

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	58166	22	0	0	0	0	This chapter is important to African countries, and frankly speaking, I found it very impressive and was prepared with high quality. The part of observed climate trends and future projections for temperature, precipitation & extreme events is impressive part, especially Figure 22-1 (page 97) for the observed & simulated variations in past and projected future annual average precipitation & temperature. Also, Figure 22-2 (page 98) for observed & simulated variations in past & projected future annual average precipitation & temperature for 5 African countries. Section 22.3. (page 99) for vulnerability & impacts presents how Africa is vulnerable and Figure 22-3 summarizes the main conclusions in this regard. Figure 22-5 (page 100) for the potential change in vegetation between the periods 1961-1990 and 2071-2100 is very impressive. The part of freshwater ecosystem is very good (page 15) using lot of references, and Table 22-1 (page 95) presents the changes & impacts observed in freshwater lakes of Africa. Part of coastal & ocean systems is impressive especially the item of the impacts & vulnerability of coastal ecosystem especially Figure 22-6 for Kenya coastal zone (page 101) & Table 22-2 for Cape Town (page 95). Also, parts of water resources, agriculture & food security are impressive too. The parts of health (starting from page 24), human security (page 27) and urbanization (page 29) were prepared with high quality. The adaptation part 22.4. (page 30) is impressive and Table 22-4 (page 96) for the cross-cutting approaches for equity & social justice in adaptation Part of climate risk reduction, risk transfer, & livelihood diversification (page 36) is impressive and Figure 22-7 (page 102) for the risks at different timings is impressive too. The part of ecosystem services, biodiversity, and natural resource management (page 42) was prepared with high quality, and Figure 22-8 (page 103) for ecosystem-based adaptation and Figure 22-9 (page 103) for the cost of adaptation per year from 2000 through 2100 are impressive and used updated references. The part 22.5. for case studies (page 48) and part 22.6. for new emerging issues (page 50) are impressive too. (Mounir Wahba Labib, Third National Communication (TNC) Project)	thanks
2	61558	22	0	0	0	0	The structure of the chapter could be improved. In the section on Observed Climate Trends and Future Projections only changes to temperature and precipitation are discussed, a (short) section on expected change to evaporation (potential/actual) would be useful, plus a subsequent section on changes to runoff (naturalised). In its current form there is some discussion on changes to streamflow in the freshwater ecosystems section which comes before the changes to water resources. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Due to space constraints additional discussion on evaporation has not been added. Runoff issues has been covered in section 22.3.3
3	61559	22	0	0	0	0	In several sections the difficulty of drawing conclusions due to lack of data is mentioned. However, in the executive summary there is no mention of the importance of data to underpin the understanding of climate change across the continent. It is well known that data networks in Africa are declining, but also that there the accessibility, sharing and governance of the data that is available is a major challenge. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	An ES on research and data gaps has been added.
4	61560	22	0	0	0	0	We appreciate the inclusion of a FAQ on the significance of migration in the context of CCA in Africa, as well as the FAQ's on food security and violent conflict (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	The FAQ on migration has been deleted due to space constraints. FAQs on food security and violent conflicts has been polished and finalized.
5	61561	22	0	0	0	0	We agree with the flagging of the need for strategies and plans of actions to adapt, in the executive summary. We especially appreciate the visibility given to EBA, pro-poor integrated adaptation-mitigation initiatives, and emphasis on highly vulnerable groups (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Thanks!
6	74362	22	0	0	0	0	As written, it is extremely hard to determine which countries are included in which political grouping. Countries should be grouped by climatic covariability, not political region, the groupings made explicit, and the classes named by geographic region. (UNITED STATES OF AMERICA)	It is a valid comment. There are many ways of dividing a region. After a lot of discussion the chapter team decided to keep the economic zones as the criteria for grouping. There is little agreement in literature regarding ecological divisions and economic zones are most useful from policy point of view.
7	74363	22	0	0	0	0	Consider reordering the executive summary starting with more on the key physical changes already observed then going into the major headlines on the biggest human impacts and potential impacts with the most implications - and about which there is also high certainty. (UNITED STATES OF AMERICA)	Some changes in the order of ES statements have been made in the FGD.
