be coordinated with chapter 11. [Sonia Seneviratne, Switzerland]	Taken into account. For the final draft, FAQ 8.3 has been reviewed and agreed upon by both Chapters 8 and 11

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111763	0				FAQ cover 95 pages, probably too many, but this is not the point. I would start with the most urgent/poignant FAQs at the top, and then I would follow with the detailed chapter-FAQ. For example I would start with the Question: what is the change between AR5 and AR6? [Alessandra Conversi, Italy]	Not applicable. The FAQs are primarily part of the chapters they are associated with. This means that each chapter needs to include between 2 and 4 FAQs (with the notable exception of the atlas where the FAQs have been moved to the online documentation of the interactive atlas) and therefore we do not have much freedom in the overall ordering of the FAQs. Note however that the FAQs within the chapters have been reordered to feature the most relevant FAQs first.
111773	0				I do not see any FAQ related to tipping points, regime shifts, alternative states, tipping systems. I have not had the time to look at the entire report, so I cannot say whether this topic is addressed. If not, it is a major missing point. Please look at these references: Lenton et al, 2019. Climate tipping points — too risky to bet against. Nature (https://www.nature.com/articles/d41586-019-03595-0). Beaugrand et al, 2019. Prediction of unprecedented biological shifts in the global ocean. Nature Climate Change (https://www.nature.com/articles/s41558-019-0420-1?error=cookies_not_supported&code=b472e4ed-d1c4-4679-a250-a7d0716c6aee). Steffen et al, 2015. Planetary boundaries: Guiding human development on a changing planet. Science (https://science.sciencemag.org/content/347/6223/1259855) [Alessandra Conversi, Italy]	Rejected. The AR6 WGI has a thorough assessment on tipping point related topics including potential for abrupt change, irreversibility over specific timeframes and low-likelihood high impact occurrences (See Table 4.10). An FAQ on this was not selected due to the complexity and broadness of the topic but note however that FAQ5.2 covers abrupt permafrost thaw and FAQ9.3 covers collapse of the AMOC.
108421	1	1	1	1	There should be some statement mentioning, at the beginning, that the words in italics have entries in the glossary. [Jason Donev, Canada]	Rejected. The words are not italicised to indicate that they are defined in the glossary but to highlight more technical words, which are defined in the FAQ.
89231	1	38	1	46	perhaps could be clearer in this paragraph the difference between what climate models could simulate in 1990 compared to now. For example, did atmospheric climate models in 1990 have the ability to demonstrate the influence of anthropogenic warming? [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Noted. No action. Models in 1990, and even in 1896, have always shown probable anthropogenic warming, but these could not be verified in 1990 because the signal of anthropogenic change had not yet emerged from the noise of natural variability. Section 1.3 of chapter 1 explains this in some detail.
89229	1	42	1	43	as a group and at large scales' is slightly unclear: is this referring to model ensembles, and global scales? [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Noted. We think it's clear. This is a plain-language FAQ. The phrase "model ensembles" is more technical than "as a group," so we prefer the former. "At large scales" is global to large-regional, but it does not seem helpful to add this specification for general readers.
19029	1		200		These are very good, and wondering if you would also consider one looking at projections from past IPCC reports and how they turned out in the light of observations: "How reliable are IPCC projections?" [Jonathan Lynn, Switzerland]	Taken into account - this topic is covered in FAQ3.3. The total number of FAQs was limited, due to practical constraints. As such, a full FAQ on this topic could not be possible.
19031	1		200		(copy-editing) standardize on capitalization in FAQ titles -- best just first word of sentence rather than all key words [Jonathan Lynn, Switzerland]	Editorial. The report will undergo professional copy-editing prior to publication. This kind of issue will be fixed then.
18825	4	32	4	32	Change "larger" to "smaller"? [Govindasamy Bala, India]	Taken into account. Text revised.

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89233	5	3	5	3	Perhaps specify warming as atmospheric and oceanic [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account. Text now refers to global warming.
89235	7	23	1	24	Should an additional sentence be included at the end of this paragraph to explain what difference (and how important) it makes to global temperature changes by using different methods for interpolating/dealing with sparse measurements? [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. FAQ1.4 was withdrawn for FGD.
18829	7	30	7	32	Can the reason for air warming slightly faster than the surface water be briefly discussed here? After all, FAQs are good teaching material [Govindasamy Bala, India]	Not applicable. FAQ1.4 was withdrawn for FGD.
18831	7	34	7	38	The station location also might have moved. This may be also discussed. [Govindasamy Bala, India]	Not applicable. FAQ1.4 was withdrawn for FGD.
89237	7	38	1	28	how much smaller? An idea of magnitude might be needed e.g. 'significantly/slightly smaller' [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. FAQ1.4 was withdrawn for FGD.
23291	10	1	10	10	FAQ: At what point do we know the climate has changed? Why the answer focused on Northern America? [Zhenzhong Zeng, China]	Noted. This regional comparison is for tropical and Northern America to provide a long dataset comparison for a single continent. The equivalent figure in Chapter 1 shows additional regions.
18827	11		11		FAQ 1.3 Figure 1 Legend: The color for temperature could be extended to 15 deg C to include the dark red shown for PETM. Also, expand PETM as it is not expanded in the text. [Govindasamy Bala, India]	Not applicable. Colour scale no longer used. PETM no longer included.
38395	12	1	12	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 FAQ1.4, Figure 1. In order to avoid unnecessary disputes, it is suggested to delete the boundary lines from the Figure. [Yaming LIU, China]	Rejected. The comment does not correspond to the mentioned Figure 1.2 and Section 1.2.1.1.
82037	19	5	19	17	The answer to the question is at the bottom of the paragraph. Consider putting it at the top, then include caveats and explanation below (i.e. bottom line up front) [Dan Zwartz, New Zealand]	

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18833	19	8	19	10	Internal variability does not change the total heat content of climate system (ocean) as it redistributes the energy within the system. However, it can change the global mean surface temperature by redistributing the energy between surface and deep ocean. Therefore, internal variability not only changes the regional surface temperatures but it can also change the global mean surface temperature. [Govindasamy Bala, India]	
82039	20	5	20	5	change "man-made" to "human-made" [Dan Zwart, New Zealand]	
89239	20	26	20	26	perhaps add 'and their interactions' at the end of this sentence? [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	
82043	22	17	22	19	Consider expanding "Multiple lines of evidence show that these increases are the results of human activities" to briefly explain how isotopic differences in natural v human-emitted CO2 shows we know it is us [Dan Zwart, New Zealand]	
18835	22	18	22	18	22,000 years? Shouldn't it be 800,000 years based on the ice core records? [Govindasamy Bala, India]	
18837	23		23		FAQ3.1 Figure 1: For illustrating natural variability (blue and red lines), it may be more accurate to connect the ridge and trough of one cycle rather than connecting the lines crossing multiple cycles. [Govindasamy Bala, India]	
18839	24	2	24	11	FAQ3.2 Figure 1: Short and long horizontal lines indicate the individual models and averages. What does the length of the vertical bars (grey, blue and orange) indicate? 90% or 100% of the model results? This may be discussed in the caption. [Govindasamy Bala, India]	
89241	28	40	28	40	wording of the first half of this sentence is unclear, suggest rewording to 'Diagnosing the time period over which mitigation is detectable depends on the criterion applied [...]' [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Taken into account. Text has been revised for clarity and simplicity.
18841	31	10	31	11	FAQ4.1. Figure 1: Along the y-axis, where does the ice-free condition correspond to? This may be indicated as a horizontal line. [Govindasamy Bala, India]	Noted. Not possible in current design, because models start from different levels over reference period.
18843	32		32		FAQ4.2 Figure 1: is the unit along the Y-axis deg C per decade or deg C per 20 years? Please check. [Govindasamy Bala, India]	Taken into account. Figure has been replaced.

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23293	34	3	34	55	FAQ 5.1. The answer to this question is: There is as yet no observable evidence that this natural removal is slowing down or that the processes underlying this removal are changing. But recent research shows that carbon sink of tropical forests are shrinking. Ref: Hubau, W., et al. (2020). "Asynchronous carbon sink saturation in African and Amazonian tropical forests." Nature 579(7797): 80-87. [Zhenzhong Zeng, China]	
5753	34	20	34	21	FAQ 5.1: Please rephrase. CO2 cannot be lost back to the atmosphere through wind throw. A windthrow can topple and kill trees (change the vitality status of biomass), but it does not release carbon to the atmosphere directly. [Joachim Rock, Germany]	
80205	34	32	34	38	Even though it is in FAQ 5.3, the ocean acidification could be mentioned here as well in the uptake part. [Lilian Fejes, Hungary]	
89243	38	23	38	23	comma not needed after 'if CO2 release equals removal the' [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	
28267	40		40		Very informative and well-written, but from the title I would have expected an answer about how large the budget actually is (given specific temperature goal and probability). One might hence add a few numbers, e.g. as in the Special Report on global warming of 1.5°C. I also believe that a visually simple and appealing comparison of this budget to the historical emissions would be valuable. [Sebastian Bathiany, Germany]	
18845	41	7	41	7	Any rationale for selecting 7 years for the running average? Why not 10 years? [Govindasamy Bala, India]	
18849	45	13	45	14	"within the first decade" is true for CH4 but not true for all SLCF. Aerosol life time is only about 10 days. Please change to "within the first month/year/decade" for accuracy. [Govindasamy Bala, India]	Rejected. The wording "within the first two decades" includes anything shorter than this, thus also aerosols.
18847	45	32	45	34	"while the average global effect of the short-lived forcings is comparable in magnitude to that of the long-lived greenhouse gases" is incorrect. The global effect of short-lived forcing is much smaller than long-lived GHGs. For instance, the current CO2 RF is about 2.5 Wm ⁻² but RF of many short-lived forcings are only a few tenths of a Wm ⁻² . Therefore, the sentence may be changed to "while the average global effect of the short-lived forcings is much smaller in magnitude than that of the long-lived greenhouse gases" [Govindasamy Bala, India]	Taken into account. Although we don't agree that the statement is incorrect (best estimate CO2 RF is 2.2 Wm ⁻² , while uncertainty range for aerosols reach -2.0 Wm ⁻² , we have omitted this comparison. In a FAQ it could give the impression that the positive forcing was comparable or (even worse) that warming of projected future emissions were of the same magnitude. See reply to comment ID 55353

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18851	45	46	45	46	"LLGHG" is used first time in this FAQ and only once. Please expand. [Govindasamy Bala, India]	Accepted - Spelled out.
18853	51	19	51	19	"But water vapour is a greenhouse gas, so clouds also trap (i.e., absorb and re-emit) some outgoing radiation, resulting in a warming effect" is incorrect. Clouds are not made of water vapor. They have liquid droplets or ice crystals. The sentence may be changed to "Clouds also trap (i.e., absorb and re-emit) some outgoing radiation, resulting in a warming effect" [Govindasamy Bala, India]	Taken into account. corrected.
18855	51		52		The high clouds move up under warming and provide a positive feedback. Why is this major positive feedback not discussed here? [Govindasamy Bala, India]	Taken into account. The cloud altitude feedback was clearly one of important processes and shown in FAQ Fig. 1, but due to limitation of the text length we did not discuss the physical processes in detail here.
18857	56		56		FAQ7.2, Figure.1 caption: what is the grey shading in the two panels? Very likely range? This should be stated in the caption. [Govindasamy Bala, India]	Taken into account. Figure has been revised
23295	57	5	57	7	I would suggest rewrite the sentence as: In particular, altering land use can lead to changes in the exchanges of water between the atmosphere, the soil and the sub-surface including exapotranspiration and precipitation. Thereby it modifies the freshwater availability via changing water yield and runoff. [Zhenzhong Zeng, China]	Accepted
131589	57	9	57	13	I think the example of the changing surface albedo is not very understandable with regard to changes in the water cycle. It explains why the surface is heating up more, but not how this would affect the water cycle. For urban areas the increasing runoff due to surface sealing would be a better example. [Hans Poertner and WGI TSU, Germany]	Accepted - We linked how changes in surface temperature may affect the water cycle. Also, we mentioned how surface sealing in urban areas may contribute to the increasing runoff.
23297	57	42	57	47	CO2 should be CO ₂ . [Zhenzhong Zeng, China]	Noted - Due to formatting issues it is not clear to understand this comment
18859	57	44	57	45	"The ratio of transpiration to CO ₂ uptake varies with plant type, and therefore land use change can affect ecosystem water-use efficiency." As water use efficiency is not defined earlier, this sentence may be revised to "Water-use efficiency, the ratio of transpiration to CO ₂ uptake varies with plant type, and hence with land use change." [Govindasamy Bala, India]	Accepted
64857	61	3	61	3	"Droughts are initially caused by a lack of precipitation". I will differ with the use of the word 'lack' to describe a drought as opposed to aridity. 'Insufficient' should be more appropriate. [ELVIS ZILEFAC ASONG, Canada]	Accepted. Wording has been changed to "deficit"

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28269	65		65		great figure! Units could be in % per degree of global warming to stay independent of the scenario and local hydrological regime. One potential problem though: the figure seems to show mean soil moisture?! But what matters more is the number of drought events. For example, it is plausible that mean soil moisture in India increases, but the number of droughts still increases. The caption should say "top" and "bottom", not "left" and "right". [Sebastian Bathiany, Germany]	Noted. Note that the final figure is qualitative and thus without units. The intention of the figure is to show areas that will be more prone to drought. These areas have projected declines in both soil moisture and consecutive dry days, thus are affected by both long and short term changes.
21229	66	24	66	28	FAQ 9.1: Note that in chapter 2 (p. 73) the role of volcanic emissions during or before the PETM is (over)emphasized. Should be conformable here. [Robert Speijer, Belgium]	Noted. No longer relevant to revised text.
21227	66	25	66	25	FAQ 9.1: PETM started at ~55.9 Ma. The 55 Ma date is outdated now. (see also in other chapters) [Robert Speijer, Belgium]	Noted. No longer relevant to revised text.
18861	66		66		The fundamental reason for long timescale is inertia. However, this is not mentioned in this entire FAQ at all. The authors should get into the fundamental science in FAQs. [Govindasamy Bala, India]	Rejected. Inertia is not relevant, it is the slow timescale of ice sheet adjustment which is discussed in depth.
111767	66		67	10	(continuing) It is very important to highlight that the time to return to current conditions can be much longer than the actual time of (way-in) change. Speed is an important concept. However the FAQ is on reversibility of the process, not on the duration of return-to-actual. so the answer does not matches the question, please change either one. Same comment applies to the figure [Alessandra Conversi, Italy]	Rejected. Implies total revamping of FAQ in new direction.
111769	66		67	10	(continues) In addition, only ice melting is described. Changes in the ocean are much more. So I think that the right name for this FAQ should be: If we stop emissions and warming, will we get back to our present condition? Same title applies to the figure for FAQ9.1 [Alessandra Conversi, Italy]	Rejected. Implies total revamping of FAQ in new direction.
111765	66		67		This is the question: "FAQ 9.1: Will human-induced changes in the oceans and frozen environments be reversible?" But the answer is not coherent, mentions the duration of the return ("some of the consequences of human-induced climate change will continue for a very long time, even if atmospheric greenhouse gas levels and temperatures are stabilised or reduced in future)" and does not address tipping points or irreversible change. (continues) [Alessandra Conversi, Italy]	Noted. The text has been clarified. The use of tipping points is too technical for an FAQ and irreversibility and committed change is laid out with timescale by the text.
18863	70	43	70	45	What is the physics behind the relatively less warming in the region where the Gulf Stream's surface water sinks? This may be briefly explained. [Govindasamy Bala, India]	Noted. The slowdown affects surface heat transport convergence, but this complexity is beyond what can be explained to this audience in this space.
89245	72	2	72	2	Figure caption on bottom lower left panel should read: '[...] ice sheet retreats further' [Jennifer Arthur, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Caption rewritten

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80207	75	3	76	11	Boundary organizations or consultant companies with different experts have an important role in creating connections between science and politics (decision-makers and stakeholders) and filling the gap. Mention these in this FAQ, maybe in the paragraph starting on Page 75, Line 54 or in the Figure. Also the importance of applied sciences could be mentioned. [Lilian Fejes, Hungary]	Taken into account. In revising and restructuring the FAQ, boundary organizations and their importance has been explicitly noted.
131591	77	1	77	1	The whole FAQ is only about the urban heat island effect, but the title is very general on the question how growing cities interact with climate change. I think this is slightly misleading since there are much more interactions between climate change and growing cities. Maybe the FAQ could be termed "What are cities affected by rising temperatures?" [Hans Poertner and WGI TSU, Germany]	Accepted. Text has been revised
80209	77	1	77	40	FAQ 10.2 is mostly about the UHI effect and how it amplifies with heatwaves. The climate vulnerability of cities shouldn't be limited to these, but heavier precipitation and other climatic extremes should be mentioned as well. Furthermore, urban population is exposed to all the services coming outside of the city (e.g. food chains) which causes even higher exposure in cities. [Lilian Fejes, Hungary]	Noted. Text has been revised but focus is still on the UHI and heatwave.
18865	77	28	77	28	"remain are lacking" should be changed to "are lacking" or "remain lacking" [Govindasamy Bala, India]	Accepted. Text has been revised
18867	79		79		How much are we sure about the numbers on the x-axis? It is probably a good idea to not provide numbers along the x-axis. [Govindasamy Bala, India]	Taken into account. Figure has been revised.
103931	80	7	80	7	Chapter 6: '...dioxide and nitrous dioxide, which can affect the climate for decades or more.'. Is there still a doubt that GHG affect the climate for decades or more? Maybe the word 'can' can be deleted? [Philippe Tulkens, Belgium]	Accepted
18869	80	8	80	8	Sentence does not read well and needs revision [Govindasamy Bala, India]	Taken into account. Sentence has been simplified.
31203	80	16	80	17	The "several" sounds a bit unexpected, but perhaps depends on what is meant by different SLCFs (different species of VOCs?), also as aerosols are lumped into one in the rest of the sentence. See also FAQ 6.2, figure 1. Perhaps "There are also SLCFs ...". [Markku Rummukainen, Sweden]	Accepted

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31205	80	18	80	18	"changing clouds" sounds quite imprecise. "modifying cloud properties"? [Markku Rummukainen, Sweden]	Accepted.
31207	80	20	80	21	Is this an established definition of SLCP? (Different definitions would seem to in use). This sentence could also be deleted (The sub group...). [Markku Rummukainen, Sweden]	Rejected. We believe this is useful information to avoid confusion.
18871	80	39	80	40	In the global warming context, it is probably better to revise this sentence: decreased albedo will result in stronger net warming [Govindasamy Bala, India]	Taken into account. Sentence reformulated.
24579	80	46			LLGHGs not defined in this FAQ yet. [Jenny Turton, Germany]	Accepted - Spelled out.
31209	80	52	81	4	This paragraph would seem to venture beyond the idea behind the FAQ and out of place here (and as such draws attention from the main text). Suggest deletion. [Markku Rummukainen, Sweden]	Rejected, Cf. Reply to comment ID 55355
31211	82	22	82	22	Suggest deleting "It is... distinct groups." It is not needed for the flow of thought and "unambiguously" is a vague expression in this context. [Markku Rummukainen, Sweden]	Rejected, We believe that the sentence helps clarifying the point.
31213	82	43	82	43	Suggest deletion of "represent two sides of the same coin" - which coin? [Markku Rummukainen, Sweden]	Rejected. It should be self explanatory.
18873	86	2	86	19	What do the filled circle, square and triangle indicate in the 2 panels? A sentence should explain this in the caption [Govindasamy Bala, India]	Not applicable. This figure has been replaced.
18875	86		86		In this Figure, 3 scenarios are explained for changes in T extremes. It is not clear to what scenario the red and blue shadings refer to. As a teaching material, it would be better if 3 separate panels are made for T extremes, one for change in mean, another for change in shape of the pdf and the other for changes in both mean and shape. Such separate panels would greatly facilitate basic understanding of changes in T extremes. [Govindasamy Bala, India]	Not applicable. This figure has been replaced.
18877	87	2	87	12	What is the difference between projected future events and scaled present events? This and storylines may be explained in this caption [Govindasamy Bala, India]	Taken into account. This figure has been replaced.
7513	89	1	89	42	(FAQ 3.1) This is very well done. Good job! [Hugh Lefcort, United States of America]	
31127	89	3	89	3	"Actually" sounds a bit like questioning of anthropogenic warming as such. Could one explore another wording here, e.g. "How much of recent Climate Changes is explained by natural variability?" [Markku Rummukainen, Sweden]	
31129	89	8	89	8	Could omit the word "released" (cf. SO2). [Markku Rummukainen, Sweden]	
31131	89	19	89	19	Suggest "climate models" rather than "computer models". [Markku Rummukainen, Sweden]	

