

Comment ID	From Page	From Line	To Page	To Line	Comment	Response
9889	0				It might be too late in the IPCC process, but it would be interesting to include the fire weather index as well in the list of indices available throughout the report. Ex : https://www.eea.europa.eu/data-and-maps/indicators/forest-fire-danger-3/assessment . [Véronique Mariotti, France]	TAKEN INTO ACCOUNT: Fire weather indices are used in the literature and are assessed in Chapter 12. However, this technical annex only describes the indices that are used for figures in chapters and in the Atlas. A sentence is added on this in the introduction. We did not add such indices in the Atlas neither in figures.
89543	0				This annex will need to be checked for consistency with the updates to Chapter 11, Chapter 12 and the Interactive Atlas. Regarding the title, will it also include "Extreme Indices", i.e. "Climatic Impact Driver and Extreme Indices" ? Although there doesn't seem to be a reference to this technical annex in Chapter 11 SOD. [Faye Abigail Cruz, Philippines]	ACCEPTED: the title now is as proposed
11145	1	1	1	1	Because the Annex VII provides background information on indices used within Chapter 11, Chapter 12, and the Atlas, so it's better to give a more general title of Annex VII, such as climate indices, rather than climate impact driver indices. [Wen Wang, China]	TAKEN INTO ACCOUNT: The technical annex VII does not refer to all indices, but "CID and extreme" indices. The title now is "Climatic Impact-Driver and Extreme Indices"
14443	1	42	1	43	Add line spacing between paragraphs [Maria Amparo Martinez Arroyo, Mexico]	Editorial. We do not see where space is missing
89515	3	3			The annex may need to be reviewed in case instances where "hazards" were used will need to be replaced with "climatic impact drivers" [Faye Abigail Cruz, Philippines]	ACCEPTED: We changed more occurrences now
131995	3	23		27	It would make more sense to call these indices climate variables. This does not preclude their later use for the intended calculations in the context of impact assessments, these would be most appropriate when carried out together with WGII experts after appropriate detection and attribution of impacts to climate change. How else would you successfully define thresholds. This would be fruitful activity between WGs indeed? The wording as to which and where assessments are done is a bit blurred in this annex and should be adjusted. The term CID being in the WGI glossary only does indicate the need for better coordination between WGs including leadership. If maintained it needs a qualifier such as "Potential CID". [Hans Poertner and WGII TSU, Germany]	TAKEN INTO ACCOUNT: The CID wording has long been discussed across WGs and the need for a specific neutral term for WGI assessment replacing "hazard".
44459	3	38	3	40	In this sentence, "hazard(s)" should be replaced with "climatic impact driver(s)" as in Ch12 we don't define hazards per se. [Jana Sillmann, Norway]	ACCEPTED
32317	3	43	3	44	To be more precise I would suggest to reformulate: "For example, an extreme precipitation event measured at a single station within a large grid cell usually has a higher magnitude than it would have when averaged across the grid cell." [Clemens Schwingshackl, Norway]	REJECTED: The authors believes the current phrasing is sufficient as it is correct as it stands.
44461	3	45	3	45	"hazard" should be replaced with "climatic impact driver". [Jana Sillmann, Norway]	ACCEPTED
32319	3	45			Calculating threshold exceedances is a convenient and easy way to assess impacts. However, impacts often do not happen straightaway when a threshold is exceeded, but rather follow a continuous function (see e.g. Gasparrini et al. 2015, doi:10.1016/S0140-6736(14)62114-0). This circumstance should be mentioned. [Clemens Schwingshackl, Norway]	REJECTED: This general point belongs to Chapter 12 where more in-depth discussions on thresholds are provided
89517	4	14	4	16	This may need to be updated to be consistent with the content of the Interactive Atlas. Also, I suggest to replace instances of "online Atlas" with "Interactive Atlas". [Faye Abigail Cruz, Philippines]	ACCEPTED

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32321	4	24	4	24	Does it mean they are based on quantiles of the distribution? In that case it might help to mention this to make it clearer for readers. [Clemens Schwingshackl, Norway]	The methods to calculate these indices are based on the definition from the ETCCDI. The section has been rewritten to clarify that we assess indices based on the literature.