8	74364	22	0	0	0	0	Coverage of pastoralists should be treated more completely, and the disparate impacts of temperatures on arid lands and lifestyles better represented and discussed. (UNITED STATES OF AMERICA)	We have attempted to provide some additional detail on these important aspects, within space constraints.

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9	74365	22	0	0	0	0	In general, the relationship between the text and the figure needs to be improved. For non-experts the meaning of the graphics needs to be explained. (UNITED STATES OF AMERICA)	We have tried to do this in the final draft.
10	74366	22	0	0	0	0	In terms of the chapter as a whole the whole second half of the chapter on adaptation is noticeably more organised, coherent and better-written and therefore, essentially, more informative than the first part on trends and impacts. (UNITED STATES OF AMERICA)	We have tried to improve the flow of the entire chapter better.
11	74367	22	0	0	0	0	Making broad generalizations about changes in Africa is difficult, and it appears the authors have tried to break the continent down into essentially three regions. However, even this divide does not capture the nuance of the changes occurring. It might be helpful to add a section or paragraph detailing the difficulties of making predictions for all of Africa, and highlighting some of the nuances that are lost by doing so. Also it would be helpful to know how useful these broad generalizations are for a specific area given that they may be more accurate in some geographical regions and for some variables than for others. (UNITED STATES OF AMERICA)	Yes, we understand that dividing regions can be complicated. In the sections we have used regions that emerge from the underlying literature instead of sticking to any particular criteria.
12	74368	22	0	0	0	0	More attention should be made regarding improving Africa's ability to monitor and analyze its own climate at seasonal and decadal time scales. (UNITED STATES OF AMERICA)	We have added a research gap section that highlight on some of these key issues.
13	74369	22	0	0	0	0	Overall this was an interesting chapter to read. However, it seemed disorganized, and in places repetitive, listing randomly possible impacts, and possible approaches to adaptation. It would benefit from possible restructuring to draw out key themes. In particular, the discussion of different ecosystems is haphazard and repetitive (sections on fisheries, for example, are stated several times can be cut). Some key ecosystems such as mountain regions are missed. The impacts should be summarized by region, even if this is as a box. Right now readers in specific countries will be forced to try to skim the entire section, searching for mention of their region and piece together evidence of climate change or its impacts. The adaption section gives no sense of the priorities for agencies. What is most effective? Given that the impacts are so varied, and still unknown, the focus should be on building resilience. Perhaps the adaption section could be restructured to give a sense of the desired outcomes, rather than focusing on the difference between soft path and hard path options which should in reality both be used Also at times the chapter is simplistic and seems to attribute problems like forest loss or ground water depletion to climate change, possibly without adequate justification. For example page 48 line 53, "A water shortage during dry periods would increase the incidence of power cuts which even now are inhibiting economic growth." Where is the reference or evidence? The power cuts may result from increasing demand for energy (and from growing industry), from bad infrastructure, etc, etc...not just climate change and its impact on water supply. The authors should be careful not to overstretch the evidence but to highlight the complexity and the challenges climate change can pose to decision makers in African countries that do not have funding for infrastructure, development, etc. (UNITED STATES OF AMERICA)	Regarding the adaptation section, the focus on building resilience, which was present in the SOD text, has been strengthened, including in the Executive Summary statement. Given that the AR5 is required to be non-policy prescriptive, specific priorities or recommendations for agencies have not been made. However, the text contains many examples where such priorities may be inferred - such as the need to focus on building resilience, to enhance the integration of gender equity and rights-based approaches in adaptation planning and implementation, etc.
14	74370	22	0	0	0	0	Regarding the executive summary and chapter 22 as a whole: The structure of the chapter is apparently set to a standard format that might be unalterable. Nevertheless this does not always assist clarity, organization or balance across sections. The executive summary in particular, in following the structure of the main chapter, is problematic in two respects. First, unlike the main chapter, it is not divided by headings or sub-headings but relies on the reader to refer via numerals to the relevant section of the main chapter. At least the executive summary could be split into two sections relating to the two main sections of the chapter, clearly marked, first, "observed climate trends and future projections, vulnerability and impacts" and second, "adaptation in Africa". Second, and more seriously, the structure does not allow the executive summary to pull out and put at the top of the summary those findings of the greatest concern i.e. those with the highest degrees of confidence, impact and implications, especially page 4, lines 13-21, "Recent evidence further strengthens a key findings from AR4" and page 5, lines 26-33, "Human security of people in Africa will increasingly be threatened". (UNITED STATES OF AMERICA)	The structure of the executive summary cannot be different from other chapters
15	74371	22	0	0	0	0	Studies on attribution are well brought out on page 9 (Tadross etc + funk et al) and those could be used earlier as some - Hoerling, Tadross et al anyway - refer to temperature and aridity too. (UNITED STATES OF AMERICA)	In WGII, attribution is focused on impacts and vulnerability hence this discussion comes in after the observed and projected changes in climate variables section.