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31133	89	34	89	34	Suggest "greenhouse gas emissions" rather than "greenhouse gases". [Markku Rummukainen, Sweden]	
31135	89	37	89	38	Would it be useful to also mention that climate variability can also lead to periods of more rapid warming than the long-term trend, i.e. both add to and subtract from it? [Markku Rummukainen, Sweden]	
31137	90	3	90	3	Models have improved, but "now more suitable" can be misunderstood. For one, it could be read as that models have not at all been suitable for this, and also that they still are not up to the job. [Markku Rummukainen, Sweden]	
31139	90	6	90	7	Could move the "now" to the last part of the sentence, to read "... are now better than ever before." [Markku Rummukainen, Sweden]	
31141	90	20	90	20	Suggest deletion of "more complex models called" - global climate models are complex already and emphasizes here confuses from the fact. [Markku Rummukainen, Sweden]	
31143	90	22	90	22	It is not "carbon dioxide" that is simulated but the "carbon cycle". Also, could change "more" to "also", and the comma may not be needed. [Markku Rummukainen, Sweden]	
31145	90	25	90	26	Suggest deletion of "making them more suitable for simulating a variety of climate processes", as what the "more" refers is not unequivocal. [Markku Rummukainen, Sweden]	
31147	90	52	90	52	Does this mean that today's models do not do a realistic representation of clouds? What degree of "realistic"? Is this about the outcome or how explicitly processes are accounted for? [Markku Rummukainen, Sweden]	
111771	90		90		FAQ 12.2: In what ways can human-driven climate change cause climate hazards to shift? [Alessandra Conversi, Italy]	NOT APPLICABLE: This comment seems to repeat the title of FAQ 12.2 without providing any additional comment. Our new title for FAQ12.3 is "What characteristics of hazards can shift with climate change?"
31149	91	4	91	4	Suggest "climate models" rather than "computer models". [Markku Rummukainen, Sweden]	
31151	91	17	91	18	Could also mention the current levels of greenhouse gases unprecedented over 3 mio (?) years. [Markku Rummukainen, Sweden]	
109279	92	1	92	52	The FAQ section for Chapter 3 was unpaginated, so I've used page numbers from the FAQ in Chapter 3. FAQ 3.3 has some overlaps with FAQ 1.1.) Consult with Chapter 1. I like the Figure for this FAQ a lot — it's a must-have. [Paul Edwards, United States of America]	
7515	92	45	92	48	FAQ 3.3 figure 1 shows models agreeing with HadCRUT4 during the pause. Yet AR5 did not show that agreement. Anytime one changes old data it requires a lengthy explanation and justification. I am also criticizing AR6s cavalier approach to modifying data. In my area of biology this is almost never done and makes my colleagues wince. [Hugh Lefcort, United States of America]	
50035	94	6	94	6	I think the word "synchronicity" here could be misleading. I would suggest "the global scale" or "the global extent" instead. [Eftychia (Efi) Rousi, Germany]	Accepted; replaced "synchronicity" with "extent".
31119	94	6	94	6	Could consider adding "slow" to "cooling trend", for better separation from present rapid warming trend. [Markku Rummukainen, Sweden]	Accepted; added "slow".

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
24557	94	27			Include '(warmer)' after interglacial to make it clear for non-scientists that these periods are warmer. [Jenny Turton, Germany]	Accepted; added "warm".
31121	94	32	94	32	FAQ 1.4, page 113, line 11-12 mentions "The surface temperature of the world has, on average, increased by around 1.1°C since the late-19th century...", which would seem to be a discrepancy compared to here. [Markku Rummukainen, Sweden]	Not applicable. FAQ1.4 was withdrawn for FGD.
80203	95	48	95	53	This sentence should be added to the paragraph. "Therefore, the importance of adaptation should be strongly emphasized." [Lilian Fejes, Hungary]	Rejected. Adaptation is out of scope of Chapter 2.
24559	96	4	96	6	The sentence beginning 'Evidence abounds...' is too words and uses too many adjectives that it becomes complicated to read. [Jenny Turton, Germany]	Taken into account - text revised (sentence now reads, 'A broad range of indicators collectively leads...').
31123	96	21	96	21	Suggest "increasing" rather than "rising". [Markku Rummukainen, Sweden]	Editorial; copyedit to be completed prior to publication.
31125	96	28	96	29	Suggest "The acidity of the global ocean has also increased..." [Markku Rummukainen, Sweden]	Editorial; copyedit to be completed prior to publication.
24563	100	1			Title too long/wordy. Suggested change: 'How is the climate likely to change over the next 20 years?' [Jenny Turton, Germany]	Taken into account. Title shortened.
50037	100	8	100	8	As the term "radiative forcing" has not been used before, I would expect an explanation here or another, more simple, term used in the summary instead. [Eftychia (Efi) Rousi, Germany]	Accepted. The term is no longer used.
31155	100	15	100	23	In the FAQs, also natural external forcing is discussed in this context (volcanic eruptions perhaps being the obvious one here). [Markku Rummukainen, Sweden]	Accepted. Volcanoes now mentioned.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
565	100	15	100	34	This FAQ is of crucial importance for policy makers: How can we influence Climate change in the near future? You mention the fact that there are two main contributions: One is the natural internal variation, and the other is the result of human action. You develop in a second paragraph the natural internal variation and it seems absolutely necessary to give more details on possible human actions. I strongly recommend to add a complete paragraph, to recall that energy consumption is responsible for 80% of CO2 emissions, and that mitigation of climate change will be obtained only if strong and short-term decisions are taken to minimize burning of fossil fuels. This may be obtained by switching as much as possible to electricity and by producing electricity from renewables and nuclear sources. Policy makers and citizens will thank you for giving concrete solutions and making the decision-making process easier. [Michel SIMON, France]	Taken into account. The human influence is taken up more explicitly in FAQ 4.2; FAQ 4.1 has been revised to stress more clearly the influence of internal variability.
24565	100	23			Is 'chaotic element' an appropriate term for non-science sections? [Jenny Turton, Germany]	Accepted. The term is no longer used.
103933	100	32	100	33	Chapter 4: sentence reads: 'However, looking ahead for twenty years, there are indications that for most quantities of interest, natural internal variability will never be predictable'. There is an apparent contradiction between 20 years and "never". Suggest rewording as "will remain unpredictable". [Philippe Tulkens, Belgium]	Taken into account. Text has been revised for clarity and simplicity.
31157	100	34	100	34	The meaning of "accurately" is unclear. Can it be quantified accurately (exactly? Flawlessly?) [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.
567	102	11	102	20	It's fully appropriate to mention that the long life time of CO2 in the atmosphere will not allow to see any reduction of atmospheric CO2 in the short term, but only a reduction of the increase rate. For the interest of the readers, it would be good to conclude that the rational analysis of the situation leads to the conclusion that decision to reduce the use of carbon fuels must be taken as soon as possible: All CO2 emitted meanwhile will be present for decades or centuries in the atmosphere. [Michel SIMON, France]	Accepted. Connection to longer-term perspective now included.
31159	102	12	102	12	Suggest "the most important anthropogenic greenhouse gas" (cf. water vapour...). [Markku Rummukainen, Sweden]	Accepted. Formulation adopted.
24567	102	18	102	19	This sentence that explains the chaotic parts of the system could also come earlier in FAQ4.1 (page 100), as it is not explained earlier on. [Jenny Turton, Germany]	Taken into account. Text has been revised for clarity and simplicity.
31161	102	22	102	25	Suggest deletion, it becomes wordy without really adding substance. [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.
31163	102	40	102	41	Suggest deletion of the first sentence, it is wordy, a bit philosophical and the idea behind is not clear. [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.
31165	102	44	102	44	Suggest deletion of "Less than certain detection can be diagnosed earlier". It is difficult to decipher and "certain detection" sounds like unequivocal, which mathematically is difficult. [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
31167	102	52	102	53	Suggest deletion of "a delay that... challenge." The idea behind is not clear and as such, the text confuses. [Markku Rummukainen, Sweden]	Accepted. Reference to challenge deleted.
31169	104	3	104	9	Suggest deletion of "but some patterns of regional climate... in global average temperature." and "In cases like these... for any given level of global warming." One could argue that not only areas that warm faster than the global mean, but also areas that warm slower, can be inferable in the same way... [Markku Rummukainen, Sweden]	Rejected. This part is the essence of the FAQ.
24571	104	14		16	I don't understand what this sentence is trying to say. [Jenny Turton, Germany]	Taken into account. Text has been revised for clarity and simplicity.
24569	104	14			What is meant by 'global warming level'? Global air temperature or CO2 emissions- it is a little ambiguous. [Jenny Turton, Germany]	Noted. Warming level is always characterised by temperature change.
31171	104	19	104	19	Suggest "other" rather than "any". [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.
31173	104	31	104	33	The idea gets convoluted here... if the precipitation patterns are heavily influenced by internal variability, they are not resulting from warming. Please clarify. [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.
31179	105	11	105	11	While it is true that CO2 concentrations have been directly measured since 1958, it might be good to add the "directly" so as to include that there are other data from before. [Markku Rummukainen, Sweden]	
24573	105	21			What is 'wind throw'? Perhaps a quick definition would be useful. [Jenny Turton, Germany]	
31181	105	40	105	40	Suggest deletion of "remarkably" (why would it be remarkable?). [Markku Rummukainen, Sweden]	
31183	105	48	105	49	This risks miscomprehension, not least given what follows in the text. Here, the absolute amounts become smaller, but the sink strength may remain. The latter is generally referred to in the FAQ. (Also, how would the ocean carbon react if atmospheric concentrations started to drop via negative emissions?) [Markku Rummukainen, Sweden]	
31185	105	54	106	1	The "In summary..." should state why it will be important - what is the point being made more exactly? [Markku Rummukainen, Sweden]	

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
24575	107	21	107	24	This paragraph is too wordy, which makes it hard to read. It needs re-wording to cut out some excess 'has been', 'have begun' etc. [Jenny Turton, Germany]	
31187	107	36	107	36	The "must" is a bit strong, perhaps, for ambitions mitigation, and a bit beyond. Also, how large is the "extra warming", only an emission is quoted. [Markku Rummukainen, Sweden]	
31189	107	37	107	38	The "However... burning." could be deleted as it is fairly obvious. "greater" is also vague. [Markku Rummukainen, Sweden]	
31091	108	10	108	10	Suggest using "Climate model simulations" rather than "computer climate simulations" for consistency. [Markku Rummukainen, Sweden]	Taken into account. The initial summary says "computer climate simulations," while the later mention says "climate model simulations." This is a plain-language FAQ for the general public, so we believe it is useful to be clear that (most) climate models are computerized simulations.
31093	108	14	18	15	Should add "greenhouse gas concentrations" as they are fundamental for climate change. [Markku Rummukainen, Sweden]	Accepted. Now mentioned in final sentence.
31095	108	30	108	30	"had a cooling influence" may be better than "cooled". [Markku Rummukainen, Sweden]	Noted. No action. This is a plain-language FAQ so we are using the clearest language we can.
31097	108	32	108	32	Could add "and land use change" after "burning fossil fuels". [Markku Rummukainen, Sweden]	Taken into account. Revised to read: "The main human causes of climate change are the heat-absorbing greenhouse gases created by fossil fuel combustion, deforestation, and agriculture, which warm the planet, and aerosols such as sulphate from burning coal, which have a short-term cooling effect that partially counteracts human-caused warming."
31099	108	43	108	43	Could deleted "in these tests", "test" and "testing" are not the same thing, and the addition is not needed. [Markku Rummukainen, Sweden]	Rejected. This is a plain-language FAQ that seeks clarity in ordinary language. Now reads: "An important test of models is their ability to simulate Earth's climate over the period of instrumental records (since about 1850). Several rounds of such testing have taken place since 1990, and the testing itself has become much more rigorous and extensive."
31101	108	48	108	48	Perhaps "project" rather than "predict". [Markku Rummukainen, Sweden]	Rejected. Simulations of the future are projections; here we are discussing predictions stemming from physical theory that have been confirmed by observations.
31191	109	1	109	51	Would it be relevant to also write about how the (surface ocean) carbon reacts to a fall in atmospheric carbon dioxide concentration? Would there be outgassing? [Markku Rummukainen, Sweden]	
109281	109	37	109	38	FAQ 5.3: "...even if large amounts of negative emissions would be implemented." Awkward - suggest "even if large negative emissions were successfully implemented." [Paul Edwards, United States of America]	

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
103935	110	1	111	8	Chapter 1, FAQ 1.3: What can past climate teach us about the future? is identical to FAQ 1.1: What can past climate teach us about the future? [Philippe Tulkens, Belgium]	Noted. There was a problem in the original compilation of the Chapter, FAQ1.3 repeated twice (for FAQ1.1 and FAQ1.3). This has been fixed and FAQ1.1 is 'Do we understand climate change better now compared to when the IPCC started?'
569	110	3	110	4	Warming of the planet due to atmospheric effect was identified in 1824 by Joseph Fourier, and the rôle of CO2 identified by Arrhenius in 1896. The date 1930 given for the discovery of Greenhouse effect and the rôle of CO2 is clearly not correct. [Michel SIMON, France]	Rejected. The text is correct. The first studies to use instrumental temperature observations to show the planet was warming were in the 1930s. The papers cited in the comment discussed the theory but not the measurements. See Section 1.3 for details.
24583	110	10			Propensity' should be changed to something that people are more familiar with. [Jenny Turton, Germany]	Not Applicable - This sentence was rewritten using the definition given by the AR6 WGI Glossary
31227	110	13	110	13	Suggest omitting "surface" from "surface land cover" - redundant. [Markku Rummukainen, Sweden]	Accepted
24545	110	20			The term 'early emergence' is used, but in the paragraph prior, it does not say that climate change signal arrived early, but that it is more apparent. It therefore isn't clear what time frame the readers should be aware of, and ready as if a sentence is missing to say that the signal was detected earlier in the tropics. [Jenny Turton, Germany]	
31103	110	21	110	22	Could mention both the size (magnitude) and pace of change here. [Markku Rummukainen, Sweden]	Taken into account. Text revised.
31105	110	27	110	28	This is a strange statement. It is difficult to see how the signal-to-noise ratio as such would make mitigation much more important for the tropics than many other regions, including the Arctic. "how far" is not necessarily decisive either, but rather the sensitivity of systems and processes being affected... [Markku Rummukainen, Sweden]	Taken into account. The text is revised to ensure that it is clear that this is one way of assessing impacts.
31107	110	30	110	30	For clarity, could write out "temperature" here, to understand what "other" refers to other than temperature. [Markku Rummukainen, Sweden]	Taken into account. Text revised.
31229	110	49	110	54	The text mentions large uncertainties but also abundant evidence, and then quotes concrete aspects. It is not readily clear what kind/level of understanding there is. A clarification would be useful here. [Markku Rummukainen, Sweden]	Noted - A clarification was included
103937	111	1	111	6	Chapter 1: FAQ 1.3, Figure 1 repeated on page 198. [Philippe Tulkens, Belgium]	Editorial.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
111407	111	1	111	48	<p>Chapitre 1 - FAQ 1.3: What can past climate teach us about the future? – Substantial</p> <p>The FAQ is I think extremely important because it is frequently used by students learning about climate change. I think the section very well written but I would add a brief statement about the recent study published by Neukom et al. (2019), which shows that the current warming is unprecedented not only in magnitude, but also in terms of its geography over the last 2000 years. I know that a similar statement can be found in FAQ 2.1:The Earth’s temperature has varied before. How is the current warming any different? Yet I think that it is important to state a bit more clearly that paleoclimatology allows scientists to put the current warming into context.</p> <p>Here is what I would incorporate to the FAQ 1.3, maybe line 23, between “10cm” and “Exceptionally”. Here I provide a suggestion, but please feel free to amend the sentence if needed.</p> <p>“Paleoclimate records such as tree-rings, ice cores, coral and sediments, have shown that average global temperatures in the 20th century are higher than ever before in the last 2,000 years and that the current warming is occurring across the whole planet at the same time for the first time. [Sébastien Guillet, France]</p>	Taken into account. FAQ text now refers to other relevant FAQs for key context to current warming.
24553	111	1	111	48	<p>After reading FAQ1.3 and looking at the associated figure (FAQ1.3 Fig 1), a question may be raised which is not yet answered in the text. If we are to reach 600-1000ppm emissions in the future, why isn't the sea level expected to be as high as the last interglacial? A paragraph explaining this would save some questions/specticism. [Jenny Turton, Germany]</p>	Taken into account. Timescales of responses are now flagged directly in the figure and referred to in the text.
103939	111	3	111	3	<p>Chapter 5: 'The remaining carbon budget is to the total net amount...' delete 'to' [Philippe Tulkens, Belgium]</p>	
109283	111	3	111	3	<p>FAQ 5.4: "total net amount of carbon dioxide emission that can still be emitted." Awkward: suggest deleting the word "emission." [Paul Edwards, United States of America]</p>	
31193	111	5	111	5	<p>The "Several choices... estimated.", would not seem to be needed in the ingress, and could be deleted. It is neither clear what "value judgements" refer to, and truly "unambiguous" estimates is a tall order. [Markku Rummukainen, Sweden]</p>	
31109	111	10	111	11	<p>This should be reworded to acknowledge the significant instrumental observations (such as those giving rise to many key long time series) beginning during the late 19th Century. [Markku Rummukainen, Sweden]</p>	Taken into account. Text revised.
31111	111	14	111	14	<p>Suggest "with the present-day increased..." [Markku Rummukainen, Sweden]</p>	Taken into account. Text revised.
31195	111	14	111	15	<p>The "This characteristic.... in the Earth System." is vague and not really needed, Suggest deletion. [Markku Rummukainen, Sweden]</p>	
103941	111	15	111	16	<p>Chapter 5: 'The concept of a remaining carbon budgets comes with some direct implications.' singular and plural usage: either The concept of remaining carbon budgets comes with some direct implications or The concept of a remaining carbon budget comes with some direct implications. [Philippe Tulkens, Belgium]</p>	