44463	4	27	4	27	add references: Zhang et al. 2011 (https://doi.org/10.1002/wcc.147), Sillmann et al. 2013 (https://doi.org/10.1002/jgrd.50203) [Jana Sillmann, Norway]	TAKEN INTO ACCOUNT: References added
8689	4	27	4	27	Include reference to HadEX3 (Dunn et al, 2020, submitted) as this dataset is used in Ch 11 [Robert Dunn, United Kingdom (of Great Britain and Northern Ireland)]	REJECTED: reference not relevant for sentence as this is about indices and not datasets.
32323	4	28	4	28	I don't know how didactic this chapter should be, but to my understanding EVT is not just selected for calculating the occurrence of rare events, but it is necessary to apply EVT to not introduce biases in the calculations. I would point out this necessity a bit more clearly. [Clemens Schwingshackl, Norway]	The section has been rewritten to clarify this.
14441	4	38	6	39	Table AVII.1. Standardize table format. It is recommended to write the first word in capital letter. Homogenize the bold words. [Maria Amparo Martinez Arroyo, Mexico]	ACCEPTED: This was homogenized
71569	4		6		Table AVII.1 makes reference to indices based on percentiles for temperature, how is this percentile defined? All the sample is used or a day-of-the-year dependent percentile is considered following the definition given by the ETCCDI. [Sixto Herrera, Spain]	REJECTED: The percentiles refer to the distributions, as all indices (introduction paragraph); more details are also given in the ETCCDI references
32325	6	7			I find the combination of four nouns ("climatic impact drivers types") a bit lengthy. To me it would sound better to use "types of climatic impact drivers" or "CID types" (using the acronym also used in the SPM). The same goes for "climatic impact drivers indices" used on page 3, lines 22-28 [Clemens Schwingshackl, Norway]	REJECTED: We do not find how to simplify
32327	6	9	6	12	Maybe it could be phrased in a more positive way, something like: "Many more indices have been developed and used in the literature. The indices listed here constitute the most relevant and most used ones." [Clemens Schwingshackl, Norway]	REJECTED: The authors believe the current phrasing is sufficient and the comment does not change the meaning of the sentence.
32329	6	9	6	15	This is not totally clear to me. Are the indices mentioned in lines 7-12 all based on expert judgement? In that case this should be pointed out already in lines 7-12. Otherwise it is a bit confusing. [Clemens Schwingshackl, Norway]	REJECTED: The selection of the indices are based on expert judgement using the guiding principles described. The results of these CID changes are based on multiple lines of evidence.
32331	6	17			Does it refer to the 7 categories described above? Maybe they should be mentioned here again. [Clemens Schwingshackl, Norway]	REJECTED: we do not see why this would be needed
89519	6	27	6	27	Suggest to replace "or" with "for" before "processing" [Faye Abigail Cruz, Philippines]	ACCEPTED: typo corrected
44465	6	27	6	27	remove "hazard", it is sufficient to write "12 global indices..." [Jana Sillmann, Norway]	ACCEPTED
44467	6	31	6	33	The use of terminology of "hazard" and "climatic impact drivers" is inconsistent in the headings. The word "hazard" should be avoided, where the more general term "climatic impact driver" can be used. [Jana Sillmann, Norway]	ACCEPTED
89521	6	31			Is the "Atlas" referred in this section pertaining to "Interactive Atlas"? If yes, best to clarify in this section (annex) since these variables are not shown/assessed in the Chapter Atlas. [Faye Abigail Cruz, Philippines]	ACCEPTED: "Interactive" Atlas is now mentioned
32333	7	8			What is the reason that no cap was employed? [Clemens Schwingshackl, Norway]	REJECTED: No explanation was added to the text on why no cap was implemented in the CH12 calculations. This is because it is not a standard method and is only sometimes used in the cited literature.