16	74372	22	0	0	0	0	Studies on attribution are well brought out on page 9 (Tadross etc + funk et al) and those could be used earlier as some studies Hoerling et al, Tadross et al anyway - refer to temperature and aridity too. (UNITED STATES OF AMERICA)	In WGII, attribution is focused on impacts and vulnerability hence this discussion comes in after the observed and projected changes in climate variables section.

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17	74373	22	0	0	0	0	The choice of climatic regions should be reconsidered, and certainly need to be better defined. From a climatic perspective, it does not make sense to base the regions on political entities. Previous work that defines homogeneous rainfall areas should be referenced and used. (UNITED STATES OF AMERICA)	Yes, we understand that dividing regions can be complicated. In the sections we have used regions that emerge from the underlying literature instead of sticking to any particular criteria.
18	74374	22	0	0	0	0	The peer-reviewed publications of Dr. Joshua Busby on climate change, vulnerability, conflict and mass death, should be cited in various places throughout the chapter, if possible. Namely, "Locating Climate Insecurity: Where are the Most Vulnerable Places in Africa?" and "Ground Truthing" Vulnerability and Adaptation in Africa." (UNITED STATES OF AMERICA)	Thank you, we have used this reference.
19	74375	22	0	0	0	0	The political definitions (e.g. SADC, etc.) that were used to define climate regions were ineffective and did not correspond to regions of natural climatic covariability. One example of a continental regionalization is provided by the work of Sharon Nicholson ( <a href="http://www.wmo.int/pages/prog/wcp/wcdmp/documents/bams-d-11-00212_datase...">http://www.wmo.int/pages/prog/wcp/wcdmp/documents/bams-d-11-00212_datase...</a> ). The full countries listed in each region need to be identified at least once (so you don't need to google COMESA). (UNITED STATES OF AMERICA)	Yes, we understand that dividing regions can be complicated. In the sections we have used regions that emerge from the underlying literature instead of sticking to any particular criteria.
20	74376	22	0	0	0	0	The structure of the chapter is apparently set to a standard format that might be unalterable. Nevertheless this does not always assist clarity, organization or balance across sections. The executive summary in particular, in following the structure of the main chapter, is problematic in two respects. First, unlike the main chapter, it is not divided by headings or sub-headings but relies on the reader to refer via numerals to the relevant section of the main chapter. At least the executive summary could be split into two sections relating to the two main sections of the chapter, clearly marked, first, "observed climate trends and future projections, vulnerability and impacts" and second, "adaptation in Africa". (UNITED STATES OF AMERICA)	This is the same as comment 14.
21	74377	22	0	0	0	0	The treatment of temperature impacts on evapotranspiration could be improved. This does not seem to receive much discussion. (UNITED STATES OF AMERICA)	Due to limited space we could not expand the discussion on evapotranspiration, but it has been covered briefly in the chapter.
22	74378	22	0	0	0	0	There is very little specific discussion of future scenarios in non-climatic drivers (e.g. dam building, land use change, population growth) and their impact on the hydrologic cycle and water resources. (UNITED STATES OF AMERICA)	Non climate drivers are treated in several places in the chapter. Systematic assessment of the future scenarios in non climate drivers is beyond the scope of this assessment.
23	74379	22	0	0	0	0	There is virtually no discussion of water quality issues (including stream temperature increases) - perhaps this is a reflection of the lack of research on this topic for Africa (and in general), especially regarding the linkages between climate change projections and water quality issues. (UNITED STATES OF AMERICA)	This has been added in the research gaps section.