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
31197	111	20	111	20	"can be estimated...choices include" could be replaced by "depends on". [Markku Rummukainen, Sweden]	
31113	111	23	111	23	It would be good to indicate, for better understanding, that "exceptionally high-resolution" compares to typical resolution of paleodata (and still is of much lower resolution in time and space than instrumental data). [Markku Rummukainen, Sweden]	Taken into account. Text revised.
7523	111	24	111	29	(FAQ 9.1) The text mentions the release of methane from methane hydrates. This may have occurred in the PETM but the latest studies show a small chance of this occurring in next 100 years. [Hugh Lefcort, United States of America]	Accepted. Text removed.
103943	111	30	111	30	Chapter 5: 'The remaining carbon budget by definitions starts from today' use the singular of definition [Philippe Tulkens, Belgium]	
31199	111	30	111	43	This could be simplified and shortened by removing the 2nd, 3rd, 4th sentences (The historical... to start with.) as well as the 6th and 7th sentences (CO2 taken... ocean acidification.) [Markku Rummukainen, Sweden]	
31201	111	30	111	43	Could provide carbon budget numbers here for total and remaining for e.g. 1.5 and 2 degrees, with further reference to the foreseen FAQ 5.4, fig.1. [Markku Rummukainen, Sweden]	
7525	111	31	111	38	(FAQ 9.1) The collapse of the West Antarctic Ice during the mid-Pliocene Warming is presented as fact ("... but collapse of the ice sheet meant that..."). This is a contentious subject in the literature. You need to add some qualifying terms about uncertainty. [Hugh Lefcort, United States of America]	Accepted. Text removed.
24547	111	40	111	42	Some parts of this sentence read in present tense, and some in the past. Perhaps 'recorded' is needed to make it clearer. [Jenny Turton, Germany]	Not applicable. Specified section of text has been removed.
7521	111	40	111	44	(FAQ 1.3) What is the citation for a greater than 20 meter sea level rise during the PETM? Thermal expansion would have occurred and caused some rise, but there were no glaciers or icecaps before the event that could have melted. If you extrapolate just from CO2 in our icehouse world, then you get a big sea level rise, but the period before the PETM was much warmer than today. This sentence is inaccurate: "... while the rates of sea level rise are much higher than they were during past geological intervals...". If ice sheets were collapsing at the end of the ice ages then sea levels would have risen drastically in mere days. That would be faster than today. For example see Brendryen, J., Hafliðason, H., Yokoyama, Y. et al. Eurasian Ice Sheet collapse was a major source of Meltwater Pulse 1A 14,600 years ago. Nat. Geosci. (2020). [Hugh Lefcort, United States of America]	Not applicable. PETM no longer discussed.
31115	111	43	111	43	FAQ 1.3, Figure 1 would seem to show that these temperatures were 10-15 deg higher, not up to 8 degrees. [Markku Rummukainen, Sweden]	Taken into account. Treatment of all climate variables are now consistent with CH2 and CH9.
31117	111	43	111	44	It is not clear what kind of pH changes were about. Increases? [Markku Rummukainen, Sweden]	Not applicable. Specified section of text has been removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
24577	111				A few spelling and grammar mistakes in this chapter, but especially FAQ5.4 [Jenny Turton, Germany]	
31231	112	52	112	52	"is affected by" could be changed to "depends on", to be more understandable. [Markku Rummukainen, Sweden]	Accepted
31233	112	54	112	55	The "Observed regional... for these many factors" has already been said above. Could delete this and start a new paragraph. [Markku Rummukainen, Sweden]	Taken into account: the final paragraph has been modified
24549	113	1			Change of title to include all aspects of this FAQ: 'How do we calculate global temperature change and what are the errors we need to consider?' [Jenny Turton, Germany]	Rejected. Title was deemed suitable with minor changes.
31241	113	16	113	17	This combines absolute and relative sea level rises. It would be good to add "local" when it comes to the vertical movement part. [Markku Rummukainen, Sweden]	Accepted. Local sea level is now collected into one paragraph where the distinction is made clear.
24589	113	18			Due to global warming' is a little misleading here- as thermal expansion, ice sheet and glacier melt are all due to 'global warming' or climate change. It needs to be clearer that the 39% of sea level rise is due to thermal expansion. [Jenny Turton, Germany]	Accepted. Now "warming of ocean waters"
31243	113	26	113	26	What is meant by "all realistic"? Perhaps for the range of scenarios considered in AR6... or suchlike. [Markku Rummukainen, Sweden]	Noted. Paragraph has been improved along these lines.
24587	113	28	113	30	This sentence, which begins with 'Scientist project there is ...' is quite confusing, especially the part with 'between 0.2 m and 1.1 m between the average'. I don't really understand what you are trying to say. [Jenny Turton, Germany]	Accepted. Rewritten
31245	113	29	113	29	Suggest "across" rather than "under" as the discussion is on ranges. [Markku Rummukainen, Sweden]	Accepted. Rewritten
31247	113	40	113	41	Suggest "sinking" rather than "falling", when it comes to land subsidence. [Markku Rummukainen, Sweden]	Accepted. Rewritten
50033	113	41	113	44	I am wondering whether it would be better to refer here to 30-year climate periods, instead of decades, which maybe too short for a "climatology" in its traditional definition. This would be more consistent with later FAQs mentioning that natural variability can be dominant in periods of < 20 years. [Eftychia (Efi) Rousi, Germany]	Not applicable. FAQ1.4 was withdrawn for FGD.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
31249	113	49	113	50	Suggest deleting "scientists predict that", a bit of a tautology in AR6... [Markku Rummukainen, Sweden]	Accepted. Substitution made
51527	114	1	114	2	FAQ 9. 2, Chapter 9: For comparison with the 2300 projections for SSP1-2.6 here, would it be possible to provide an estimate for a higher emission scenario projection for 2300 also? [Jolene Cook, United Kingdom (of Great Britain and Northern Ireland)]	Not applicable. Text removed.
31235	114	19	114	21	Wouldn't "crops" be more an aspect of "people" (society) rather than "ecosystems"? For the ecosystems, also fauna could be mentioned. [Markku Rummukainen, Sweden]	Accepted. Sentences have been changed accordingly.
31237	114	22	114	23	The sentence about pluvial could be removed, does not really fit in here. [Markku Rummukainen, Sweden]	Accepted, sentence deleted.
24585	114	29			Ameliorate' is not a well-known word for non-native English speakers, perhaps find an alternative. [Jenny Turton, Germany]	Accepted, changed to alleviate.
31239	114	32	114	32	Suggest changing "human modifications..." to "The severity of a drought can also be affected by human activity." or suchlike. [Markku Rummukainen, Sweden]	Accepted, we now use the phrase, "human activities"
31251	115	5	115	5	The AMOC slows down already in the 21st Century, which would not seem to be covered in the present formulation. Also, "or" maybe a bit too strong as it is based on "some" models according to the text that follows. Perhaps, "Some models project..." See the fourth paragraph of this FAQ ("However..."). [Markku Rummukainen, Sweden]	Noted. This FAQ has been revised to be consistent with the Chapter 2, 4, 9 text and assessments.
31253	115	21	115	21	It is not clear what the "first role" is - the text is a bit too detached from the previous paragraph and thus the idea difficult to connect. [Markku Rummukainen, Sweden]	Accepted. Rewritten for greater clarity
51531	115	37	115	48	FAQ 9.3, Chapter 9: line 37 (which states the AMOC is slowing) doesn't seem to be consistent with line 42 ('slowdown is not yet apparent in the data) - please could you clarify why the data does not show the slowdown, is this due to a too limited timeseries? [Jolene Cook, United Kingdom (of Great Britain and Northern Ireland)]	Accepted. Rewritten for greater agreement with present chapter summary statements (which are more technical, of course)
50039	115	42	115	42	It is mentioned that the slowdown of the AMOC is not yet evident in the measurements at 26.5oN, but I had the impression that it is, according to Robson et al. (2014) https://doi.org/10.1038/ngeo2050 and Smeed et al. (2013) http://citeserx.ist.psu.edu/viewdoc/download?doi=10.1.1.405.1856&rep=rep1&type=pdf [Eftychia (Efi) Rousi, Germany]	Noted. However, the assessment in this report in chapters 2, 3, 9 is that there is not yet consensus detection of an attributable trend.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
103945	115	51	115	51	Chapter 9: '...compensate for the changes in the ocean overturning by transporting some of the missing heat transport.' Transport cannot be transported. Avoid the repetition of "transport". [Philippe Tulkens, Belgium]	Accepted. Rewritten for greater clarity
31255	115	53	115	53	This is unclear. Which are the "other regions"? Some other part of Europe? Other parts of the world? Are the other regions comparable in climate system sense (apart from the Atlantic Ocean influence?) [Markku Rummukainen, Sweden]	Accepted. Rewritten for greater clarity
31257	116	2	116	4	The sentence "We have not been... shutdown." could be deleted. The monitoring has already been discussed above, and one would not expect either to see a possible shutdown in present variability". Also, "to be sure ... accurate" is a bit of a vague expression. [Markku Rummukainen, Sweden]	Accepted. Rewritten for greater clarity and brevity
24591	116	7			Salt is not 'added', but the salinity increases due to less liquid water. This makes it seem like salt is poured into the water. [Jenny Turton, Germany]	Accepted. Rewritten for greater clarity and brevity
31259	116	13	116	14	That such weather changes are so far only modelled is true for the North Atlantic as well. This is relatively speculative and it could be appropriate to delete from "only projected by models" to "of the Gulf Stream". [Markku Rummukainen, Sweden]	Noted. However, the distinctions between projections and understanding are too subtle for the FAQ audience in an FAQ not focused on the interpretation of models.
76759	117	7	117	9	It is super interesting to read here that "it is very likely that clouds will change in ways that will amplify, rather than offset, global warming in the future", however, I missed an explanation of statement about this in the following text. My understanding of the text is that since the industrial revolution, clouds did cool the atmosphere. How will this effect evolve in the future? And what feedback or interplay of feedbacks will cause the warming effect of clouds? Is the warming effect in comparison to today (i.e., less cooling from the aerosol-effects) or a net warming effect? [Ronja Reese, Germany]	Taken into account. The FAQ7.1 text has been revised accordingly.
76761	117	43	117	43	What are subtropical marine boundary layer clouds? [Ronja Reese, Germany]	Taken into account. Jargon has been eliminated.
31215	118	7	118	8	Suggest deletion of "this reflects... improves." The first part of the sentence already expresses the matter, and adding the rest could be taken as a statement that the understanding is still as poor as before. [Markku Rummukainen, Sweden]	Taken into account. The paragraph has been substantially rewritten.
31217	119	12	119	14	The "from its preindustrial concentration" is surely not part of the definition that rather refers just to a doubling. [Markku Rummukainen, Sweden]	Taken into account. Definitions explained more carefully explained
31219	119	14	119	15	Does the "around 90%" apply to a specific emission scenario, rather than all scenarios? If so, it would be good to clarify. [Markku Rummukainen, Sweden]	Taken into account. Text clarified
31221	119	20	119	21	Different lines of evidence have been used already before. Would be useful to state what is the novelty in methodology. Or, finish the sentence after "climate sensitivity" and start a new sentence by "Four lines of evidence are considered..." [Markku Rummukainen, Sweden]	Accepted. Agree, suggestion adopted

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
31223	119	34	119	35	"statistically representative" is difficult to understand. Suggest ending the sentence after "from a limited sample." [Markku Rummukainen, Sweden]	Accepted. Agree, wording adopted
24581	119				It is not always clear which chapters are talking about previous estimates of the equilibrium climate sensitivity and which talk about current models value. I think a change in structure/flow of this FAQ is needed to make it clearer. [Jenny Turton, Germany]	Taken into account. FAQ flow is revised
29437	130	1	131	11	Providing useful climate information needs for a proper communication of scientific results into language which could actually be understood by local stakeholders. With respect to climate sensitive urban planning for instance, strengthening resilience towards climate change needs to involve expert knowledge directly into the planning process. As is already the case for selected urban areas and regions, this needs to involve the the installation of dedicated climate managers whose role is to coordinate the communication and bridges the gap between theory and application. So called decision-support systems need to be developed within a coordinated effort including various players representing a heterogenous field with mixed interests but working towards a dedicated goal. Communicating Climate Change has to necessarily start at the local level, meaning a global problem has to be transferred to a regional context. Perhaps the theory of DSSs could be included into FAQ 10.1, FIGURE 1. [Joachim Fallmann, Germany]	Rejected. The dialogue that is needed among all parties implies using relevant tools, methodologies and languages.
31261	130	8	130	8	Also policymakers should be identified as users. [Markku Rummukainen, Sweden]	Rejected. The text covers all types of users, as subsequent text and the figure indicate.
31263	130	14	130	14	the "values" should be defined, it might be understood different by different readers. Existing knowledge? Valuations? Preferences? Capabilities and capacities? [Markku Rummukainen, Sweden]	Rejected. The values will depend on all those engaged in the dialogue leading to distilled information and must necessarily be situation-dependent.
24593	130	37	130	40	Long sentence, and the end is not grammatically correct. The sentence should end with 'arrive at climate information'. A second sentence can then say that an uncertainty estimate is required. [Jenny Turton, Germany]	Taken into account. The FAQ has been restructured and shortened to bring out important points more clearly.
31265	130	46	130	53	The two examples are too brief to add value. They should either be fleshed out more (outcomes?) or omitted for brevity. [Markku Rummukainen, Sweden]	Accepted. The examples were deleted in the process of making the FAQ more succinct.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
29439	132	1	132	50	It is sometimes dangerous to just focus on the term UHI when discussing the impact of climate change on human health in urban areas. With largest UHIs being present mostly at night-time and morning hours that explanation would hold, as urban temperature not dropping below 20 °C will become harmful for the human body especially true for older people and babies. However, extreme daytime temperatures on the other hand can also exist, or get more extreme in the future without the UHI changing dramatically within the dedicated urban region. A second point to mention here, is the increased risk of urban areas towards flooding subsequent to more extreme precipitation events expected in the future. Urbanization transforms natural to impervious surfaces, this sealing amplifies the flood risk. Another point is the fact that many studies acknowledge the positive effects of urban greening, trees on the urban thermal environment. However within this point, one has to take into account that not every tree per se is beneficial, as certain tree species (Platanus) emit secondary compounds (BVOCs) which can act as precursors to tropospheric ozone formation wherever additions NOx pollution is present as well. The strength of emission in turn depends on the stress level of the tree, which actually would be higher in a more extreme climate. Water scarcity would be another aspect which is important to mention at this point, as more greening needs more water. This is not to say that greening is bad, but rather efforts should be made with respect to the local/regional conditions (e.g. what is the right tree?). Lastly, I would find the title 'Climate Change impact on urban areas' more adequate as the impact of the UHI on mean global temperature is not verified by studies yet. [Joachim Fallmann, Germany]	Noted. We will focus this FAQ on temperature only and all mitigation aspect using green infrastructure will not be discussed here since this is WGI-related information.
31267	132	9	132	10	How much of the emissions cities are responsible to depends on how systems' boundaries are drawn. A lot of consumption occurs in cities (actually, by the inhabitants, the concentration of which is high in cities), but the emissions occur elsewhere and in emission inventories attributed to different sectors (land use change, manufacturing, energy). This should be put forward more clearly. [Markku Rummukainen, Sweden]	Not applicable, text has been removed.
31269	132	16	132	16	Does the 30 000 casualties refer to additional mortality in early August in Paris? [Markku Rummukainen, Sweden]	Taken into account Text has been revised
31271	132	27	132	32	The paragraph is more about research needs than answers the Question. Suggest deletion to ensure clarity of the overall FAQ 10.2. [Markku Rummukainen, Sweden]	Rejected. As the question of long-term city monitoring network is very important and its need for urban studies is vital.
31273	132	39	132	39	It sounds strange that climate change would not have an impacts on the magnitude of UHI as temperature increase should manifest itself also in urban areas, and heat waves intensify with global warming. [Markku Rummukainen, Sweden]	Noted.
31305	139	14	139	22	As the example is of crops, one could also discuss pests and fire risks. [Markku Rummukainen, Sweden]	NOT APPLICABLE: We have dropped this FAQ in favour of alternative questions. A deeper discussion about the asymmetry of effects belongs in Working Group II.
31287	148	1	149	28	The text is fairly long on the basics of statistical distributions and how to read pdfs. It might be useful to tune down on general technical details - makes the subject matter harder to take in - and focus on the FAQ, i.e. how changes in the means and extremes relate to each other. Explanation on how to read curves could still be given in figure captions. [Markku Rummukainen, Sweden]	Considered. The text is largely rewritten focusing on simple comparison between changes in mean and extremes in temperature and precipitation. Discussion on statistical distributions is removed.
24595	148	7	148	8	This sentence is not complete- or has been combined with another sentence. [Jenny Turton, Germany]	Accepted. Unfortunately, during the edition process a full paragraph went missing.