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32335	7	9	7	11	Was the same period used for the Southern Hemisphere or was the method not applied to the Southern Hemisphere? [Clemens Schwingshackl, Norway]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
32337	7	13	7	24	I think it would be helpful to shortly explain/define TX, TM, and TN. [Clemens Schwingshackl, Norway]	REJECTED: these are explained in several places in Table VI.1
9271	7	21	7	21	it seems that the upper bound of summation Cooling degree-days (CDD): is not 365. The correct number is 182 as it is mentioned in Spinoni et al., 2015 [Morteza Pakdaman, Iran]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
32841	7	21	7	21	it seems that the upper bound of summation Cooling degree-days (CDD): is not 365. The correct number is 182 as it is mentioned in Spinoni et al., 2015 [sadeqh zeyaeyan, Iran]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
33171	7	21	7	21	it seems that the upper bound of summation Cooling degree-days (CDD): is not 365. The correct number is 182 as it is mentioned in Spinoni et al., 2015 [Sahar Tajbakhsh Mosalman, Iran]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
44469	7	24	7	24	it should read "cumulated over the entire year instead of 6 months, so it applies to both hemispheres." [Jana Sillmann, Norway]	ACCEPTED
89523	7	26	7	39	It is not clear here which threshold was used for Tnn in Ch12 and the (interactive) Atlas, unlike for the other indices. [Faye Abigail Cruz, Philippines]	TAKEN INTO ACCOUNT. The 21.5°C threshold is used in CH12, now mentioned clearly
32339	8	8	8	18	The simplified WBGT formulation used here is likely an insufficient approximation of WBGT and I would suggest to replace it by a formulation that is based on the definition of WBGT as a weighted mean of dry and wet bulb temperature. In fact, the paper cited here (Lemke and Kjellstrom, 2012) even says that the source of the simplified WBGT cannot be tracked and that research based on simplified WBGT should be re-evaluated. [Clemens Schwingshackl, Norway]	NOTED: However WBGT is not used here anymore. Instead the NOAA index HI is used
71571	8	8	8	18	At the end of paragraph describing the Wet Bulb Globe Temperature appears the term model, is this index only estimated for models? [Sixto Herrera, Spain]	NOTED: However WBGT is not used here anymore. Instead the NOAA index HI is used
9273	8	29	8	29	it seems that the upper bound of summation Heating Degree Day (HDD) is not 365. The correct number is 183 as it is mentioned in Spinoni et al., 2015 [Morteza Pakdaman, Iran]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
32843	8	29	8	29	it seems that the upper bound of summation Heating Degree Day (HDD) is not 365. The correct number is 183 as it is mentioned in Spinoni et al., 2015 [sadeqh zeyaeyan, Iran]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
33173	8	29	8	29	it seems that the upper bound of summation Heating Degree Day (HDD) is not 365. The correct number is 183 as it is mentioned in Spinoni et al., 2015 [Sahar Tajbakhsh Mosalman, Iran]	REJECTED: As explained to account for both hemispheres this is cumulated over the whole year
71573	8	40	9	16	The R99 can be obtained from the full series, including wet and dry days, or from the wet-days only, which is the definition used in the report? [Sixto Herrera, Spain]	NOT APPLICABLE: The R99 is not used anymore
44471	8	42	8	43	break between paragraphs missing. [Jana Sillmann, Norway]	ACCEPTED. Added
14445	9	1	9	2	Add line spacing between paragraphs. [Maria Amparo Martinez Arroyo, Mexico]	ACCEPTED
32341	9	41	9	41	The definition of SPEI is missing [Clemens Schwingshackl, Norway]	NOT APPLICABLE: SPEI was eventually dropped
71575	9	41	9	41	SPEI index has not been defined. [Sixto Herrera, Spain]	NOT APPLICABLE: SPEI was eventually dropped
89525	9	41	9	41	Missing definition/discussion for SPEI [Faye Abigail Cruz, Philippines]	NOT APPLICABLE: SPEI was finally given up
89527	10	7	10	9	If bias adjustment (due to actual and model elevation difference) will not be done, useful to indicate how these elevation biases will affect this index to guide the reader/end-user. [Faye Abigail Cruz, Philippines]	Rejected: this annex only gives methodological details and does not interpret figures and numbers, for which details are given in Chapter 12