24	74380	22	0	0	0	0	There needs to a more emphatic treatment of expected crop impacts, stalled agricultural and water development activities, and population growth. (UNITED STATES OF AMERICA)	Crop and livestock impacts, water resource impacts and population growth in the context of MDGs are well covered in this chapter, given the space limitations for this chapter and enormous volume of literature to assess
25	77381	22	0	0	0	0	"there should be consistency in the usage of terms. For example the use of near-surface and surface. What is the difference between the two" (UNITED REPUBLIC OF TANZANIA)	We have double checked and ensured that near surface has been used where ever appropriate.
26	78314	22	0	0	0	0	Congrats on good chapter. It was a very interesting read. (Kees van der Geest, United Nations University)	thanks!
27	78444	22	0	0	0	0	This has progressed a long long long way since the ZOD! Kudos. (Dáithí Stone, University of Cape Town)	Thanks!
28	78445	22	0	0	0	0	Many statements throughout the first half of the chapter centre around the words "could" or "may". Maybe these statements could be possible, but generally there is nothing in them to indicate that the opposite could not be equally possible. (Dáithí Stone, University of Cape Town)	We have tried to systemically address these issues
29	78446	22	0	0	0	0	I am surprised at how little discussion there is about the effect of heat stress on the populace of a (the?) hot continent where most people work (and in some cases live) outdoors. Perhaps there is little literature, but this issue should be highlighted. Some coordination with Chapter 11 would be appropriate; note their Box 11-2, Figure 11-2, and 11.6.2.2. (Dáithí Stone, University of Cape Town)	Excellent point, and you are correct about the limited amount of literature. Literature updated.
30	80141	22	0	0	0	0	Overall, the report is much improved from its earlier draft; however, some sections could be strengthened (A. Peter Castro, Maxwell School, Syracuse University)	ok. Additional work has been done on all of the sections of the chapter, to strengthen these.

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31	81047	22	0	0	0	0	There are some missing/ incorrect citations in the chapter. These discrepancies have been highlighted in the ref check document for chapter 22 and is available in the supporting material web page. Chapter team may wish to rectify these errors before starting to work on SOD revisions and FGD preparation. (Monalisa Chatterjee, IPCC WGII TSU)	We have tried to systemtically address these issues
32	81293	22	0	0	0	0	Author team should ensure that calibrated uncertainty language is used only to make probabilistic statements. (Monalisa Chatterjee, IPCC WGII TSU)	We have tried to systemtically address these issues
33	81294	22	0	0	0	0	the chapter should be further condensed by reducing repetitive discussions in section 22.3.2 on water ecosystems and resources, 22.3.2.3 and 22.3.7. The adaptation section should also be reduced by removing repetitions. (Monalisa Chatterjee, IPCC WGII TSU)	Agreed. Length and redundancies have been reduced.
34	81317	22	0	0	0	0	Authors should coordinate with chapters 12 and 19 to ensure consistent message on human security section 22.3.6.2 (Monalisa Chatterjee, IPCC WGII TSU)	Messages on human security have been formulated more cautiously. Cross references to Chapters 12 and 19 added where possible.
35	81326	22	0	0	0	0	The chapter has rich discussions on several interdependent topics. For FGD preparation, authors may wish to synthesize key messages in tables or in form of other synthetic elements as 'finding rich capsules' that people can use from this assessment. (Monalisa Chatterjee, IPCC WGII TSU)	We have tried to add such synthetic elements
36	83240	22	0	0	0	0	1) Overall -- The chapter team has developed a strong assessment in its 2nd-order draft. In the final draft, the chapter team is encouraged to continue its prioritization of compact and rigorous assessment, effective and comprehensive tables and figures, and high specificity in examples given. (Katharine Mach, IPCC WGII TSU)	We have tried to systemtically address these issues
37	83241	22	0	0	0	0	2) Coordination across Working Group II -- In developing the final draft of the chapter, the chapter team should continue to ensure coordinated assessment, both in the chapter text and at the level of key findings. As appropriate, cross-references to the sections of other chapters and/or their assessment findings should be used, reducing overlaps and harmonizing assessment. (Katharine Mach, IPCC WGII TSU)	Additional cross-references have been added.
38	83242	22	0	0	0	0	3) Harmonization with the Working Group I contribution to the AR5 -- In developing the final draft, the chapter team should also ensure all cross references to the Working Group I contribution are updated, with discussion of climate, climate change, and climate extremes referencing the assessment findings in that volume. (Katharine Mach, IPCC WGII TSU)	Additional cross-references have been added.