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31275	148	7	148	8	broken sentence [Markku Rummukainen, Sweden]	Accepted. Unfortunately, during the edition process a full paragraph went missing.
50041	148	8	148	8	Something is missing here, what about "...magnitude as extremes will occur.." [Eftychia (Efi) Rousi, Germany]	Accepted. Unfortunately, during the edition process a full paragraph went missing.
31277	148	13	148	13	Would it be correct to change "may have" into "have"? [Markku Rummukainen, Sweden]	Considered. The text is largely rewritten focusing on simple comparison between changes in mean and extremes in temperature and precipitation. Discussion on statistical distributions is removed.
24597	148	13			People who are new to reading/understanding PDFs won't know that it has two ends/tails. A sentence prior to this to explain the shape of a PDF would help. [Jenny Turton, Germany]	Considered. The text is largely rewritten focusing on simple comparison between changes in mean and extremes in temperature and precipitation. Discussion on statistical distributions is removed.
31281	148	28	148	40	Also the case of larger warming of daily cold extremes than average temperature in areas where snow/ice cover reduces could be mentioned. [Markku Rummukainen, Sweden]	Considered. The text is largely rewritten focusing on simple comparison between changes in mean and extremes in temperature and precipitation. Discussion on statistical distributions is removed.
31279	148	30	148	33	"land regions warm more than global average" is said twice, one occasion could be deleted. [Markku Rummukainen, Sweden]	Considered. Sentence revised.
31283	148	54	148	54	Is this about surface temperature change or air temperature change (away from the surface?) [Markku Rummukainen, Sweden]	Considered. The text is modified.
31285	149	2	149	4	It is not obvious why the discussion returns here to average precipitation. Might this sentence be better placed at the beginning of the paragraph? [Markku Rummukainen, Sweden]	Considered. The text is edited.
31289	150	3	150	4	The "will be similar to those experienced in the past" sounds like there will be no change. Does this refer to some extremes, but not all? Or, what is meant by "similar"? That future heatwaves will have higher temperature than the mean temperature and that today's heatwaves have a higher temperature than the mean temperature of today does not make them "similar". [Markku Rummukainen, Sweden]	Accepted. This idea has been clarified to note that the broad types of events will remain the same but their characteristics may change.
31291	150	12	150	12	Suggest, "including the extremes and rare events that occurred." [Markku Rummukainen, Sweden]	Taken into account. This text has been revised differently.
50043	150	18	151	1	Some words are used repeatedly (e.g. unprecedented), even multiple times in the same sentence, so that the text is difficult to follow and does not seem very coherent. [Eftychia (Efi) Rousi, Germany]	Taken into account. The text has been revised with clarity and understanding in mind.
31293	150	22	150	24	The example is quite specific and could be changed to a more general finding of return periods of extreme heatwaves. [Markku Rummukainen, Sweden]	Taken into account. This example has been removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
24599	150	23			The word 'today' is causing some confusion in understanding this sentence. [Jenny Turton, Germany]	Taken into account. This example has been removed, but the use of "today" is avoided in the revised text.
31295	150	26	150	35	It is not evident how this contains an example of changing exposure and vulnerability. Corals have been vulnerable beyond their thresholds already before. Do the thresholds change? [Markku Rummukainen, Sweden]	Not applicable. This example has been removed.
31297	152	3	152	3	While it is true for weather, it may be misleading to say that "the climate... we experience varies from day to day" and even "year to year". [Markku Rummukainen, Sweden]	Accepted. The paragraph has been revised and this sentence removed.
24601	152	3	152	9	Whilst weather changes day to day and year to year, the definition of climate does not allow that it changes day to day/year to year. Climate is the long-term (30 year) average of the weather. This opening paragraph leads to confusion. [Jenny Turton, Germany]	Accepted. The opening paragraph has been revised and this sentence removed.
31299	152	15	152	15	Probably unnecessary to say "borrowing methods from epidemiology" as this is recurrently applied in climate/meteorology/hydrology... [Markku Rummukainen, Sweden]	Taken into account. This sentence was removed while streamlining the text.
31301	153	1	153	2	Would be useful to state what prevents such attribution. Scale? Shortness of time series= Rarity of events? [Markku Rummukainen, Sweden]	Noted. The text was clear about modelling capability.
31303	153	4	153	9	It would be good to provide information on which recent events this refers to. Also, is "impossible" a proper word here? Does it mean physically impossible or very unlikely? [Markku Rummukainen, Sweden]	Taken into account. The text of this FAQ was simplified and this paragraph was removed.
103947	174	2	174	2	Chapter 6: summary schematic figure, left hand-side, under Methane, a pictogram of a sheep. Wouldn't a cow be more appropriate? Also, there is no difference between local and regional impacts in the centre panel. [Philippe Tulkens, Belgium]	Taken into account, this figure was just a placeholder
103949	178	1	178	7	Chapter 3; FAQ 3.1: very nice figure. It would be very telling if the timeline could be extended backwards past the 1930s (7 decades). As table FAQ 1.4, Figure 1 shows we have measurements dating back several centuries (3 centuries). [Philippe Tulkens, Belgium]	
31153	178	1	178	8	It is a bit unfortunate to draw lines between individual specific years and call it cooling or warming. For example, the blue line in the observed change -panel would have been a red line if stopped one year earlier. Suggest using running means or suchlike, which is customary in discussing observed trends. [Markku Rummukainen, Sweden]	
31175	188	1	188	16	It is unclear what "will continue to rise" and "will continue to shrink" refer to - to the time periods shown, beyond 2040 or beyond 2100. Delete? [Markku Rummukainen, Sweden]	Taken into account. Text has been revised for clarity and simplicity.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
31177	188	1	188	16	Could indicate in the sea ice panel at which reduction the Arctic is sea-ice free in September. [Markku Rummukainen, Sweden]	Taken into account. Figure has been revised for clarity.
84091	191	1	73	1	The numerical values for sea level rise included in the Figure are written as XX cm. [Marco Tulio Cabral, Brazil]	Not applicable; comment does not refer to FAQ 2.1 Fig. 1 - misplaced.
7527	193	45	193	53	(FAQ 3.1 Figure 1). Mention that the black line of HadCRUT4 are adjusted data. Adjusting data may be normative in climate modeling, but in most areas of science it is quite rare and therefore you must state that the data have been adjusted. [Hugh Lefcort, United States of America]	
44961	198	1	198	1	The FAQ section is really important. This is where the unfamiliar and non-scientists will spend some of the most time. Therefore, I think it's great that there are so many more graphs and diagrams in this document. The reader's eye will be drawn to those and they will spend longer amounts of time on each particular point with the more of those you include I suggest you try to have a diagram, chart, or graph for each one, and especially on the very first page. [Catherine Linsky, United States of America]	Noted. We have one figure for each FAQ and they are placed on the same page of the FAQ texts in the final form.
103951	198	1	198	5	Chapter 1: FAQ 1.3, Figure 1 - a very interesting table that provide both an informative overview of global key variables in the known history of the planet but also presents the information that the planet has known higher temperatures in the past. However, this information can be used to downplay the risk of human-caused climate warming. FAQ 2.1. Figure 1 helps in understanding the difference between the different warmings. Maybe a cross referene to this figure could be included. Better yet, the caption should explain that the whole human history took part in (and has been adapted to) the conditions in the white rectangle and indicate the rates of changes that occurred moving from one period to another. [Philippe Tulkens, Belgium]	Taken into account. Accompanying text now refers to other relevant FAQs.
44959	198	3	200	6	Science communication: It is not safe to assume that policy makers will read all of these. I think it is critical to list the most important questions that climate change deniers need to see FIRST. I think starting with FAQ 1.2 would be much more effective. Then follow that with the others that affirm the tremendous amount of evidence and scientific world consensus. [Catherine Linsky, United States of America]	Rejected. We decided to have FAQ1.1 first as the historical development of climate science fits well for the first thing to read.
81269	198		198		FAQ Figure 1.2: what is mean by "we know the climate has changed at this point"? - the figure looks like temperature change, but not much else. Also, the grammar needs editing in the figure. [Stephanie Downes, Australia]	Taken into account. Text revised.
24551	199	1	199	1	PETM needs defining in the caption as I couldn't find this abbreviation defined in the FAQ text. [Jenny Turton, Germany]	Not applicable. The PETM is no longer included.
103953	199	1	199	6	Chapter 1: FAQ 1.4, Figure 1 - very interesting overview of global measurement sites/densities. No measurements in Greenland? Four measurements in Antarctica only? A finer granularity of the map could be included. Arctic polar cap is missing. Using black both to denote the 300-200 ys old measurement site and to mark the delimitation of the countries is unfortunate as the former are lost. Question whether the country delimitations need to be so pronounced (black, bold). [Philippe Tulkens, Belgium]	Not applicable. FAQ1.4 was withdrawn for FGD.

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24555	200	1			Using black in the colour bar doesn't currently work as the outline of countries is also black. This makes it hard to see if countries have a long number of observation years, or it is just an outline, especially in continental Europe. [Jenny Turton, Germany]	Not applicable. FAQ1.4 was withdrawn for FGD.
31225	206	1	206	9	Please specify if the very likely range is just for the CMIP-models or for all lines of evidence. Also, specify the "high emission scenario". [Markku Rummukainen, Sweden]	Taken into account. Text clarified
129691	233	3	233	8	This refers to FAQ 12.3, Figure 1. It isn't clear from the figure how these all flow. Suggest adding 'increase' before warm-season mortality and 'decrease' before cold-season mortality. [Trigg Talley, United States of America]	NOT APPLICABLE: We have dropped this FAQ in favour of alternative questions.
108463	6-80	5	80	11	The ideas in the full text are not reflected in the italicized summary at the top. Specifically the ideas from line 31-34 should be explored in this. [Jason Donev, Canada]	Accepted.
108465	6-80	5	80	11	Methane is considered a SLCF and yet that has gone up. This seems to be left out and that's a problem. [Jason Donev, Canada]	Accepted. Statement modified.
55351	6-80	10	6-80	11	FAQ 6.1: This short answer should conclude with the main take home message of this FAQ. Currently that would be that "measures to improve air quality have led to reductions in emissions and concentrations of SLCFs in many regions over the last decades". This is not a strong answer to the question "why do we care about SLCFs"? Recommend concluding the short answer with a message about the potential for mitigation of warming SLCFs to reduce the rate of near-term warming and how this can contribute to offsetting the projected warming from reductions in cooling SLCFs. Also benefits to achieving SDGs. This would tie in better with para 5 of the long answer as well. [Nancy Hamzawi, Canada]	Accepted. Good point.
108467	6-80	28	80	28	Explain halogenated, this is the FAQ after all, it should be very readable. [Jason Donev, Canada]	Rejected. This is already exemplified in the parenthesis
108469	6-80	31	80	31	What is meant by 'regional' here? The length scale just isn't clear. Is this a part of a city? An entire European country? A portion of a continent like Eastern Asia? Unclear. [Jason Donev, Canada]	Rejected. Regional scale is a term used throughout the report (cf, Chapter 12).
55353	6-80	32	6-80	34	FAQ 6.1: This statement, that "the average global effect of the short-lived forcers is comparable in magnitude to that of long-lived GHGs" is not likely to be understood by many FAQ readers as intended. It would be easy to misinterpret this to mean that the warming effect (forcing) of SLCFs is on par with that of LLGHGs. It might be simpler in the FAQ to focus on the local effects of SLCFs. [Nancy Hamzawi, Canada]	Taken into account. The sentence has been simplified by omitting the comparison with the global effect of LLGHGs, and just stating the large regional forcing.
108471	6-80	33	80	34	This idea is important but lost where it's sitting. At the very least it should be included in the summary at the top, but it should be brought out more. 'Burying the lead'. [Jason Donev, Canada]	Rejected. In the summary this is already addressed through the regional effects of the SLCFs due to the shorter lifetimes.
86825	6-80	49	6-80	49	This FAQ would benefit from being extended with more information on health and food security reasons why we care about SLCFs. It might also be a good place to highlight that it is possible to abate SLCFs without mitigating SO2 emissions to the extent that warming is the result of SLCF abatement. When referring to the SDGs, it would be nice to state specifically which SDGs benefit from SLCF mitigation, or rephrase in order to highlight which co-benefits SLCF mitigation provides. [Oyvind Christophersen, Norway]	Rejected. Although this is obviously a valid point, it is the focus of FAQ6.2.

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55355	6-80	52	6-81	4	FAQ 6.1: Suggest this last paragraph may not be needed in the FAQ as it is highly technical, strays away from the main focus of this FAQ and is of more relevance to the research community than to the broad range of readers of FAQs. [Nancy Hamzawi, Canada]	Noted. Paragraphs re-ordered. Students and the scientific community is also a part of the audience, so we refrain from deleting the paragraph.
55349	6-80		6-80		FAQ 6.1: General comment: This FAQ needs work. Terminology is an issue. SLCFs should consistently be defined to include all such forcers and not just warming agents (short answer essentially equates SLCFs with SLCPs), and in terms of lifetime, not time over which they effect climate. The introduction to Ch. 6 on SLCFs (pg 6-5 lines 3-11) has a much clearer explanation of what SLCFs are and what they include. Nowhere in the FAQ is it mentioned that sulphate aerosols have offset a large amount of the GHG-induced warming to date. This seems an omission. Different SLCFs are referred to in different paragraphs without first identifying the suite of compounds considered as SLCFs. Overall, a good edit is needed. [Nancy Hamzawi, Canada]	Accepted - all forcers are now included.
108473	6-82	1	82	45	Many people propose burning methane (natural gas) as a way to reduce the GHG emissions and air pollution, this idea needs to be addressed within this FAQ. Buring natural gas does, in fact, reduce air pollution, and in the absence of leaks reduce the GHG footprint. But leaks always happen, and it continues to drive CO2 levels up. This idea is very much talked about in energy circles, but is ignored by much of the climate science community. This dangerous idea is going to lead to considerably worse climate change. This FAQ needs to take a stand on this and clearly state that burning natural gas continues to contribute to global warming and climate change, even though it does, in the short term, reduce air pollution. [Jason Donev, Canada]	Rejected. Beyond the scope of a FAQ
55357	6-82	9	6-82	12	FAQ 6.2: Air pollution also affects ecosystems and crops. This could be mentioned as well as health impacts of air pollution. [Nancy Hamzawi, Canada]	Rejected. Already mentioned.
86827	6-82	11	6-82	12	Please consider including migration when listing the impacts of climate change. [Oyvind Christophersen, Norway]	Rejected. Not within the scope of WGI
55359	6-82	14	6-82	19	FAQ 6.2: Since fossil fuel combustion is both the major source of GHGs and air pollutants it would be helpful to include this fact somewhere in this paragraph. This would help link to subsequent text in the FAQ that speaks to the benefits of decarbonization for both air quality and climate change. [Nancy Hamzawi, Canada]	Rejected. All the activities mentioned imply fossil fuel burning.
108475	6-82	21	82	21	What air pollutants? Is CO2 a pollutant? It is usually considered one in this context. [Jason Donev, Canada]	Rejected. CO2 is not considered an air pollutant.
108477	6-82	21	82	21	Burning natural gas in a fireplace releases a negligle amount of non-CO2 pollution. The statement here about lighting a fire in the fireplace emits air pollution will be attacked as being untrue. Please think about this carefully. [Jason Donev, Canada]	Rejected. We are talking of wood burning here.
55361	6-82	32	6-82	32	FAQ 6.2: Decarbonization is not just important in a long term perspective. In low emission scenarios, decarbonization progresses ambitiously over the next few decades. [Nancy Hamzawi, Canada]	Accepted
55363	6-82	34	6-82	35	FAQ 6.2: As we understand it, whether or not wood-burning is carbon neutral is subject to some scientific uncertainty. Please ensure statements in the FAQ about wood burning and carbon neutrality are consistent with the way the IPCC TFI treats this issue. [Nancy Hamzawi, Canada]	Not applicable. Consistency will be checked.

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108479	6-82	35	82	37	There is such a focus on air quality that this statement misses the water and land pollution that can also happen. Be careful about getting too focused on the context of the climate that we miss out on other aspects (like water quality) that get hit too. [Jason Donev, Canada]	Rejected. It is not a matter for Chapter 6.
86829	6-82	43	82	45	We think it is worth to repeat what is written on p. 60 l. 16-18: Neither ambitious climate change policy nor air quality abatement policy can automatically yield co-benefits without integrated policies aimed at co-beneficial solutions (Zusman et al., 2013; Schmale et al., 2014b; Melamed et al., 2016) [Oyvind Christophersen, Norway]	Rejected. It would be a repetition of the concepts expressed.
55365	6-82	43	6-82	45	FAQ 6.2: This final message is contentious. It implies that policymakers may not want to take action to reduce sulphur emissions to tackle air pollution because of the 'lose' on climate change. Given the enormous health benefits of reducing sulphur emissions, this is not likely to be the case and while we doubt this was the intent of the authors, the FAQ should be carefully worded to avoid that implication. The science message could be that we need to understand the full suite of emissions from different sources to be able to fully assess the implications for both air quality and climate change of mitigation action, and take advantage of opportunities for synergies. [Nancy Hamzawi, Canada]	Rejected. We do not think that there is any subliminal message here.
108481	6-83	3	83	5	These species are co-emitted by chemically and physically different. I don't think it's true that they can't be considered separately. It may be hard to do in this context, but in many other contexts they are tracked and discussed differently. They are doing different things, even if they often have the same source. [Jason Donev, Canada]	Not applicable. Figure has been completely redesigned.
55325	3-89	28	3-89	34	FAQ 3.1: In general, there is clearly some overlap between this FAQ and FAQ3.3. They are a good pair read together and cross-referencing should be added to reflect that. Lines 28-34 in particular should cross-reference FAQ3.3 and the related Figure. [Nancy Hamzawi, Canada]	
55327	3-89	30	3-89	30	FAQ 3.2: Recommend adding some additional conditions to the sentence "Thus, warming will always be experienced" to explain that this is true under conditions of continued increases in anthropogenic forcing. [Nancy Hamzawi, Canada]	
55311	2-94	22	2-94	22	FAQ 2.1: It would be helpful to identify that the period 125,000 years ago was the time of the last (warm) interglacial which is something not all FAQ readers may be familiar with. [Nancy Hamzawi, Canada]	Accepted; added "last major interglacial period".
55313	2-94	30	2-94	30	FAQ 2.1: Please clarify/confirm that global temperature increased by about 5C from the last glacial period to the current interglacial. [Nancy Hamzawi, Canada]	Taken into account; temperature change is explicit as reviewer states.
55315	2-94	32	2-94	32	FAQ 2.1: Consistent with other comments, it is often unclear whether results provided in an FAQ are "assessed results" from the AR6 or generalized statements. Here for example, it states the Earth has warmed by nearly 1C whereas the assessed warming (from Ch. 2 and in the SPM) is 1.1C (best estimate, GSAT increase). [Nancy Hamzawi, Canada]	Taken into account; warming value is now consistent with CH2 assessed value, albeit simplified with qualifiers for purposes of FAQ.
86831	2-94	41	2-94	41	Please consider being more specific than "continents have warmed more than the ocean" by replacing "ocean" with "ocean surface", because otherwise it might be unclear to some readers whether warming refers to temperature increase by the surface or to how much energy has been absorbed by the ocean (the latter understanding would make the sentence untrue) [Oyvind Christophersen, Norway]	Accepted; added "surface".

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55317	2-94	52	2-95	5	FAQ 2.1: Is this paragraph about impacts supported by the WGI AR6 report? If not, then keep this conclusion to a minimum simply to make the point that during past globally warm periods, there were few humans on Earth. Furthermore, the writing style on pg 2-95 lines 2-5 is not in keeping with IPCC practice, which would be an additional reasons to consider deleting these lines. [Nancy Hamzawi, Canada]	Accepted; final two paragraphs now extensively cut to retain focus on unique content in this FAQ (evidence for unusual recent warming) and to call out other FAQs for related information.
55319	2-96	3	2-96	8	FAQ 2.2: Since most of the evidence discussed in the FAQ uses data from the late 20th century, the conclusion in lines 7-8 that evidence depicts a warming world since the late 19th century is not well supported. It is important that evidence related to warming of the climate system over this longer period is included in the response to this FAQ. [Nancy Hamzawi, Canada]	Taken into account - text revised (deleted the phrase, 'since the late 19th century').
108445	2-96	44	96	44	Don't use the word 'phenological' in the FAQ, this is supposed to be lay person readable, and this word isn't. [Jason Donev, Canada]	Taken into account - combined with comment 40315
108449	3-4	41	4	41	In the graph it only shows since 1810, but the text claims a longer timeline, please resolve text vs. graphic [Jason Donev, Canada]	Noted. Text revised.
108451	3-6	1	6	1	Should this start at 0? Starting at 0.6 implies worse agreement than is realistic for precipitation and sea level pressure. [Jason Donev, Canada]	
108453	3-6	1	6	1	This graph doesn't effectively illustrate the point that it's trying to make to lay people. This graph requires expertise and isn't explained nearly effectively enough. [Jason Donev, Canada]	
19043	(2) 94		95		(FAQ 2.1) use of it's for it is or it has is very informal. Maybe that's a deliberate choice but not consistent with others, and think it is /it has better here [Jonathan Lynn, Switzerland]	Editorial; copyedit to be completed prior to publication so FAQ conforms to uniform style.
19045	(2)94	29	94	29	(FAQ 2.1) some people argue the Holocene Epoch is over and we are now in the Anthropocene. In which case "present" is incorrect, or the name itself [Jonathan Lynn, Switzerland]	Rejected; according to the current information from the International Commission on Stratigraphy's Subcommission on Quaternary Stratigraphy, "The Anthropocene is not currently a formally defined geological unit within the Geological Time Scale; officially we still live within the Meghalayan Age of the Holocene Epoch."
19047	(2)94	53	94	53	(FAQ 2.1)(copy-editing) should be ...fewer than about 500 million... (missing word "than") [Jonathan Lynn, Switzerland]	Taken into account; paragraph extensively cut.
19049	(2)96	10	96	12	(FAQ 2.2) the phrase "our changing climate" is used in two successive sentences at lines 10 and 11-12 -- stylistically better to avoid this repetition [Jonathan Lynn, Switzerland]	Editorial; copyedit to be completed prior to publication.
19051	(2)96	25	96	25	(FAQ2.2) "Change has been transmitted..." would read better than "Change has transmitted..." [Jonathan Lynn, Switzerland]	Editorial; copyedit to be completed prior to publication.
19091	(6) 174		174		(FAQ 6.1, fig 1) need to explain the different sizes of circles under local/regional/global [Jonathan Lynn, Switzerland]	Accepted. The impact on present day warming (since pre-industrial) of the different SLCFs are shown through different sizes of the globes in the last column.
19085	(6) 80	46	80	46	(FAQ 6.1) LLGHGs is not a widely recognized abbreviation and should be spelled out [Jonathan Lynn, Switzerland]	Accepted - Spelled out.
19087	(6) 82	23	82	24	(FAQ 6.2) most non-specialists understand "species" as a biological term so its use here may be confusing. "gases" "substances" "gases and pollutants" maybe alternatives and there would be others, with maybe more than one term appropriate [Jonathan Lynn, Switzerland]	Accepted
19089	(6) 82)	43	82	45	(FAQ 6.2) neat conclusion! [Jonathan Lynn, Switzerland]	Thanks