71577	10	11	10	15	This notation "1 :100yr ESL" corresponds with the maximum value of a 100 years period, to the 100-years return value, it is not clear in the text. [Sixto Herrera, Spain]	ACCEPTED: now explained

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14447	11	4	11	6	Table AVII.2. Standardize table format. It is recommended to write the first word in capital letter. Homogenize the bold words. [Maria Amparo Martinez Arroyo, Mexico]	ACCEPTED: Format was standardized
89529	11	4	11	8	In Table AVII.2 (and other tables), I suggest to use a less technical name (acronym) for the variables to help the reader (unless there's a table describing what "tas", "tasmin", etc. mean that can be referred to in the table caption). [Faye Abigail Cruz, Philippines]	REJECTED: These names are the names used for climate variables in the CMIP/CORDEX specification
44473	11	4	11	10	The word "hazard" in Table AVII.2 needs to be replaced with "Climatic Impact Driver" [Jana Sillmann, Norway]	ACCEPTED
110661	11	7			In table AV7.2, regarding heat (TX35), a reference related to heat stress could be added in addition to those already made for crops. For instance, according to Parsons 2014, Above an ambient temperature of ca. 35 °C, people undertaking heavy manual labour are likely to experience heat stress. Parsons K (2014) Human thermal environment. The effects of hot, moderate and cold temperatures on human health, 3rd edn. CRC Press, New York [Ana Casanueva, Spain]	REJECTED: The table does not imply that TX35 is not relevant for heat stress impacts but this index is intended here to represent CIDs for agricultural applications.
44475	12	1	12	1	Remove the word "hazard". The section title should be "Indices used in Section 12.5.1" [Jana Sillmann, Norway]	ACCEPTED
89531	12	1			May be useful if these indices will also be available to be viewed in the Interactive Atlas [Faye Abigail Cruz, Philippines]	ACCEPTED: This is the objective. The Table will be corrected corresponding to the Atlas indices finally available at FGD submission time
14449	12	23	12	23	Add period (.) at the end of the line. [Maria Amparo Martinez Arroyo, Mexico]	ACCEPTED. added
14451	12	27	12	27	Add period (.) at the end of the line. [Maria Amparo Martinez Arroyo, Mexico]	ACCEPTED. added
89533	12	37			In Table AVII.3, will there be coordination with Chapter 6 for "Air Pollution/Allergens"? [Faye Abigail Cruz, Philippines]	REJECTED: this was not needed
14453	12	38	13	38	Table AVII.3. Standardize table format. It is recommended to write the first word in capital letter. Homogenize the bold words. [Maria Amparo Martinez Arroyo, Mexico]	ACCEPTED: Format is standardized
71197	13	1			"permafrost melting" does not exist, see comment Nr. 3 [Lukas Arenson, Canada]	ACCEPTED - text rephrased
89535	13	5	13	5	Will there be a discussion on warming levels in this section? [Faye Abigail Cruz, Philippines]	REJECTED: Warming levels is discussed elsewhere in the report
44477	13	7	13	7	Rename section header to: AVII.4.1 Models used to calculate indices (or AVII.4.1 Models used to calculate indices for Climatic impact drivers) [Jana Sillmann, Norway]	NOT APPLICABLE: The model tables are removed as they are part of "Data tables"
89537	13	11	13	11	Suggest to specify here that these simulations are from CORDEX [Faye Abigail Cruz, Philippines]	NOT APPLICABLE: The model tables are removed as they are part of "Data tables"
71579	17	11	17	20	In order to apply the bias adjustment, if I have understood well, the ERA5 reanalysis has been re-gridded to the model resolution and then, the index is calculated before to apply the bias adjustment of the model. I would expect, to both avoid as much as possible any alteration of the index calculation and reduce the computational cost, to estimate the index over the original ERA5 resolution and then to re-grid the result to the model resolution in order to apply the bias adjustment. [Sixto Herrera, Spain]	REJECTED: We agree that this approach would be more adequate, but we do not have the resources to re-run the analysis. Further, we do not anticipate that changing the methodology would substantially change the results.