39	83243	22	0	0	0	0	4) Tightening and shortening the chapter's assessment -- In developing the final chapter draft, shortening the text should be a top priority. The chapter team should aim for 35 pages in the main body of the chapter text, as an ideal length of the chapter, tightening and polishing the text into a compelling assessment throughout. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
40	83244	22	0	0	0	0	5) Characterization of future risks -- In characterizing future risks for Africa, to the degree appropriate the chapter team should indicate the extent to which risks (or key risks) can be reduced through mitigation, adaptation, development, poverty reduction, etc. That is, is it possible to indicate how risks may increase as the level of climate change increases or, potentially, to indicate the relative importance of changes in mean conditions, as compared to changes in extreme events, as compared to potential non-linear changes associated with biome shifts or tipping points? And then, how much can risks be reduced through adaptation or development, in the near-term and long-term? How are factors or stressors that multiply risks relevant in this context? As supported by its assessment of the literature, the author team should consider communicating risks for the era of climate responsibility (the next few decades, for which projected temperatures do not vary substantially across socioeconomic/climate scenarios) and for the era of climate options (the 2nd half of the 21st century and beyond). As might be helpful to the chapter, the framing of table SPM.4 could be considered in characterization of future risks, along with the key and emergent risk typology of chapter 19. (Katharine Mach, IPCC WGII TSU)	We have added a new section 22.5 to address this
41	83245	22	0	0	0	0	6) Informing the summary products -- To support robust and insightful summary products for the report, the chapter team is encouraged to maximize nuance and traceability in its key findings, continuing to use calibrated uncertainty language. In addition to nuanced characterization of future risks (see the previous comment), the chapter team is encouraged to consider themes emerging across chapters, indicating for example how extreme events have demonstrated adaptation deficits and vulnerabilities to date and may relate to future risks, how limits to adaptation may be relevant in the context of this chapter, how multidimensional inequality is relevant in the context of climate change, how adaptation experience has been relevant to date, and how interactions among mitigation, adaptation, and sustainable development may occur. (Katharine Mach, IPCC WGII TSU)	Please note that there is an ES finding on limits to adaptation, which the author has checked did find its way into the first summary product. I would like to encourage the members of the chapter team who are on the summary products teams to go beyond just passing on the ES findings, but also to make sure, from their in-depth knowledge of the chapter, that these key points, many of which are indeed covered in the chapter, are carried forward into the summary products.

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42	83246	22	0	0	0	0	7) Report release -- The chapter team should be aware that the final drafts of the chapters will be posted publicly at the time of the SPM release, before final copyediting has occurred. Thus, the chapter team is encouraged to continue its careful attention to refined syntax and perfected referencing. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
43	83247	22	0	0	0	0	8) Policy neutrality -- Given the mandate of providing a policy relevant and policy neutral assessment, the chapter team should reconsider use of phrases such as "need" and "required" throughout the chapter. Avoiding potential interpretations of policy prescription should be a priority, recognizing that there are often opportunities to avoid potentially prescriptive language while also enhancing the richness of detail in statements. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
44	84794	22	0	0	0	0	GENERAL COMMENTS: I congratulate the author team for all their work on the SOD, recognizing that there is more work to be done. The chapter would greatly benefit from an edit aimed at tightening the discussions significantly, and when considering the suite of review comments, please look for opportunities to continue to hone and focus the text even further. Please see my detailed comments for suggestions related to this, as well as to specificity of ES findings and traceable accounts, refining figures and tables, and various specific clarifications. In addition, where likelihood terms are used ("likely," "very likely," etc.), it is also not always clear whether they are intended as calibrated language or not--please carefully check this and avoid casual usage. (Michael Mastrandrea, IPCC WGII TSU)	We have tried to do this in the final draft.