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
19083	(6)80	31	80	34	(FAQ 6.1) don't think "inhomogeneity" is a word, or at least not widely recognized by non-specialists, and the sentence "This inhomogeneity... long-lived gases" as a whole is hard to follow and could be reworded to clarify (maybe two sentences) [Jonathan Lynn, Switzerland]	Taken into account. Inhomogeneity ==> heterogeneity
108501	10-130	1	131	11	There needs to be an entire working group on this. Seriously. Reference other working groups/coming reports/past reports. [Jason Donev, Canada]	Rejected. FAQs are non-technical summaries of topics that are intended to stand on their own, without citing other work.
108503	10-130	16	130	16	missing a period [Jason Donev, Canada]	Editorial – copyedit to be completed prior to publication
108505	10-130	17	130	17	line break needed [Jason Donev, Canada]	Editorial – copyedit to be completed prior to publication
108507	10-130	53	130	53	line break needed [Jason Donev, Canada]	Editorial – copyedit to be completed prior to publication
19107	10-132	5	132	39	(FAQ 10.2) "...the so-called "urban heat island" (UHI) effect, which causes cities..." (add missing word effect line 5 and similar in 39, some other copyeditig needed [Jonathan Lynn, Switzerland]	Accepted. Text has been revised
55277	10-132	35	10-132	37	FAQ 10.2: Is this sentence meant to refer to nighttime minimum temperatures specifically (as opposed to annual minimum - coldest - temperatures? If so, clarification would be helpful and would link better to the text above on line Otherwise it seems odd to have a key conclusion about the effects of urbanization on minimum temperatures when most of the FAQ is about its effect on hot temperatures/heatwaves. [Nancy Hamzawi, Canada]	Taken into account. Text has been revised
55279	10-236	6	10-236	6	FAQ 10.2 Figure 1: Caption: what do the uncertainty bars in this figure represent? Are these assessed uncertainty levels or do they merely represent the range of values in the recent literature? [Nancy Hamzawi, Canada]	Taken into account. Text has been revised
55281	1-108	24	1-108	26	FAQ 1.1: Can something more instructive here be said than just that better models and understanding of ice sheet behaviour and melt rates "may lead to major changes this century including substantial SLR". Hasn't this new understanding allowed better quantification of likely SLR this century as well as a better assessment of the potential for SLR to be above this range under high emission scenarios? [Nancy Hamzawi, Canada]	Noted. Revised to read: "Today, much more data and better models of ice sheet behaviour reveal unexpectedly high melt rates that will lead to major changes within this century, including substantial sea level rise (see FAQ 9.2)."
108423	1-108	25	108	26	How is this melt rate unexpectedly high? Does it not match the models? [Jason Donev, Canada]	Noted. Unexpected from the point of view of previous IPCC reports.
55283	1-108	31	1-108	34	FAQ 1.1: Given the strong role sulphate aerosols have played in offsetting warming from GHGs, suggest these aerosols should be mentioned here along with soot as important aerosols contributing to climate change and coming from burning fossil fuels. Alternatively, leave the reference to tiny particles generic. [Nancy Hamzawi, Canada]	Accepted. Now mentions "soot and dust in the air" and also states "The main human causes of climate change are the heat-absorbing greenhouse gases created by fossil fuel combustion, deforestation, and agriculture, which warm the planet, and aerosols such as sulphate from burning coal, which have a short-term cooling effect that partially counteracts human-caused warming."
19033	1-108		108		FAQ 1.1 is very useful. Wonder whether worth adding paragraph highlighting the areas the IPCC/climate scientists are looking at now [Jonathan Lynn, Switzerland]	Noted. Thanks! The FAQ's goal is to answer the Q, namely "Do we understand climate change better now than when the IPCC started?" so we would not best address new research areas here.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
55285	1-109	1	1-109	1	FAQ 1.2: Recommend revising this title since this FAQ does not actually do a comparative analysis of signal detection in all regions. The title associated with the FAQ 1.2 Figure is better - "At what point do we know that climate has changed" - as this is closer to the topic of signal emergence covered in this FAQ. [Nancy Hamzawi, Canada]	Noted. Final title of FAQ 1.2 is "Where is climate change most apparent?"
108425	1-109	4	109	6	What is this figure, there's no information on it at all [Jason Donev, Canada]	Noted. We apologize for failing to complete the infographic in time for this review.
55287	1-109	6	1-109	8	FAQ 1.2: Recommend adding the fact that at the global scale, changes in the climate system, including variables other than global temperature, are also now unequivocal. [Nancy Hamzawi, Canada]	Accepted. Now includes: "Changes in other climate variables have also become apparent at smaller spatial scales and shorter time scales. For example, changes in average rainfall are becoming clear in some regions, but not in others, mainly because natural year-to-year variations in precipitation tend to be large relative to the magnitude of the long-term trends. However, extreme rainfall is becoming more intense in many regions, suggesting an increase in risks from inland flooding (see FAQ 8.2). Sea levels are also clearly rising on many coastlines, implying increasing risks of inundation from coastal storm surges, even without any increase in the number of storms reaching land. A decline in the amount of Arctic sea ice is apparent, both in the area covered and in its thickness, with implications for polar ecosystems."
55289	1-109	20	1-109	28	FAQ 1.2: This paragraph moves beyond the topic of climate change signal detection to talk about comparative risks in two regions. As written, it seems to imply that risks are aligned with statistical detection of a climate change signal which omits a whole raft of other issues related to risks (actual and perceived). Contrasting the high northern latitudes with the tropics in this regard, and highlighting larger potential risks to tropical populations, is particularly problematic given that Arctic communities have been robustly identified as particularly vulnerable to climate change risks. Recommend shortening this paragraph and not extending into a discussion of risks other than in general terms (lines 20-24 only). [Nancy Hamzawi, Canada]	Taken into account.
109257	1-110	1	110	8	The question and the "short answer" (typed in italic) do not really match. Maybe change question to "when and where has climate change..." The "where" question is answered only very vaguely in the short answer. [Maria Zeitz, Germany]	Noted. Text revised.
17061	1-110	1	110	42	I think one basic fact missing from this FAQ answer is that generally climate change has become more apparent on land than in oceans, i.e. it should maybe, before going into detail, be mentioned that mean surface temperatures on the continents are increasing more than the global mean. Maybe this can be added to the introductory part of the answer (the part in italics). Also, this question and answer could be merged with FAQ 4.3 which is nearly the same. [Eva Y. Pfannerstill, Germany]	Taken into account.
19037	1-110	1	198		(FAQ 1.2) the title is different on p 1-110 and p 1-198 [Jonathan Lynn, Switzerland]	Corrected.
108427	1-110	14	110	18	Unclear, could these lines be re-worked. I had trouble understanding what was being said. [Jason Donev, Canada]	Taken into account. Text revised.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
109259	1-110	47	110	51	why is there such a strong focus on the Americas? [Maria Zeitz, Germany]	Noted. This provides a comparison with long datasets for tropics and mid-latitudes on the same continent. The figure in Chapter 1 shows additional regions.
55291	1-111	20	1-111	22	FAQ 1.3: To maintain the focus on GHGs vs just CO2, the stability of atmospheric concentrations of other key GHGs over the last several millennia would also be worth mentioning here. [Nancy Hamzawi, Canada]	Rejected. Including other greenhouse gases is beyond the scope of this FAQ.
108429	1-111	23	111	23	Space between number and unit [Jason Donev, Canada]	Editorial.
55293	1-111	30	1-111	38	FAQ 1.3: This para, focused on the past million years and glacial-interglacial cycles, would benefit from inclusion of a reference to the value of past warm interglacial periods for understanding the consequences of changes in global temperature of a few degrees. As written, it seems odd to end this paragraph by highlighting the value of the last glacial (cold) period rather than the value of past interglacial (warm) periods. [Nancy Hamzawi, Canada]	Taken into account. Text revised.
108431	1-111	41	111	41	Space between number and unit [Jason Donev, Canada]	Editorial.
108433	1-111	43	111	43	Space between number and unit [Jason Donev, Canada]	Editorial.
108435	1-113	11	113	11	This is inconsistent with 4.1 FAQ line 49 on page 4-100 [Jason Donev, Canada]	Not applicable. FAQ1.4 was withdrawn for FGD.
108437	1-113	31	113	31	Please define surface water here, it's unclear. [Jason Donev, Canada]	Not applicable. FAQ1.4 was withdrawn for FGD.
19035	1-113	37	113	38	(FAQ 1.4) not just those lines but generally it's not clear to a non-specialist how the global figure is derived from the individual measurements. Do you just average them? Is it a weighted average in which case how? Etc [Jonathan Lynn, Switzerland]	Not applicable. FAQ1.4 was withdrawn for FGD.
108509	11-148	1	148	4	There's no italicized summary here. Those are helpful and one should be included. [Jason Donev, Canada]	Considered. Italicized summary is added.
19109	11-148	7	148	8	(FAQ 11.1) Sentence "For near-surface temperature,... global mean warming." does not read [Jonathan Lynn, Switzerland]	Accepted. Unfortunately, during the edition process a full paragraph went missing.
19111	11-148	27	148	27	(FAQ 11.1) add reference to FAQ 11.3 here which uses changes in frequency of extremes to communicate changes? (FAQ 11.2 lines 23-24 also communicates this well) [Jonathan Lynn, Switzerland]	Considered. The text is largely rewritten focusing on simple comparison between changes in mean and extremes in temperature and precipitation. Discussion on statistical distributions is removed.
55295	11-148	42	11-148	46	FAQ 11.1: This paragraph is rather unclear. Sentence 1 - Presume this "absence of increases in maximum temperatures observed on hot days" is not a general finding of Ch. 11 but specific to some locations? It would help to clarify this; 2. Sentence 2 - Is the "absence of warming in India and in the U.S. Midwest" meant to refer to an absence of increases in max temp (as in the previous line) or to an absence in annual avg or seasonally averaged warming? [Nancy Hamzawi, Canada]	Considered. Much of this text is removed.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
88983	11-148	48		49	While projected rainfall changes are slightly more complicated than just a shift, my work has shown that the factors in play are less vague and complicated than this sentence conveys. Specifically, in Pendergrass and Hartmann (2014) we showed that 2/3 of the change in the distribution of precipitation amount can be explained by just two modes (when formulated in log space in terms of rain volume, and relative to each model's own distribution) - a shift to higher rain rates, and an increase in magnitude of the distribution. Pendergrass, A. G., & Hartmann, D. L. (2014). Changes in the distribution of rain frequency and intensity in response to global warming. <i>J. Clim.</i> , 27. https://doi.org/10.1175/JCLI-D-14-00183.1 [Angeline Pendergrass, United States of America]	Considered. The text is largely rewritten focusing on simple comparison between changes in mean and extremes in temperature and precipitation. Discussion on statistical distributions is removed.
88985	11-149	2		3	Add "global" because 2-3 % per degree warming is the rate for global changes - the land-mean change is smaller. [Angeline Pendergrass, United States of America]	Considered. The text is edited.
108511	11-150	1	150	4	There's no italicized summary here. Those are helpful and one should be included. [Jason Donev, Canada]	Accepted. The first paragraph was intended to be italicized. The formatting has been fixed.
19113	11-150	11	150	13	(FAQ 11.2) adapted not adapated [Jonathan Lynn, Switzerland]	Edited
55297	11-150	28	11-150	29	FAQ 11. 2: Add "marine" before "heat extremes". [Nancy Hamzawi, Canada]	Not applicable. This example has been removed.
108513	11-152	1	152	4	There's no italicized summary here. Those are helpful and one should be included. [Jason Donev, Canada]	Accepted. The first paragraph was intended to be italicized. The formatting has been fixed.
108515	11-152	3	152	5	Weather varies every day, climate doesn't vary like that. Climate is a long term average. Climate events (events that occur within the context of a climate) can happen, but they don't vary the climate on that rapid of a timescale. [Jason Donev, Canada]	Accepted. The opening paragraph has been revised and this sentence removed.
19115	11-152	46	152	46	(FAQ 11.3) could add how frequent the event is in the changed circumstances as example [Jonathan Lynn, Switzerland]	Not applicable. The figure has been revised and we no longer discuss return periods.
19117	11-152	55	152	55	(FAQ 11.3) "prevents making" not good English. Perhaps "prevents us from making" or "makes it impossible to develop". Also is this intended - impossible? Or should it be makes it difficult to? [Jonathan Lynn, Switzerland]	Considered. Text is edited.
86833	11-266	1	11-266	19	Since this FAQ is relatively hypothetical and complex, using terms such as shift and shift+var in the figure and figure text makes it difficult to follow the message. Please consider rethinking the way this figure is communicated by using more clear and known language, and also adding a figure title. The figure could also be more easily understood if the two "future" curves in (a) were split in two plots, so that the figure portrays three plots. [Oyvind Christophersen, Norway]	Not applicable. This figure has been replaced.
19119	11-266	2	266	19	(FAQ 11.1 fig 1) text of caption hard to follow for non-specialists [Jonathan Lynn, Switzerland]	Not applicable. This figure has been replaced.
108517	11-267	1	267	13	This graph doesn't effectively illustrate the point that it's trying to make to lay people. This graph requires expertise and isn't explained nearly effectively enough. [Jason Donev, Canada]	Taken into account. This figure has been replaced.
108519	11-267	1	267	13	Unclear, could these lines be re-worked. I had trouble understanding what was being said. [Jason Donev, Canada]	Not applicable. This figure has been replaced.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
86835	11-267	1	11-267	12	It is not so clear what the dots and lines in the figure represent (impacts, risk or probability of compound events?). And what are the red (scaled present events) and the blue (storylines) points representing? Please consider being more specific in the figure and text, and also include an explanation of what is meant by a critical event/region, or rephrase to e.g. "elevated risks and impacts" as this is already used further up in the text. [Oyvind Christophersen, Norway]	Taken into account. This figure has been replaced.
108521	11-268	1	268	13	This graph doesn't effectively illustrate the point that it's trying to make to lay people. This graph requires expertise and isn't explained nearly effectively enough. [Jason Donev, Canada]	Taken into account. The figure has been rearranged, with better labelling and a much simpler caption.
108523	11-268	1	268	13	Unclear, could these lines be re-worked. I had trouble understanding what was being said. [Jason Donev, Canada]	Accepted. The figure caption has been rewritten with much simpler language and explanations.
109261	1-198	1	198	10	The intensity of the colored patches over the map remains unclear. [Maria Zeitz, Germany]	Noted. They are symbols for the regions shown.
86837	1-198	1	1-198	1	Please consider including temperature change values also on the right hand side of the figure (right hand axis of Tropical America) [Oyvind Christophersen, Norway]	Noted. Figure revised.
108439	1-199	1	119	1	Explain what PETM is in the figure caption [Jason Donev, Canada]	Not applicable. The PETM is no longer included.
108441	1-199	1	119	1	Space between number and unit [Jason Donev, Canada]	Editorial
86839	1-199	1	1-199	1	Please write out the abbreviation PETM [Oyvind Christophersen, Norway]	Not applicable. The PETM is no longer included.
86841	1-199	1	1-199	1	Please consider adding at the end of the last sentence "with pre-industrial being the reference for sea level and temperature change", or find another suitable way to clarify that these parameters of change are for all time periods given relative to the pre-industrial period. [Oyvind Christophersen, Norway]	Taken into account. Text revised.
19039	1-199		199		(FAQ 1.2 fig 1) first bar abbreviation PETM is not explained here or in text on p 1-110 [Jonathan Lynn, Switzerland]	Not applicable. The PETM is no longer included.
19041	1-199		199		(FAQ 1.2 fig.1) CE on third bar after 1850 just confuses and anyway not used with 2100 on last two bars [Jonathan Lynn, Switzerland]	Editorial
55299	1-199		1-199		FAQ 1.3 Figure 1: In principle, we think a Figure like this would be extremely useful for this FAQ. We have some specific comments: 1. need to be clear if the values in this Figure are assessed values from within the WGI chapters and if not, where do they come from? It seems they are not assessed values (most notably, the SLR values for the two mitigation scenarios are much larger than the assessed likely or very likely ranges for the year 2100 included in the SPM; 2. the second last bar for "effective emissions mitigation" with a global temp increase of 2-4C needs to be relabeled as this amount of global temperature increase could hardly be called effective mitigation. Recommend specifying a scenario (SSP-XX) for both this and the last bar so the results are traceable to the scenarios used in this report. [Nancy Hamzawi, Canada]	Taken into account. Treatment of all climate variables are now consistent with CH2 and CH9, with specific references to sections to increase traceability.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
108443	1-200	2	200	2	The caption reads 'number of years', but it's not clear of what? This is a placeholder, but of what? [Jason Donev, Canada]	Not applicable. FAQ1.4 was withdrawn for FGD.
88977	1-200				In addition to a global map of measurement sites or points, it could be useful to show a timeseries of the available stations. While the colors on the map in FAQ 1.4, Figure 1 indicate the length of records, it important to note that after the year 2000 or so the number of stations has generally decreased. See, for example, Fig 4 of Hegerl et al. (2014) Hegerl, G. C., Black, E., Allan, R. P., Ingram, W. J., Polson, D., Trenberth, K. E., et al. (2014). Challenges in Quantifying Changes in the Global Water Cycle. Bulletin of the American Meteorological Society, 96(7), 1097–1115. https://doi.org/10.1175/BAMS-D-13-00212.1 [Angeline Pendergrass, United States of America]	Not applicable. FAQ1.4 was withdrawn for FGD.
55301	12-137	7	12-137	8	FAQ 12.1: Add "detrimental" before "impacts" on line 8. Hazards are related to negative (detrimental impacts) rather than beneficial ones. [Nancy Hamzawi, Canada]	ACCEPTED: Added "detrimental" ahead of "impacts" in this line
19121	12-137	10	137	10	(FAQ 12.1) explain difference between exposed and vulnerable to non-specialists? [Jonathan Lynn, Switzerland]	NOT APPLICABLE: We have re-oriented the FAQs away from describing the overall risk framework and instead focus on defining the Climatic Impact Driver element.
19123	12-137	17	137	17	(FAQ 12.1) "the suitability of an asset's day-to-day viability" not sure what this means [Jonathan Lynn, Switzerland]	TAKEN INTO ACCOUNT: We have clarified this language and the overall definition of Climatic Impact Drivers to refer to the climatic conditions that are needed for an asset to behave normally or changes in these climatic conditions that can be beneficial or hazardous. The new text does not use the word "asset", and refers to tolerance levels of different elements of society and ecosystems.
108525	12-139	1	139	24	I understand that there's a desire to be 'fair'. The balance of climate change impacts is very negative. That needs to be clearly stated here. One can mention the positive, but, especially within the FAQ, the document must be clear that climate change is going to be bad for basically every person on the planet. It's also going to be bad for an awful lot of non-person living things. While many individuals will get some benefits, the negatives vastly out-weigh the positives. This FAQ, written this way will be used to show that climate change isn't really a problem. [Jason Donev, Canada]	NOT APPLICABLE: We have dropped this FAQ in favour of alternative questions. A deeper discussion about the asymmetry of effects belongs in Working Group II.
55303	12-139	22	12-139	24	FAQ 12.3: Even in cold regions, the loss of cold can be detrimental. For example, it can lead to increased overwintering success of agricultural or forest pests. More generally, we aren't convinced this FAQ is really needed as it is extremely general, and more closely tied to IPCC WGII work. The associated figure is not very informative especially if not expanded beyond the single example of decreases in cold spells/increases in heat waves. This is an example of a schematic more suitable for an outreach product than IPCC assessment. [Nancy Hamzawi, Canada]	NOT APPLICABLE: We have dropped this FAQ in favour of alternative questions. A deeper discussion about the asymmetry of effects belongs in Working Group II.
108527	12-233	1	233	5	I understand that there's a desire to be 'fair'. The balance of climate change impacts is very negative. That needs to be clearly stated here. One can mention the positive, but, especially within the FAQ, the document must be clear that climate change is going to be bad for basically every person on the planet. It's also going to be bad for an awful lot of non-person living things. While many individuals will get some benefits, the negatives vastly out-weigh the positives. This FAQ, written this way will be used to show that climate change isn't really a problem. [Jason Donev, Canada]	NOT APPLICABLE: We have dropped this FAQ in favour of alternative questions.
55305	2-191		2-191		FAQ 2.1 Figure 1: while we support simplified graphics for IPCC FAQs, this infographic is not very satisfying and really doesn't add anything to what is in the text response already. This infographic is more appropriate as a derivative outreach product. Suggest instead a simplified version of all or part of Cross-chapter Box 2.1 Figure 1 could be used. [Nancy Hamzawi, Canada]	Rejected; simple figure and major points is consistent with FAQ purpose and design.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
108447	2-192	1	192	1	Bio and cultural are mentioned in the text, but not the graphic. [Jason Donev, Canada]	Rejected - biosphere is depicted in the land section of the figure (i.e., species range shifts and growing season length).
55307	2-192		2-192		FAQ 2.2 Figure 1: Similar to our comments on the text response to this FAQ, we would like to ensure the supporting evidence is included in the response for the trends in this Figure showing observed changes since the late 19th century. The caption should clarify that multiple lines of evidence are combined (direct observations as well as proxy evidence). Ch. 2 ExSumm concludes that for some climate system variables, there is low confidence in changes in a longer term context (e.g. atmospheric circulation, precipitation); therefore, a related question is whether all these indicated trends since the late 19th century are equally robust? We note that in the similar FAQ in the AR5 WGI report (Ch. 2) a technical graph illustrating long term trends was included in support of the schematic figure. A similar approach should be considered this time, too. [Nancy Hamzawi, Canada]	Taken into account - figure and caption revised.
55309	2-192		2-192		FAQ 2.2 Figure 1: some additional specific comments: Split sea ice from ice sheets - these represent two very different climate system elements and changes in these have different implications for the climate system; clarify (in figure caption) that precipitation is precipitation over land; suggest changing WATER title to OCEAN to reflect the variables shown. [Nancy Hamzawi, Canada]	Taken into account - figure revised.
86843	3-178	1	3-178	1	FAQ 3.1 FIGURE 1: Please consider using another word than "modulate" in the figure subtitle, e.g. "dominate". [Oyvind Christophersen, Norway]	
55321	3-178		3-178		FAQ 3.1 Figure 1: The RH panel of htis figure is very hard to understand. To begin with, it's unclear if this is the observed signal (figure label) or the combined modelled signal (figure caption). Second, it is not clear how to correctly interpret the various short red and blue arrows in the RH panel. It took some time to realize these were replicates of the arrows in the LH panels. Distinguishing short and long dashed lines better would help and adding this information to the caption would also help. The key message then seems to be that the dashed lines are shifted upwards no matter if they were cooling or warming trends, due to the effect of human-induced warming. But the labeling on the RH with the bold lines does not convey this message. Instead it highlights a temporary cooling (bold blue arrow) which is not even evident given that if the end year were shifted back by one year, the cooling trend would not exist. Somehow readers need to be directed to focus better on the shift from dashed to bolded lines if this is the key message of this panel. [Nancy Hamzawi, Canada]	
55323	3-178		3-178		FAQ 3.1 Figure 1: additional specific comments on this Figure are: 1. y-axis labels should indicate temperature change; 2. reference periods for each panel should be included in the caption. [Nancy Hamzawi, Canada]	
86845	3-179	1	3-179	1	FAQ 3.2 FIGURE 1: Please make the mark (circle) of the reference observational data set more visible by e.g., using a stronger color or a another symbol. Why is this only linked to the CMIP5 dataset? [Oyvind Christophersen, Norway]	
109263	3-193	36	193	42	This paragraph remains unclear to me [Maria Zeitz, Germany]	