32343	17	13	17	13	I would add: "Bias adjustment is used for calculating threshold exceedances of the variables X, Y, ..., using quantile delta mapping as described by Cannon et al. (2015)." [Clemens Schwingshackl, Norway]	Not applicable: the paragraph was reformulated
44479	17	13	17	13	Sentence missed a verb. Rephrase to " We apply the quantile delta method ..." [Jana Sillmann, Norway]	ACCEPTED: typo corrected
89539	17	13	17	13	Sentence looks incomplete. [Faye Abigail Cruz, Philippines]	ACCEPTED: typo corrected

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32345	17	13	17	20	I think it would be good to specify the variables to which bias adjustment is applied instead of using the general term "heat index". [Clemens Schwingshackl, Norway]	ACCEPTED: This is now done in Table VI.2
44481	17	17	17	18	What heat index? Please be more specific to what heat indices/heat index this bias adjustment is applied. [Jana Sillmann, Norway]	ACCEPTED: This is the WBGT index, this is now written
89541	17	17	17	20	Is this the same methodology for bias adjustment done for the other indices (not just for heat index)? [Faye Abigail Cruz, Philippines]	Taken into account. This is not the same bias correction process as for other variables. The bias correction method is specified in the text
32285	17	18	17	18	It is important to explain how the re-gridding is done, here and for the basic analyses. Which algorithm is used, whether land points and sea points are dealt with separately, whether an extrapolation step is done in that context etc. The re-gridding methodology may have significant impacts, especially for extreme indices. [Eric Brun, France]	ACCEPTED: ERA5 data are interpolated by conservative remapping to each model's grid. The remapping is applied to all grid points without distinguishing between land and sea. The text has been updated accordingly. As ERA5 has a higher resolution than most of the climate models (except CORDEX EUR-11), re-gridding artefacts should be of less relevance.
116807					Thank you for this first version for AnnexVIII. Could it be possible to highlight novel indices compared to what was used in AR5 (SREX), and SR15-SRCCL-SROCC? I think that text needs to refer to global warming levels (GSAT not GMST). Please check which chapter is assessing which index in the first table. Please also check how chapter 4 defines heat stress. Please check the coherency of the tables with the annex on models. [Valerie Masson-Delmotte, France]	TAKEN INTO ACCOUNT: Although the annex does not explicitly refer to novel indices since the AR6 Special Reports. The introduction provides some context and mentions that such indices are not used for the first times, for instance some of them were used in the SREX 2012. References to global indices were removed as the purpose was refocused on regional indices. Finally humid heat stress is not defined here as in chapter 4, as its selection was based on an example of impact-driven index. Models tables have been removed as the references are the data tables.
5091					For transparency of the derived indices it is required to give more detail on the input data used, ideally cite the data. In case of CMIP5 the data is available in the IPCC Data Distribution Centre, which also gives data citation information: http://www.ipcc-data.org/sim/gcm_monthly/AR5/index.html . An additional table is recommended. The best location within the report for model data references would be Annex III with a reference from Annex VII. [Martina Stockhause, Germany]	REJECTED: We have removed all data reference as data references are in the figures data tables.