45	84795	22	0	0	0	0	SUMMARY PRODUCTS: In preparing the final draft of your chapter and particularly your executive summary, please consider the ways in which your chapter material has been incorporated into the draft SPM and TS. For Chapter 22, this includes presentation of observed impacts and vulnerabilities in section A.i, adaptation experience in section A.ii, and sectoral and regional risks in section C.i, as well as related figures and tables. Are there opportunities for presenting chapter findings and material in a way that further supports broad themes highlighted in the summary products and that facilitates additional cross-chapter synthesis in specific findings or figures/tables? Do the existing summary product drafts suggest additional coordination that should occur between Chapter 22 and other chapters at LAM4? (Michael Mastrandrea, IPCC WGII TSU)	We have tried to put our key messages in the ES so that it can be included in the summary products
46	85231	22	0	0	0	0	Useful apart from the concealment of the absence of overall temperature change (Vincent Gray, Climate Consultant)	Our assessment is on impacts of climate change. WGI assesses the physical climate aspects and the scientific community agrees with the findings of WGI findings on overall temperature change.
47	60378	22	1	0	104	0	Overall comments - much improved from the FOD. The whole chapter still reads, however, in a rather fragmented fashion, and shows some repetition. I began to note the instances of repetition, but there are a number. I would recommend that the entire chapter undergo a very rigorous edit for flow, continuity and reduction of repetition. This may allow it to be shorter, easier to read, and allow some of the very good content to be better communicated. (Emma Archer van Garderen, CSIR)	We have tried to do this in the final draft.
48	60379	22	1	0	104	0	A further overall comment - I'm uneasy about the emphasis on migration. The evidence base here is still rather weak. I do think this needs to be treated with substantive caution, until the evidence base improves. (Emma Archer van Garderen, CSIR)	Messages on migration have been formulated more cautiously and cross-references to Chapters 12 and 19 added.
49	56996	22	1	1	1	1	The tile "Africa" is hanging. Let the title capture the spirit of the underlying text in the entire document. In other words, the title always prepares the reader what he expects in the text of the document (KENYA)	We cannot change the title of the chapter as it is in the plenary approved outline
50	70478	22	1	1	104	1	General comment: The chapter has improved since the first order draft and represents a good selection of material. There were a few misrepresentations and I have highlighted these in my individual comments. Overall it is a solid chapter, those involved should be congratulated for their hard work. (Caroline Bain, Met Office)	Thanks!
51	81292	22	3	7	0	0	Authors should add ES findings on other important topics like terrestrial ecosystems, differential impacts among diverse communities, urban areas, impact on critical economic sectors, specific experience with adaptation, etc. (Monalisa Chatterjee, IPCC WGII TSU)	Regarding adaptation, there is currently much detail on this in the ES and it is hard to see how to add more specific experience, within the page constraints.
52	83248	22	3	7	0	0	Format of the Executive Summary -- The chapter team should consider the presentation of each paragraph within the executive summary. A format of a bold key finding followed by non-bold supporting statements should be adopted for each paragraph. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
53	83249	22	3	7	0	0	Length of the Executive Summary -- The chapter team should ensure that the executive summary is as concise as possible, with each sentence communicating richly. A target length of 2-2.5 pages should continue to be the priority. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.



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54	83250	22	3	7	0	0	Regional Key Risks in the Executive Summary -- The chapter team is encouraged to present clearly the key regional risks for Africa within the executive summary. For the key risks, how do they vary with level of climate change, and what is the potential for adaptation to reduce the risks? What are the risks in the near-term (which can be considered an era of climate responsibility) versus the long-term (which can be considered an era of climate options)? The framing of SPM table SPM.4 or the framing of chapter 25's executive summary and table 25-8 could be considered. Identifying key risks would enable the chapter team to continue to tighten the executive summary with a strong organizing principle. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
55	84796	22	3	7	0	0	Executive Summary: Please continue to refine the focus and clarity of the executive summary as you revise the chapter. The executive summary is currently a bit long, and I have made suggestions below for specific paragraphs where I think there are opportunities for shortening or condensation. Please continue to ensure clear line of sight to underlying chapter sections--in general this is done well at present, and I have noted places where further clarity would be useful below. Finally, please consider ways to present each paragraph as a bold finding with a set of nonbold supporting statements. Some paragraphs currently diverge from this format. In addition, in some paragraphs the calibrated uncertainty language associated with nonbold statements differs from that of the bold statements. This is fine if presented clearly, but please pay attention to this nuance to ensure clarity of associated calibrated language. (Michael Mastrandrea, IPCC WGII TSU)	We have tried to do this in the final draft.