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
109265	3-195	6	195	6	FAQ 3.2, Figure 1 (caption): maybe use a simpler term instead of "centered pattern correlation". The style of the FAQ is otherwise less technical [Maria Zeitz, Germany]	
109267	3-196	1	196	1	FAQ 3.3 is very similar to FAQ 3.1. Maybe move them together [Maria Zeitz, Germany]	
109269	3-196	3	196	6	In other FAQs the first paragraph is more precise. It would be great to increase some clarity [Maria Zeitz, Germany]	
109271	3-197	1	197	8	The choice of the blue lines, which indicate natural cooling and temporary cooling seems to suggest, that there has been indeed a warming hiatus. If my understanding is correct, this hiatus hypothesis has been disproven by rigorous statistical analysis. The blue line starts in the local maximum and ends in a local minimum, thus it is not a meaningful trend. I would suggest to find other ways of displaying natural warming and cooling. [Maria Zeitz, Germany]	Noted. Diagram no longer appears.
108455	4-100	49	100	49	This is inconsistent with 1.4 FAQ line 11 on page 1-113 [Jason Donev, Canada]	Taken into account. Sentence has been dropped.
55329	4-100	49	4-100	51	FAQ 4.1: Does the phrase "a global warming of 1.5C above pre-industrial" mean that this level of warming is sustained for a climatologically relevant time period? Clarity on this important point is needed here. [Nancy Hamzawi, Canada]	Taken into account. Sentence has been dropped.
86847	4-102	7	4-102	9	Please consider using more precise language than "discernible fingerprint". Suggestion: "Current emissions reductions are expected to be noticeable on atmospheric CO2 concentration first in about ten years and on global surface temperature after about 20-30 years." [Oyvind Christophersen, Norway]	Accepted. Formulation adopted.
86849	4-102	48	4-102	53	Please consider if there is a more common and suitable word for "discernible" e.g., "noticeable". [Oyvind Christophersen, Norway]	Accepted and replaced.
19069	4-102		102		(FAQ 4.2) This is very important and an important message in the last two lines. It would be worth spelling out simply and clearly e.g. in the first para lines 12-14 what is implicit: that it is falling concentrations of greenhouse gases that are important, and slowing emissions is not enough [Jonathan Lynn, Switzerland]	Accepted. Text and figure now explicitly differentiate between emissions and concentrations.
19071	4-102		102		(FAQ 4.2) Further to previous comment 21, this might be an opportunity to mention COVID-19 impact, even as a hypothetical point e.g. "a slowdown in the rate of emissions growth for a few years (e.g. from the economic impact of a pandemic) would not affect..." [Jonathan Lynn, Switzerland]	Accepted. COVID now mentioned.

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
86851	4-103	7	4-103	7	To enhance understanding, please consider being more specific on when the emission reductions that form the basis of the figure occur, e.g. by reusing text from above: "... two scenarios: one where emissions begin to fall after 2020 (SSP1-2.6) and one without mitigation (SSP3-7.0)." [Oyvind Christophersen, Norway]	Accepted. Caption now more explicit.
86853	4-104	5	4-104	5	Please consider referring to the warming of the "ocean surface" rather than solely the "ocean", to avoid possible misconceptions related to ocean heat uptake vs warming in terms of overall temperature increase. [Oyvind Christophersen, Norway]	Accepted. Formulation adopted.
55331	4-188		4-188		FAQ 4.1 Fig 1: 1. recommend adding a line to the lower panel graph to indicate Arctic sea ice area that is considered "sea-ice free"; 2. the lower panel should clearly indicate (Y-axis or label) that it is showing September sea ice area. [Nancy Hamzawi, Canada]	Taken into account. Figure has been revised for clarity.
17063	4-190	1	190	8	This question and answer is more or less a duplicate of FAQ 1.2, maybe could be merged [Eva Y. Pfannerstill, Germany]	Taken into account. Text has been revised to explain the patterns shown, instead of the method.
108457	5-105	8	105	9	The statement 'there is no observable evidence that this natural removal is slowing down or that the processes underlying this removal are changing' is inconsistent with what is in the technical summary and chapter 5 itself. The statement in B.1.2 in SPM-8 line 35-37 says otherwise. Please make it consistent. [Jason Donev, Canada]	
108459	5-105	21	105	21	Wind throw isn't a commonly known term, please explain it. It looks like a typographical error, but I don't think it is. [Jason Donev, Canada]	
19073	5-105	33	105	36	(FAQ 5.1) some difficulties with language here e.g line 33 should "...the upper 50 m but change seasonally..." be "...the upper 50 m but this changes seasonally..." and line 36 "The CO2-enrich surface ocean water..." should be "The CO2-enriched surface ocean water..."? (also line 42 should be "remain" not "to remain") [Jonathan Lynn, Switzerland]	
55333	5-105	46	5-105	55	FAQ 5.1: Can this text clarify whether the airborne fraction of CO2 from human emissions will stay approx. constant as emissions decline? That seems to be the implication but it is not said explicitly whereas in the paragraph above, it is said explicitly that as emissions have grown, the airborne fraction has remained constant (due to growing sinks). [Nancy Hamzawi, Canada]	
19075	5-107	4	107	7	(FAQ 5.2) the first sentence of the introduction is hard to read - could it be simplified/clarified? Maybe more than one sentence required [Jonathan Lynn, Switzerland]	
108461	5-107	18	107	18	Space between number and unit [Jason Donev, Canada]	
19077	5-107	19	107	19	(FAQ 5.2) "the carbon stored in this ecosystem is at risk" -- don't think "at risk" is correct wording,, it's more that there is a risk this carbon will be released or something [Jonathan Lynn, Switzerland]	
55337	5-107	32	5-107	39	FAQ 5.2: This paragraph makes no mention of how significant it is (to carbon budgets or climate warming) whether the emitted carbon from thawing permafrost is released as CH4 or CO2. Addressing this topic would be helpful since it is one that policy-makers often ask about. [Nancy Hamzawi, Canada]	

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
55335	5-107	37	5-107	38	FAQ 5.2: This sentence about the effect of C release from thawing permafrost is unclear ("However, it is not so strong that (it) would lead to warming that is greater than the warming from fossil fuel burning"). By definition a positive feedback, such as additional C released from thawing permafrost, would have an amplifying effect on global temperature (which is mainly caused by fossil fuel burning). The intent of this sentence is unclear. The short answer to this FAQ includes a statement that C release from thawing permafrost does not appear to be a process that will lead to runaway warming. That is a clearer statement and could be elaborated on in the main response in these lines to replace the existing sentence. [Nancy Hamzawi, Canada]	
86855	5-108	31	5-108	34	There is no mention of GHG sources besides fossil fuel burning as main causes for climate change. Please comment on the contribution from land use and land use change. [Oyvind Christophersen, Norway]	Taken into account. Revised to read: "The main human causes of climate change are the heat-absorbing greenhouse gases created by fossil fuel combustion, deforestation, and agriculture, which warm the planet, and aerosols such as sulphate from burning coal, which have a short-term cooling effect that partially counteracts human-caused warming."
19079	5-109	40	109	47	(FAQ 5.3) hope this useful paragraph with its references to Paris Agreement targets survives government comments [Jonathan Lynn, Switzerland]	
55339	5-109		5-109		FAQ 5.3: General comment: While the conclusion to this FAQ is that negative emissions can only reverse climate change to a limited degree, the message about reversing global warming seems to be yes, this can be achieved through negative emissions. Lines 31-32 state that surface air temperature starts to decline within a few years following a decline in atmospheric CO2 (from CDR). And this is repeated in the final paragraph on lines 50-51. This text could easily be misinterpreted to mean that global warming can be reversed back down to low levels if atmospheric CO2 can be continually lowered through CDR. Unless there is evidence to support this, a more nuanced conclusion about the extent to which global warming can be reversed is needed in this FAQ. An important and consistent message from IPCC reports has been that global warming is effectively irreversible on human-relevant timescales. This FAQ should not leave readers with the impression that that conclusion is no longer generally valid or it should be very clear under what conditions it is no longer valid. [Nancy Hamzawi, Canada]	
55341	5-109		5-109		FAQ 5.3: General comment: It would be helpful to clarify throughout if net negative emissions is intended to mean net negative global emissions. Alternatively, the text could clarify that net negative emissions could be achieved at different scales (e.g. a site, a country, the world). [Nancy Hamzawi, Canada]	
86857	5-110	35	5-110	37	Please consider including that a decline in arctic sea ice extent further reinforces warming and ice melting due to the ice-albedo feedback. [Oyvind Christophersen, Norway]	Rejected. Not enough space to cover every aspect.
86859	5-110	39	5-110	51	It is not certain that the reader will have an intuitive understanding of "signal" and "emergence". Please consider rephrasing the paragraph/sentence (and adjust figure text accordingly) with less scientific terms or include a short explanation of these terms, similar to that on line 32-33 on page 3 in the SPM. [Oyvind Christophersen, Norway]	Taken into account. Text revised.
19081	5-111		111		(FAQ 5.4) this needs a lot of copy-editing (can provide details if wanted) [Jonathan Lynn, Switzerland]	

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
55343	5-111		5-111		FAQ 5.4: General comment: Missing from this FAQ is any discussion of the way achievement of net negative global emissions affects the remaining carbon budgets. While the topic of negative emissions is dealt with in a separate FAQ, it would be good to include at least a brief statement here to say that (limited) exceedance of a carbon budget for a given temperature target, if followed by the required amount of CDR, could lower global temperature to that target, with a cross reference to the FAQ on negative emissions. [Nancy Hamzawi, Canada]	
86861	5-113	12	5-113	13	To avoid possible misconceptions on ocean warming vs temperature increase by the ocean surface, please consider rephrasing the sentence to e.g., "the air above the land surface has warmed more than the ocean surface" or "air temperature increase has been greater above the land surface than above the ocean surface". Alternatively, consider adding a brief explanation of why the ocean surface temperature is not as affected as that over land. [Oyvind Christophersen, Norway]	Not applicable. FAQ1.4 was withdrawn for FGD.
108483	6-174	1	174	7	The image says climate pollutants, the caption says climate forcers, use the same term. [Jason Donev, Canada]	Accepted, the figure has been completely redesigned and the wording between text and figure made consistent.
108485	6-174	1	174	7	It's unclear what's meant by impacts/mitigation here. Could this be explained more in the caption? Could it be more clear which it is, impacts or mitigation? I'm just confused as to what you're going for here. [Jason Donev, Canada]	Not Applicable, the figure has been completely redesigned.
86863	6-174	1	6-174	6	This figure shows a lot of useful information within a nice schematic. In the figure that replaces this placeholder please make sure however that it is more clear and easy to understand the different sources and impacts of SLCF, by explaining the symbols presented in the figure. [Oyvind Christophersen, Norway]	Taken into account, text revised.
55345	6-174		6-184		FAQ 6.1 Figure 1: we recognize this figure is a placeholder and so would just like to note the importance of either including all SLCFs or clearly distinguishing SLCFs from SLCFs. [Nancy Hamzawi, Canada]	Taken into account, text revised.
108487	6-175	3	175	3	This isn't a figure, it's a table, the captions for tables go at the top (don't ask me why, but it is the convention). [Jason Donev, Canada]	Not Applicable, the figure has been completely redesigned.
108489	6-175	3	175	3	The third column of this table is confusing. Please present this differently? [Jason Donev, Canada]	Not Applicable, the figure has been completely redesigned.
86865	6-175	3	6-175	9	Although it might be obvious to most readers, please consider specifying the significance of the plus and minus signs of the table i.e., that "+" means warmer temperatures and "-" refers to a cooling of the climate. Maybe someone who takes a quick look will think that the "+" refers to a positive change for the climate unless specified. Also, if possible, could the health and ecosystem impacts be followed by a symbol that indicates whether the impact is mostly negative or positive for health and ecosystems?(such as an up/down arrow or plus/minus sign e.g. "H(-)/E(-)"- as long as not confused with the signs in the climate column). If all impacts are mostly negative, a better option could be to indicate this in the column heading or figure text. Lastly, it would be interesting to include which type of impacts the different substances have on health and ecosystems, or at least indicate where the reader can find this in the report. [Oyvind Christophersen, Norway]	Taken into account - the figure has been completely redesigned and now shows more clearly and visually the climatic and environmental impacts of the various compounds.
108491	6-175	7	175	7	These species are co-emitted by chemically and physically different. I don't think it's true that they can't be considered separately. It may be hard to do in this context, but in many other contexts they are tracked and discussed differently. They are doing different things, even if they often have the same source. [Jason Donev, Canada]	Not Applicable, the figure has been completely redesigned.
108493	6-175	8	175	9	Is CO2 a pollutant? It is usually considered one in this context, can this be clarified? It's quite relevant within the context of this FAQ 6.2 [Jason Donev, Canada]	Chapter 6 considers as air pollutants the compounds that are harmful for health and their precursors. It is introduced in 6.1.