56	74381	22	3	7	5	43	As stated eloquently on Page 34, lines 40-44, the important roles of pro-poor adaptation policies: social protection, services and safety nets; better water and land governance, enhanced water storage and harvesting, better post-harvest services and strengthened civil society and greater involvement in planning, could be emphasized in the Executive Summary. (UNITED STATES OF AMERICA)	Thank you for this useful comment, the point has been highlighted in the ES. Note that the text to which the ES statement refers has been moved to section 22.4.4.2.
57	74382	22	3	7	5	43	The highest priority adaptation activities (agriculture?, pro-poor resilience-building development?) should be emphasized in the Executive Summary. Which adaptations and impacts are most critical? (UNITED STATES OF AMERICA)	We focus on these topics in the chapter.
58	78366	22	3	7	5	43	There are many case of unitalicised "likely" in the ES. (Dáithí Stone, University of Cape Town)	The adaptation section 22.4 has been checked and any such instances of casual usage of 'likely' have been removed.
59	80465	22	3	9	3	13	Only evidences on warming and rainfall changes are mentioned. Evidences on anthropogenic climate change evidences are not indicated. These evidences of anthropogenic climate change should be be quoted here. (Aliou Diouf, ENDA Energie-Environnement-Développement)	The discussion on anthropogenic climate change is given in section 22.3 in page 12, also see figure 22-3.
60	83251	22	3	9	3	13	The general time frame for these statements should be specified. (Katharine Mach, IPCC WGII TSU)	Time period specified
61	85225	22	3	9	3	13	There is overwhelming evidence that the earth is not warming, and if you take into consideration the inherent bias of the "Mean Global Surface Anomaly Record" it is actually cooling. This is particularly evident in the persistent cold winters in the Northern Hemisphere. Then, the claimed warming is only decimals of a degree, hardly capable of consideration when compared with the inaccuracies of measurement. Then, what has this got to do with carbon dioxide? The climate has always had periods when it warms and others when it cools. (Vincent Gray, Climate Consultant)	Thank you for your comment, there is overwhelming evidence that the earth has warmed and continues to do so.
62	84797	22	3	10	3	10	Please specify what is meant by increased here--compared to what, and over what timeframe? (Michael Mastrandrea, IPCC WGII TSU)	Timeframe specified
63	80142	22	3	11	0	0	Greater clarification should be given about the nature of change in rainfall (changes in seasonality and amount of precipitation seems too vague) (A. Peter Castro, Maxwell School, Syracuse University)	This has been added as a separate summary statement
64	61922	22	3	12	3	12	Reduced Long Rains over E.Africa have not (yet) been shown to be anthropogenic. This recent reduction is different to the direction of model trends and has not (to my knowledge) been shown to be inconsistent with natural variability. So I think it's too early to make the attribution statement made here. (David Rowell, Met Office Hadley Centre)	Statement has been removed.
65	84798	22	3	12	3	12	It is not completely clear that "long rains" have a specific meaning in this context, as explained in the corresponding chapter text. Please clarify the seasonal period meant, or at least put the term in quotes to signal that it has a definition that can be found in the text. (Michael Mastrandrea, IPCC WGII TSU)	Statement has been removed.
66	85226	22	3	13	3	38	The relative sea level, as measured by coastal tide gauges is not rising.. The most accurate measurements where GPS equipment has been used to control land level, show recent little or no change. (Vincent Gray, Climate Consultant)	Thank you for your comment, this is not consistent with the long-term scientific consensus.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
67	78351	22	3	15	0	0	Presumably "likely" should be italicised? If so, then this is mostly a statement on the likelihood of some major global mitigation or geoengineering action. Can the IPCC make such assessments? Otherwise the conditionality on emissions scenario should be stated. (Dáithí Stone, University of Cape Town)	"Likely" italicized and scenarios added.
68	67455	22	3	15	3	15	Change 'are' to 'is'. (Peter Burt, University of Greenwich)	Changed
69	74383	22	3	15	3	15	It may be helpful to state that the temperature that is being referred to is the mean annual temperature, as there will be significant nuance to changes in other types of temperature statistics (UNITED STATES OF AMERICA)	Added
70	83252	22	3	15	3	15	This statement could benefit from clarification. What is the geographic region (Africa versus the whole world)? Is this a statement being made across all scenarios of climate change? Presumably average warming, globally or regionally, is being referred to? Finally, if "likely" is being used as a calibrated likelihood term, reflecting a probabilistic basis for its assignment, it should be italicized; casual usage of the reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	"Likely" italicized and scenarios added.