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55347	6-175		6-175		FAQ 6.2 Figure 1: placeholder figure seems simple and useful. CO2 effects only identified for ecosystems - presume this is meant to refer to CO2 fertilization effects and not climate change mediated effects. Figure caption will need to explain this. If methane's impacts on health and ecosystems are indirect as well (i.e. from ozone), then again, the caption should clarify that. [Nancy Hamzawi, Canada]	Taken into account - the figure has been completely redesigned and now shows more clearly and visually the environmental climatic impacts of the various compounds (e.g. impact on crops or health). For instance, the indirect effect of CH4 is now very clear.
55367	7-117	3	7-117	3	FAQ 7.1: Very nicely written FAQ. Would suggest a change in title as "What have we learned since the AR5?" is not likely to be a question that is frequently asked. Perhaps something along the lines of "Will changes in clouds amplify or dampen climate warming?" or "Are clouds still the major uncertainty in projections of future climate"? [Nancy Hamzawi, Canada]	Taken into account. The FAQ title has been revised.
86867	7-117	3	7-118	13	It is very interesting to highlight how recent science has progressed the understanding of the cloud effect on climate. However, since the focus of the FAQ is broader than just what is discovered recently, perhaps a more suitable heading for this question would be "How are clouds affecting, and being affected by, current and future climate?" [Oyvind Christophersen, Norway]	Taken into account. The FAQ title has been revised.
108495	7-117	11	117	12	Is this over land? Is it mostly over the ocean? This doesn't match my personal experience of looking at the sky, but I live entirely on land. If this is the ocean, could that be stated more explicitly? I could believe that the ocean has a lot more cloud cover than land, but I don't know how to check. [Jason Donev, Canada]	Noted. The explanation at L.11-15 is general for cloud formation at any place of the Earth.
86869	7-117	36	7-118	13	Please include the conclusions from section 7.4.2.4.3 "Synthesis for the net cloud feedback", that shows high confidence in that the sign of the cloud feedback is positive (whereas this in AR5 had only medium confidence). [Oyvind Christophersen, Norway]	Accepted.
55369	7-118	10	1-118	13	FAQ 7.1: The short summary at the top concludes that the net cloud feedback is assessed to be positive (amplifying). In the long response, this final paragraph does not include any conclusions about the net cloud feedback but instead simply emphasizes the increased understanding of processes related to cloud processes. Recommend bringing some key conclusions/messages into this final paragraph. [Nancy Hamzawi, Canada]	Taken into account. The FAQ7.1 text has been revised accordingly.
55371	7-119	11	1-119	13	FAQ 7.2: For the general readership of FAQs, it would help to explain why equilibrium climate sensitivity is an "idealized quantity". [Nancy Hamzawi, Canada]	Taken into account. Definitions explained more carefully
86871	7-119	13	7-119	13	It might not be clear to every reader what "equilibrium temperature change" means. Please consider including a sentence explaining this e.g., from Box 7.1 "Equilibrium refers to a steady state where the change of the top-of-atmosphere energy budget averages to zero over a multi-century period." [Oyvind Christophersen, Norway]	Taken into account. Definitions explained more carefully explained
55373	7-119	37	1-119	40	FAQ 7.2: recommend including here the very likely ECS range (from FAQ 7.2 Figure 1) to help anchor the statements that there is a 5% chance the value is above 5C and less than 2C. [Nancy Hamzawi, Canada]	Accepted. Agree, now added
55375	7-119	52	1-119	54	FAQ 7.2: Recommend clarifying here that the "best estimate of future warming" is for any given emission scenario. [Nancy Hamzawi, Canada]	Taken into account. Text updated and models used clarified
19093	7-119		119		(FAQ 7.2) this FAQ refers to the full report chapter 7 whereas the other FAQs don't touch on the chapters. For consistency might be better to make the same reports without citing the chapter [Jonathan Lynn, Switzerland]	Taken into account. Chapter is no longer cited

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55377	7-205		7-205		FAQ 7.1 Figure 1: Seeking clarification on whether the increase in droplet number (in turn increasing cloud reflectivity) is a response to historical/current elevated aerosol concentrations vs. future projected decreases in aerosol concentrations. If the emission scenarios driving future warming all (most?) include declining aerosol emissions, what effect will this have on this aspect of cloud feedback? [Nancy Hamzawi, Canada]	Not applicable. The figure has been updated for the FGD. All the panels show cloud responses to surface warming, but not increase/decrease in aerosol concentration. Please see the caption.
55379	7-206	3	7-206	7	FAQ 7.2 Figure 1: Figure caption does not (in current draft) explain the difference between yellow vs red dots and light vs dark blue dots in both figure panels. [Nancy Hamzawi, Canada]	Taken into account. Figure changed for better clarity
19095	8-110	30	110	30	(FAQ 8.1) "Changes in land use can also modify the amount of tiny aerosol particles in the air." Can we add a phrase or sentence explaining how? [Jonathan Lynn, Switzerland]	Accepted - We now included a sentence explaining this connection.
55381	8-114	30	8-114	30	FAQ 8.3: A missing message here (potentially) is that increased evaporation due to increasing temperatures could contribute to hydrological or agricultural drought even if precipitation is not lacking (or below average). For northern latitudes this can be a risk in summer where even where precipitation is projected to increase, the increases are small and not expected to be sufficient to compensate for increased evaporation. [Nancy Hamzawi, Canada]	Noted. This aspect is mentioned in the next paragraph.
88979	8-114	42			Increased temperatures lead to increased evaporative *demand*, but this does not always result in increased evaporation (or evapotranspiration). Changes in stomatal conductance by plants due to increased CO2 can play an important role that might counter the increase in evaporative demand, Swann et al (2016) Swann, A. L. S., Hoffman, F. M., Koven, C. D., & Randerson, J. T. (2016). Plant responses to increasing CO2 reduce estimates of climate impacts on drought severity. Proceedings of the National Academy of Sciences, 113(36), 10019–10024. https://doi.org/10.1073/PNAS.1604581113 [Angeline Pendergrass, United States of America]	Noted. However, the possible alleviation of drought by stomatal changes is not well understood and assessed with low confidence in Chapter 8, thus it is not mentioned here in the FAQ, which is designed for a general audience. We do acknowledge that plants can modulate drought processes on Line 29.
19097	8-215		215		(FAQ 8.2 fig 1) colour of arrows hard to distinguish [Jonathan Lynn, Switzerland]	Noted, but arrow colours have not been changed as we felt they were clearly visible.
55383	8-215		8-215		FAQ 8.2 Figure 1: Support development of this Figure generally but have a few comments/suggestions for improvement. 1. For the legend, is "more flooding likely" and less flooding likely" IPCC "likely"? If not, recommend alternate phrasing (e.g. Driver of increased/decreased flooding; 2. What do 2 circles with a + sign mean? (vs one circle); 3. for the two soil related pictographs, it looks like the signs of the effects are reversed (more runoff should have a + sign (top picture) and more absorption (soak up) a - sign (lower picture)); 4. it might work better to reconfigure this schematic with the "heavier rainfall increases severity of flooding" in the middle of a circle and all the various influencing factors on the outside. We make this recommendation because it was unclear at first how to interpret this Figure. It seems to be about how other factors can amplify or ameliorate the key finding that projected increases in heavy rainfall increase flood risk and severity (and not how various factors contribute to heavy rainfall.) The arrows are confusing. [Nancy Hamzawi, Canada]	Thanks, good comments. The legend wording has been changed to "more severe" and "less severe" flooding. Two plus circles means more effect than one plus circle, we hope this is intuitive. For the soil-related pictographs, we had the text around the wrong way, now fixed in FGD. We have kept the overall shape and look of the figure unchanged, we felt that that this format conveyed the messages well.
86873	8-216	1	8-216	7	Please consider being more specific in terms of whether the figure shows the development pattern of precipitation, soil moisture and surface runoff, or if it is only showing where there will be more or less extreme cases of these parameters (i.e. droughts). Is the "drier/wetter" label an indication of both climate change and the increase/decrease in expected number of droughts, or just the latter? [Oyvind Christophersen, Norway]	Noted, however it is the long-term mean state that determines whether a region will be more prone to drought, and the projected trends in soil moisture are similar to the projected trends in consecutive dry days (see Ch. 11). The final figure, which is qualitative, will highlight areas that have both projections of soil moisture declines and CDD.

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88981	8-216	1		7	The question itself is about droughts, which are a matter of variability over time. This mockup looks to be about mean-state soil moisture and runoff, which have to do with aridity, rather than drought. [Angeline Pendergrass, United States of America]	Noted, however it is the long-term mean state that determines whether a region will be more prone to drought, and the projected trends in soil moisture are similar to the projected trends in consecutive dry days (see Ch. 11). The final figure, which is qualitative, will highlight areas that have both projections of soil moisture declines and CDD.
55385	8-216		8-216		FAQ 8.3 Figure 1: What do the horizontal dashed lines in the maps represent? [Nancy Hamzawi, Canada]	Not applicable. The final figure has been completely revised and the hatch regions no longer feature there!
55389	9-111	5	9-111	7	FAQ 9.1: The increase in global temperature is also effectively irreversible on human timescales. This is a consistent message from IPCC assessment reports and this FAQ response should emphasize that message clearly as well in this opening line. [Nancy Hamzawi, Canada]	Noted. The relationship between carbon dioxide and temperature (and thus CDR) is not directly relevant. However, the text now more directly addresses stabilized temperatures and reversing temperatures as relevant to ice sheet regrowth.
55391	9-111	8	9-111	10	FAQ 9.1: Stabilizing atmospheric GHG concentrations is no longer a goal for policy-makers given the Paris Agreement. To suggest it is here is misleading. More importantly, the question of interest is how the climate system responds on different timescales to stabilized global warming. [Nancy Hamzawi, Canada]	Rejected. The policy goals are not relevant to the illustrative thought experiments described here.
55393	9-111	14	9-111	16	FAQ 9.1: Consistent with our comment on lines 8-10, we would strongly discourage the authors from referring to stabilization of GHGs in the atmosphere in way that implies this is a policy goal. [Nancy Hamzawi, Canada]	Rejected. The policy goals are not relevant to the illustrative thought experiments described here.
55395	9-111	28	9-111	29	FAQ 9.1: These lines are inconsistent with FAQ 5.2 in terms of referring to release of carbon from permafrost thaw as an abrupt change with rapid and substantial impacts on global warming ("If either (process) were triggered in the future, global warming would increase rapidly..."). FAQ 5.2 describes instead a more gradual process with the amount of carbon released depending on the magnitude of warming. [Nancy Hamzawi, Canada]	Accepted. Text removed.
55397	9-111	37	9-111	38	FAQ 9.1: unclear what "this relationship" is referring to. [Nancy Hamzawi, Canada]	Accepted. Text removed.
55399	9-111	40	9-111	43	FAQ 9.1: as per our general comment on this FAQ, under what conditions would global temperatures decrease within this or next century? SSP1-1.9 and SSP2-2.6 shows essentially stabilized temperatures even with significant amounts of negative emissions (CDR). If this discussion of decreasing global temperatures is theoretical/idealized, this needs to be made very clear otherwise a take home message will be that this is doable. [Nancy Hamzawi, Canada]	Rejected. The policy goals are not relevant to the illustrative thought experiments described here.
55401	9-111	47	9-111	52	FAQ 9.1: For consistency, it would be good to include ocean chemistry changes in this final paragraph as well. Also, consistent with general comment and comment on lines 40-43, the writers should be explicit about what conditions would enable air temperatures to be decreased to pre-industrial levels. [Nancy Hamzawi, Canada]	Not applicable. Text removed.

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55387	9-111		9-111		FAQ 9.1: This FAQ response needs some work. We have a number of detailed line specific comments but a general comment is that the response should clearly differentiate between the timescale of responses to stabilized global temperature vs the potential for reversibility IF, somehow, humans are able to actively intervene in the climate system to reduce global temperature substantially to pre-industrial levels. It is critically important for general readers to understand that under scenarios of stabilized global temperature - which is what even the lowest emission scenarios will achieve - reversibility of climate system elements is not possible. Reversibility is (at present) an idealized construct that depends on implementing sustained CDR at a scale to lower global temperature substantially. [Nancy Hamzawi, Canada]	Noted. The relationship between carbon dioxide and temperature (and thus CDR) is not directly relevant. However, the text now more directly addresses stabilized temperatures and reversing temperatures as relevant to ice sheet regrowth.
55403	9-113	16	9-113	17	FAQ 9.2: It seems unconventional to refer to vertical land movement as a key factor in influencing global sea level rise. Best left to paragraph 4 where local sea level change is discussed. [Nancy Hamzawi, Canada]	Accepted. Local sea level is now collected into one paragraph where the distinction is made clear.
108497	9-113	28	113	30	Unclear, could these lines be re-worked. I had trouble understanding what was being said. [Jason Donev, Canada]	Accepted. Rewritten
55405	9-113	28	9-113	30	FAQ 9.2: While the short answer to this FAQ gives an estimate of further SLR of 7-25 cm by 2050, it would be good to include projected changes by 2050 here in the long response as well, in a more formal way, consistent with the very likely projections of SLR for 2100. [Nancy Hamzawi, Canada]	Accepted. Rewritten
55407	9-113	48	9-113	54	FAQ 9.2: Two cases where "predictions" of SLR and extreme water level events are referred to rather than projections and since these are scenario dependent, then projections would seem to be the preferred word. [Nancy Hamzawi, Canada]	Accepted. Substitution made
86875	9-113	49	9-113	52	Please include a sentence describing why the occurrence rate of extreme sea level events is expected to be significantly higher in the tropics. [Oyvind Christophersen, Norway]	Accepted, now low latitudes are singled out in final paragraph
109273	9-114	1	114	4	It would be instructive to compare SSP1.-2.6 to other scenarios [Maria Zeitz, Germany]	Not applicable. Text removed.
55409	9-114	2	9-114	4	FAQ 9.2: Please be explicit about whether this last sentence applies to SLR after 2300 or on nearer timeframes. [Nancy Hamzawi, Canada]	Not applicable. Text removed.
86877	9-115	1	9-116	21	We highly appreciate this FAQ on the Gulf stream. However, we propose somewhat more clarity on a possible shutdown. Page 9-115, line 5-6, states "Most climate models project that the AMOC could slow or shut down in the 22nd century under most future emissions scenarios". Page 9-116, line 2-4, states that the present variability do not indicate a long-term shutdown. Please clarify for the reader what distinguishes these two statements. Is it correct that some models predict a shutdown in the 22th century, but looking at the short observational record it seems unlikely because of present variability? Please reformulate with easier language. [Oyvind Christophersen, Norway]	Noted. This FAQ has been revised to be consistent with the Chapter 2, 4, 9 text and assessments.

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55411	9-115	3	9-115	9	FAQ 9.3: A general comment on this short answer, which is applicable also to the long answer, is that this FAQ response would be more useful if it clearly differentiated between the likelihood and consequences of a slow down in the AMOC (projected under all emission scenarios) and a shutdown in the AMOC. Also, line 5 refers to a potential slow down in the 22nd century and yet the previous line already says a slow down is underway and is projected to slow more in the future. Recommend separating out the potential shutdown in the 22nd century from slow downs underway now and expected to continue (consistent with lines 45-48). [Nancy Hamzawi, Canada]	Rejected. Addressing this subtlety is far beyond the scope of this audience. To specify whether there is a slowdown or an abrupt change is already inherent in the response.
86879	9-115	6	9-115	6	It would be nice if you could include the main reason of the changing AMOC in this first paragraph e.g., by extending the sentence ending with "most future emissions scenarios" "..., due to meltwater from the Greenland ice sheet and Arctic sea ice, as well as increased precipitation in the North Atlantic." [Oyvind Christophersen, Norway]	Accepted. Rewritten for greater clarity
19099	9-115	28	115	28	(FAQ 9.3) the word "completes" doesn't sound right [Jonathan Lynn, Switzerland]	Accepted. Rewritten for greater clarity
19101	9-115	51	115	51	(FAQ 9.3) "... by transporting some of the missing heat transport" doesn't read properly [Jonathan Lynn, Switzerland]	Accepted. Rewritten for greater clarity
19103	9-221		221		(FAQ 9.1 fig 1) colours hard to make out - very faint grey jagged line in top panel almost invisible [Jonathan Lynn, Switzerland]	Noted. Figure improved
19105	9-221		221		(FAQ 9.1 fig 1) caption "ice sheet retreat = sea level rise" above second column in lower set looks wrong as these don't seem to be about sea level. Also the caption underneath the four images in the lower set all need copyediting [Jonathan Lynn, Switzerland]	Accepted. Caption rewritten
55413	9-221		9-221		FAQ 9.1 Figure 1: The utility of the proposed top panel for this figure is unclear to us if the message is intended to be (as written) that "the past suggests some consequences of climate change will continue even if temperature is stabilized". The top panel shows glacial-interglacial changes in sea level and these accompanied changes in global temperature of about 5 °C. The lower panels seem more appropriate as they illustrate potential instabilities in ice sheets that could lead to continued ice sheet mass loss even if global temperature was stabilized, or critical thresholds were passed. [Nancy Hamzawi, Canada]	Rejected. The suggested intents are far more complex than the figure which just shows sea level varies along with ice sheets, which vary over thousands of years.
109275	9-222	0	222	0	The Figure could be improved by 1) increasing the font of the legend and 2) replacing pie charts, which sized are difficult to compare for the human brain by stacked bar charts. Also it is not very clear, what the arrows at the right side of the figure indicate. [Maria Zeitz, Germany]	Rejected -This page does not exist in Ch8
108499	9-222	1	222	4	A stacked bar chart would more clearly show the difference in magnitude. The human eye doesn't estimate area terribly well (and volume is worse), a stacked bar chart with the same width would allow the eye to see the height of the bar and see the contributions of each better. [Jason Donev, Canada]	Rejected -This page does not exist in Ch8
19125	Atlas 128	30	128	30	(FAQ Atlas.1) spell out SOD -- abbreviation only familiar to IPCC insiders [Jonathan Lynn, Switzerland]	Not applicable. The sentence has been removed.
19063	n/a	7	3	8	(FAQ 3.2 fig 1)(no page numbers) "solid grey circles" can only see one, above the blue line in precipitation, and it's quite faint [Jonathan Lynn, Switzerland]	
19065	n/a	9	3	9	(FAQ 3.2 fig 1) (no page numbers) don't understand "are computed at a resolution of 2.5° in longitude and 2.5° in latitude" - s it a particularly location in which case you need N/S E/W or about scale? [Jonathan Lynn, Switzerland]	
19059	n/a	13	3	13	(FAQ 3.2)(no page numbers) text says projections from models used in FAR have generally been validated. Could we have details showing how they were accurate? Also for projections from subsequent reports. (See also comment 1) [Jonathan Lynn, Switzerland]	

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19053	n/a	31	3	31	(FAQ 3.1)(no page numbers)(copy-editing) simulations should be simulations [Jonathan Lynn, Switzerland]	
19055	n/a	39	3	39	(FAQ 3.1)(no page numbers) "Thus, warming will always be experienced" doesn't make sense. Seems wrong choice of words, but can't hazard guess. Maybe "some warming"? [Jonathan Lynn, Switzerland]	
19061	n/a	49	3	49	(FAQ 3.2) (no page numbers) for this audience might be necessary to explain "intercomparisons" or use alternative as this term is not generally understood [Jonathan Lynn, Switzerland]	
19057	n/a		3		(FAQ 3.1) (no page numbers) is it possible to say at the end what proportion if any of global warming over a recent period is due to natural variability? [Jonathan Lynn, Switzerland]	
19067	n/a		3		(FAQ 3.2 fig.1) (no page numbers) this figure not so easy to understand for non-specialists. Can you explain "correlation" ie does 1.0 mean the model matches the observation perfectly? Also the colours are hard to distinguish especially the use of dark and light grey [Jonathan Lynn, Switzerland]	
115795					FAQ1.1 check what "in the last century" means here (1920-2020?). The 4th paragraph does not say that aerosols have an overall, short lasting cooling effects, amplified by clouds. The whole description of understanding should also refer to "re processing of data" (eg updated level of warming) + understanding processes (eg processes that amplify the effect of greenhouse gases, albedo, water vapour, clouds). [Valerie Masson-Delmotte, France]	Accepted. Phrase "in the last century" no longer appears. 4th paragraph now reads: "Data also show that major volcanic eruptions have sometimes cooled the entire planet for relatively short periods of time (typically several years) by erupting aerosols (tiny airborne particles) high into the atmosphere," and 5th paragraph adds "The main human causes of climate change are the heat-absorbing greenhouse gases created by fossil fuel combustion, deforestation, and agriculture, which warm the planet, and aerosols such as sulphate from burning coal, which have a short-term cooling effect that partially counteracts human-caused warming." Re-processing of data is described in the 2nd paragraph. Third paragraph begins "Understanding of climate system processes has also improved" and provides examples, albeit not the ones you mention.
115797					FAQ1.2, please be explicit that sea ice changes refers to Arctic sea ice, not Antarctic sea ice (preamble). Note contrasted regional Antarctic sea ice trends but no overall trend. The figure caption needs to provide traceability to source data (what about using x obs datasets and show the uncertainty range?). [Valerie Masson-Delmotte, France]	Taken into account.
115799					FAQ1.3, I think that the text needs work to reflect that the future cannot be extrapolated from the past, but there are insights on : how current or projected changes are unusual in a long term context; role of components of the climate system and insight on feedbacks from a range of natural experiences on the climate system (response to plate tectonics, orbital, solar, volcanic forcing) and on response time scales also from natural variability (eg past abrupt change); use of paleo evidence to test models outside of the range for which they are developed and tuned. This could stress the lack of analogue (also because ecosystems are different now than millions of years ago) and because of changes in human societies (this could include contributors from WGII). Note, avoid duplication of the term "rich" (twice). It would even be better to explain recent insights (improved knowledge of recent regional variations, improved description of past abrupt changes). PMIP could be highlighted (what climate models can do is important for confidence in projections at least on equilibrium responses). The figure of FAQ1.3 needs special consideration and needs to include contributors from all related chapters, and report uncertainty ranges + be explicit on causes for different climate states. Wording related to mitigation needs to be consistent with other parts of the WGI report (replace "effective" / "little" by adequate, careful wording). [Valerie Masson-Delmotte, France]	Taken into account. Text revised.

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115801					FAQ1.4, not sure about how the analogy with watches will work with a non specialist reader (to test) (I usually use the analogy with your own family scale and the doctor's scale (different absolute weight but capture correctly amplitudes of changes compared to a reference period). "close to the poles" could be replaced by "in remote regions" (deserts, high mountains). The problem about sea temperature and air temperature can also be explained about the reduced area of sea ice. The last paragraph could be reformulated. I would suggest to explain why it matters (to build on chapter 2 x chapter box). [Valerie Masson-Delmotte, France]	Not applicable. FAQ1.4 was withdrawn for FGD.
115803					FAQ2.1 when referring to the Holocene, please also include a description of the pattern (different / orbital forcing / global warming). What about stating that no natural driver or aspect of natural variability can explain the characteristics of recent climate change (not just warming, heat accumulation, etc)? The last paragraph seems disconnected from the question and WGI perspective. [Valerie Masson-Delmotte, France]	Rejected; final two paragraphs now extensively cut to retain focus on unique content in this FAQ (evidence for unusual recent warming) and to call out other FAQs for related information.
115805					FAQ 2.2 : 4th paragraph, (has contributed to GMSL), together with the loss of land ice. Explain phenology for a non specialist in the FAQ. Check the figure text (acidification rather than acidity, near surface permafrost temperature extent or thaw?, sea ice only in the arctic, greening area larger than browning area (there is also browning, SRCCL),. [Valerie Masson-Delmotte, France]	Taken into account - text revised accordingly.
115807					FAQ3.1 this FAQ question and text is quite unclear. What does "recent" mean here? (since 1850 ? Since 1950?). The statement "orbital forcing creates radiative forcing" is misleading (the net effect is small, what matters is the seasonal/ latitudinal distribution of insolation + feedbacks. I think that it would be better to explain what is natural variability (response to external natural forcing + internal variability including modes), then how you make the difference (methods of detection, methods of attribution, explaining these terms), then how results differ for the global scale and the regional scale, temperature and precip. Also, the last paragraph is incorrect : in the case of ambitious mitigation, one does not expect surface warming to continue, but to stabilize, and internal variability can also obscure the detection of the effect of mitigation. I think that this FAQ needs more work. [Valerie Masson-Delmotte, France]	
115809					FAQ3.2 explain how you measure the skills of a climate model, and how an improvement is measured, and the fact that a better match to present day or recent trends is not directly linked to responses to large perturbations of the Earth's energy budget (as feedbacks can depend of the climate state). Missing reference to feedbacks in the whole FAQ, and confidence in the representation of feedbacks. Explanations why the assessment relies on a multi model ensemble is needed (just stating that no single climate model is better at all aspects). The notion of "centred pattern correlation" needs to be explained in the text. [Valerie Masson-Delmotte, France]	
115811					Generally, there is a gap between the FAQ text, and the figure (often not described in the text). [Valerie Masson-Delmotte, France]	Taken into account. We have tried to strengthen the link between the FAQ texts and figures. Note however that if the figure illustrates the FAQ, it is not necessarily described in the text.
115813					FAQ3.3 Figure not clear on what is shown (GSAT? GMST? CMIP6?). I suggest to reconsider the flow of information. We are certain human activities are responsible for emissions of heat trapping gases. That this leads to an imbalance of the Earth's energy budget. That energy is accumulated leading to warming etc. Plus no natural factor can explain the pattern of what is observed, which by contract is in agreement with what is simulationed and theoretically expected when you add GHG. Moreover the observed warming is emerging from natural variability as well as other aspects. Please reconsider the insights obtained x chapters, not just from attribution methods. [Valerie Masson-Delmotte, France]	
115815					FAQ4.1 should be clearer on the global state of the climate system vs regional aspects. The statement about reaching 1.5°C is important but appears disconnected from the text. Surprises could also be discussed (what if major volcanic eruptions). It would be good to show GHG concentrations or RF from scenarios to help readers understand. Why not show initialized projections too in the figure? [Valerie Masson-Delmotte, France]	Taken into account. The revision has striven for a stronger support of the text by the graphics and for greater coherence of the text.

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115817					FAQ4.2 check if terms such as "discernable" and "fingerprint" are used consistently x chapters and with the glossary. Check coherency of description of internal variability across FAQs (chaotic processes / modes of variability / ever changing weather). Why the choice of this specific model here (that has a high sensitivity)? I suggest to remove speculation ("might cause substantial communication challenge"). If I understand correctly, the figure shows GSAT from models, but how does the rate of change compare with observations (GMST in SR15 is reported to increase at 0.2°C per decade)? [Valerie Masson-Delmotte, France]	Taken into account. The underlying chapter shows that discernible, detection, and fingerprint are used in their technical and rigorous sense here. We have harmonized the definition of IV across our FAQs. Speculation has been dropped. CamESM5 was used in the SOD because it had the only CMIP6-based large ensemble applied to a comprehensive set of scenarios.
115819					Please check the use of confidence language in FAQs (I thought that it was not needed, it is quite heterogeneous and some FAS as FAQ4.3 use it). [Valerie Masson-Delmotte, France]	Accepted. Confidence language has been removed from the FAQs (with the notable exception of FAQ7.3, where it makes sense to keep it but it is well explained).
115821					FAQ5.1 Why refer to "wind throw" here? Would it make sense to explicitly refer to soil respiration and carbon in soils? To the link with the observed greening trend? Please explain which of the ocean and land carbon sink is known with better accuracy. Under which conditions (when) is it expected to detect a reduced ocean sink? No mention of blue carbon in this FAQ? What controls a reduction in the fertilization effect? why only above 2°C would the land sink be reduced? What about permafrost (link to FAQ5.2)? Figure = it could be good to provide key numbers and also show the lack of trends in the figure ; the figure does not show figure trends wwhich are discussed in the text. [Valerie Masson-Delmotte, France]	
115823					FAQ5.2 does not permafrost thaw also release N2O (missing with the focus on carbon)? What about Tibet permafrost (size of the carbon pool)? What about abrupt thaw? (check coherency / SROCC). The text is not clear enough on the timescale of potential emissions (gradually, decades-centuries?), and the potential cliamte amplifying effect (how to convert extra PgC per °C to additional °C). [Valerie Masson-Delmotte, France]	
115825					FAQ5.3 check coherency with FAQ4.3 on detectability of consequences of reduced emissions. [Valerie Masson-Delmotte, France]	
115827					FAQ5.4 it would be good to remind the reader of the timescale of the climate effect of the residual CO2 fraction remaining in the atmosphere. AR5 chapter 6 FAQ said "After 2000 years, the atmosphere will still contain between 15% and 40% of those initial CO2 emissions", is it still valid? [Valerie Masson-Delmotte, France]	
115829					FAQ6.1 The text does not refer to dust (only human emitted SLCF?). It is focused on some SLCF aspects but not all (they matter for many aspects eg aerosol cloud precipitation interplays or regional forcing. I suggest to build more across chapters 6-7-8-9 for this FAQ. The logical flow of information could be improved. Could an original figure be designed in line with the content of this report? [Valerie Masson-Delmotte, France]	Taken into account for the revision of the FAQ.
115831					FAQ6.2 I would suggest to highlight not just mortality but also the chronic disease burden linked to air quality. Please consider petrol car (not car, if using electricity from a zero carbon source). The FAQ is focused on emissions, but not on how a changing climate can affect air quality, or on how there can be compound effects of health (eg heat wave + poor air quality). The table is a good idea, it would be relevant to flag other aspects (eg albedo effects) and highlight the relative importance for climate vs health if possible. [Valerie Masson-Delmotte, France]	Taken into account for the revision of the FAQ.
115833					FAQ7.1 is using confidence language (to harmonize x FAQs). I do not understand the explanation of the warming effect of clouds linked to water vapour in the third paragraph. Can the FAQ also refer to what has already been identified in the last decades (not just future effects)? The figure is nice (how / why does it differ from the similar one in AR5 could be added for clarity with the title of the FAQ). What does "global temperatures" mean (why use of plural here)? [Valerie Masson-Delmotte, France]	Taken into account. The sentence in the third paragraph was wrong and corrected. The figure title has also been revised.

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115835					FAQ7.2 What about lessons from past warm phases on sensitivity, if it depends on the climate state? What does "a high sensitivity state" mean? It could be good to link this FAQ to the one on model evaluation and the one on the role of clouds to make sure that a correct overall picture emerges. What are implications of models with large sensitivity (above the assessed likely range) for other uses (eg attribution, patterns)? This is not enough developed clearly at this stage. [Valerie Masson-Delmotte, France]	Taken into account. FAQ text on lines of evidence has been clarified
115837					FAQ8.1 can this FAQ also link water cycle to greening / browning trends (vice versa)? (x Ch2, ch 5). Please check the use of the subscript for CO2. [Valerie Masson-Delmotte, France]	Subscript checked, regarding the greening/browning trends, the role of vegetation is considered but in more general way, as this FAQ has to consider many processes and mechanisms that modify the WC and Land use
115839					FAQ8.2 The FAQ is focused on floods driven by heavy rainfall (could it be explicit in the title)? It seems that coastal flooding (also linked to sea level rise + extreme sea level change) could be integrated here (with ch 9) (it is shown on the figure but not discussed in the text). What about water and land management which can influence flood risks too (with WGII?). [Valerie Masson-Delmotte, France]	Accepted. Coastal flooding and water and land management are now discussed in the FAQ.
115841					FAQ8.3 could the FAQ also say something about drought metrics and the relative influence of precipitation deficit and temperature (in relationship with the choice of figures with soil moisture, and runoff here). What about a pattern (per °C of warming) rather than selecting a particular SSP? [Valerie Masson-Delmotte, France]	Noted. The text in the FAQ has been edited by the TSU for clarity for a general audience. The figure accompanying the FAQ shows a pattern of change.
115843					FAQ9.1 Please check coherency with the FAQ on permafrost (especially on timescales of responses). I am not sure that the whole third paragraph (paleo) provides elements of response to the FAQ question (response time, reversibility). I am also concerned about the links between global temperature and sea level, without being explicit on polar temperature change. I do not understand what relationship is described to be consistent, and also on which time scale of response. I would expect more clarity on what is reversible and what is not (see also chapter 6 of SROCC, table), and on which timescale. [Valerie Masson-Delmotte, France]	Noted. Text rewritten, especially headline where the direct answer to questions is provided.
115845					FAQ9.2 "further 7-25 cm" by 2050 compared to what ? (today? 2000?). The reference to the "Little ice age" could include an explanation for this (delayed response to cooler conditions linked to frequent major volcanic eruptions)?. I am puzzled by the use of the term "predictions" instead of projections ("scientists predict"). It would be better to stress what are the main sources of uncertainty (incl the Antarctic ice sheet dynamical instability). For the proposed figure, please check the meaning of the size of the circle and how to capture extreme sea level event change. What about providing insights for 2050 (committed), 2100 (effect of scenario), and 2250-2300 (rather than an average between 2050-2100 which could mask differences by the end of the century) + source of deep uncertainty (as a "decision tree", what if...)? [Valerie Masson-Delmotte, France]	Accepted. These changes have all been implemented except the 2300 case, for which projections are not settled.
115847					FAQ9.3 I find the title of the FAQ confusing, as it refers to the Gulf Stream, while the substance is about AMOC. Also, my understanding is that the Gulf Stream is also driven by the Earth's rotation (not said). Can the Gulf Stream really shut down? Also, I do not understand the reference to "especially during the end of ice ages" (this is not fully consistent with the substance in the chapter assessment). Can you please check the coherency between the FAQ and chapter 9? [Valerie Masson-Delmotte, France]	Noted. The principle here is that the Gulf Stream is more familiar than the AMOC. The title is a narrative hook to get the general audience reading (the popular media tends to talk about a Gulf Stream shutdown) and then explain the two circulations that the GS participates in and which is sensitive to climate change and which is not. Coherency has been improved.
115849					FAQ10.1 Please also consider biological diversity (ecosystems); define what "actionable" mean in the WGI context (here, glossary). The issue of the relevance of extending recent trends into the future needs careful attention here and in the main text (explain the underlying rationale). I would suggest to think carefully if the last paragraph (page 10- 130, lines 45-53) is fully needed ("likely controversial" etc). Altogether, it reads more like framing than like a FAQ. For the visual representation, what about infrastructures or tourism? What about references to regional climate impact drivers in the distillation process? [Valerie Masson-Delmotte, France]	Taken into account. The FAQ has been substantially rewritten in collaboration with TSU, taking into account these remarks.

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115851					FAQ 10.2 I have the impression that the answer is too restrictive. Interplays also include air quality and SLCF, downstream effects, effects on runoff, correction of urban heat effects to estimate global temperature change, and it does not refer to possibilities to limit the urban heat island effect or runoff effects (city design, greening cities etc). I would suggest to have authors of WGII and WGIII also have a look at the FAQ so that it is designed to facilitate integration with the other WG too. I am not sure that the last sentence correctly reflects the message of authors and previous points. Figure : what about effects of air conditioning (for thermal aspects) too? Other aspects (eg downstream effects of cities, SLCF and air quality are not mentioned). [Valerie Masson-Delmotte, France]	Noted. For the FGD we have agreed with TSU that this FAQ will only treat the interaction between heat waves and UHI.
115853					FAQ11.1 Why is the FAQ focused on projections and not observations. What about the change in intensity of extreme events / mean warming (this was reported in SR15). A reference to amplification in cities could make the link with FAQ10.2. I am not convinced that the paragraph lines 42-46 addresses the FAQ topic. [Valerie Masson-Delmotte, France]	Considered. FAQ11.1 has been heavily edited. It is based on both past changes and future projections to illustrate that changes in local surface temperature extremes follow closely the corresponding changes in local average surface temperatures but changes in precipitation extremes may not follow those in average precipitation. A reference to amplification in cities is not made to simplify the main message.
115855					FAQ11.2 I find the flow of information hard to follow in this FAQ (too many ideas). I am not sure that some aspects are fully traceable to the WGI assessment (eg past adaptation). Aspects linked to recurrence / recovery time are not fully addressed (eg coral reefs). Insights on compound events + simultaneous events are missing. Ex heat wave + air pollution, or extreme sea level + extreme rainfall, or new events linked to high mountains (eg hazards at different places or different seasons), or new events in oceans (loss of oxygen + acidification + heat wave). I would suggest to better reflect insights x chapters incl ch 9 here. The figure is complex and not described in the text (storylines? what is the main message of that figure?). [Valerie Masson-Delmotte, France]	Considered. FAQ11.2 has been heavily edited. The message is simplified to illustrate that extremes that are unprecedented, either in magnitude, frequency, timing or location will occur in the future with warming and the frequency of these unprecedented extreme events will increase with increasing global warming. The figure is replaced with a new figure illustrating the concept.
115857					FAQ11.3 The beginning is too generic and vague. There are repetitions with other FAQs (esp 11.1 and 11.2, also cities and SLCF) and the text does not fully provide a response to the question. Insights from paleoclimate information are missing (very rare events part of natural variability). I suggest to better explain how it is possible to explore how events have been modified in a changing climate (event attribution). I do not understand the link between the text and the figure (too much overlap with FAQ11.1). [Valerie Masson-Delmotte, France]	Considered. All FAQs are carefully revised and iterated under TSU's coordination. Texts are heavily edited to reduce overlap among FAQs. FGD FAQs' Figures are very different. Figure in FAQ11.1 is replaced with maps to show difference between changes in mean and extremes while the figure for FAQ11.3 is also redesigned to improve readability.
115859					FAQ12.1 Too strong focus on agriculture (here and in FAQ12.3.) I would rather suggest an FAQ on what is a climate impact driver, how it is defined etc. [Valerie Masson-Delmotte, France]	TAKEN INTO ACCOUNT: We are adjusting FAQ12.1 to reduce focus on agriculture. We are also including an FAQ on climatic impact drivers.
115861					FAQ12.2 Check complementarity with FAQs from chapter 11. Coordination is needed. Frequency is related to recurrence. What about trends and thresholds here as well? Horizontal axis labelled "time" unclear (years, months in a year...). [Valerie Masson-Delmotte, France]	TAKEN INTO ACCOUNT: We do not duplicate or form any inconsistencies with Chapter 11. This demonstrating of climatic impact driver signals of change is not currently presented elsewhere in Working Group I, and we have continued to work with the TSU to add clarity to the figure. The time axis here is not meant to be specific but rather to illustrate the signal that scientists look for in determining CID changes.
115863					FAQ12.3 Nice topic but answers would need to build x chapters (diversity of sectors / examples needed in FAQs from ch 12). Other examples could include ecosystems (eg milder winters, effect on pests etc. Effect on heating demand) [Valerie Masson-Delmotte, France]	NOT APPLICABLE: We have removed the previous FAQ12.3 as this was considered too close to Working Group II's mandate. We have replaced this with an FAQ that better describes the Climatic Impact-driver framework which is oriented around providing climate information without pre-judging its positive or negative impact.

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115865					FAQ Atlas.1 Explain misuse? [Valerie Masson-Delmotte, France]	Noted. Misuse is explained in the guidance updated in response to the interactive atlas user survey.
129689					Terms and concepts should be reviewed for consistency across existing fields and practice. For example, in the FAQ, a change is not considered hazardous when the results of the change do not exceed the biophysical or engineered tolerance of a particular asset. This would be news to the disaster research community. A disaster occurs when capabilities are overwhelmed. A hazard can occur even if it can be managed. If the statement is about how a hazard becomes a disaster, then that can and should be stated. [Trigg Talley, United States of America]	Accepted. Terms have been reviewed for consistency.
115867					FAQ Atlas.4 I do not think references are required for FAQs. [Valerie Masson-Delmotte, France]	Accepted. FAQs are now part of the online documentation material and references have been removed.
19127					generally review colours in figures - some are hard to make out or distinguish one from other. There may be accessibility issues [Jonathan Lynn, Switzerland]	Taken into account. The final figures have been co-developed with graphics experts who know about colour accessibility issues (e.g. all figures have been checked for colour-blindness)
24561					The word 'summary' is missing from the summaries in some FAQ chapters- but isn't in others. [Jenny Turton, Germany]	Editorial. The report will undergo professional copy-editing prior to publication. This will be made consistent then.