71	84799	22	3	15	3	15	Is this "likely" meant as calibrated language? If so, its pairing with medium confidence is odd and needs explanation, as generally likelihood statements are associated with high or very high confidence. If not, please rephrase to avoid confusion. (Michael Mastrandrea, IPCC WGII TSU)	"Likely" italicized and scenarios added.
72	69877	22	3	15	3	19	For clarity, it would be useful if the summary stated what the 2C was relative to. (John Caesar, Met Office Hadley Centre)	Text inserted stating late 20th Century as relative time period
73	84800	22	3	15	3	19	It would be useful to provide further support for this finding in section 22.2.1.2, explaining clearly the basis for the conclusions drawn here. Section 22.2.2.2 focuses on precipitation, and does not seem relevant here. (Michael Mastrandrea, IPCC WGII TSU)	Additional explanation placed in 22.2.1.1. Reference to 22.2.2.2 removed
74	80143	22	3	21	0	0	Perhaps it should be stated that some African countries have attained high levels of growth in recent years, especially those possessing mineral wealth and other resources involved in global exports. Whether such growth will generate benefits that are widespread remains to be seen (A. Peter Castro, Maxwell School, Syracuse University)	This is beyond the scope of this chapter.
75	74384	22	3	21	3	31	These two paragraphs seem to be out of place. The paragraph above and below are talking about the direct physical changes expected, while these are about the effects on people of those physical changes. Consider moving this paragraph to later in the Executive Summary, and adding a bolded sentence as per the other paragraphs in this section (UNITED STATES OF AMERICA)	The ES statements have been changed
76	74385	22	3	21	3	31	While it is important to cast the ongoing cc adaptation strategies in Africa in the context of the MDGs, this section should also include specific case studies where, for instance, cc adaptation initiatives that can be directly linked to specific MDGs. For example, the success achieved by the Millennium Villages Projects ( e.g Sauri, Kisumu-Kenya; Potou, Senegal, etc)- Generose Nziguheba et al., 2010 ( Advances in Agronomy) (UNITED STATES OF AMERICA)	Some examples are mentioned in the underlying section however, due to space constraints we have reduced the material on just MDGs.
77	79642	22	3	21	3	31	We think that the MDGs are very important, and note the importance of tackling climate change for their attainment, however this isn't a key scientific finding so we would suggest removing the second paragraph. This would also help shorten the exec summary. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)	The ES statement has been combined with one on adaptation. This has however been removed from the final version of the chapter, as a result of the internal revisions process.
78	83253	22	3	21	3	31	This text should be condensed with a focus on material relevant to climate change. Structuring the paragraphs with bold key findings followed by non-bold supporting statements would be preferable. On line 24, where a placeholder is provided, a level of confidence should be assigned of course, ideally through indication of a bold key finding for the paragraph. (Katharine Mach, IPCC WGII TSU)	We have tried to address such issues in the final draft.
79	84801	22	3	21	3	31	It is not completely clear that these paragraphs are relevant to the executive summary. If retained, please focus on links with and relevance to climate change, rather than simply information about the MDGs. (Michael Mastrandrea, IPCC WGII TSU)	The ES statement has been combined with one on adaptation
80	70479	22	3	26	3	26	Significant' may imply some statistical significance, would prefer it if you used 'some' instead (Caroline Bain, Met Office)	The ES statement has been combined with one on adaptation
81	74386	22	3	29	3	31	The focus on improved monitoring and evaluation and more/more accurate impact assessments for programs in Africa is well founded and expressed in this sentence. (UNITED STATES OF AMERICA)	Section on research gaps have been added.
82	83254	22	3	33	3	34	This statement would benefit from clarification. What impacts are meant on line 33, and what is meant by "threaten"? Is it possible to indicate any differences in outcomes across scenarios of climate change and time frames? (Katharine Mach, IPCC WGII TSU)	ES statement has been revised

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
83	79643	22	3	33	3	37	Suggest making a statement about whether projections show that events like this are likely to happen more frequently in the future. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)	In revision this key finding has been deleted.
84	69655	22	3	33	3	38	The climate change component of risk should be carefully characterized. For example the risk of floods in coastal cities increases due to other factors such as inadequate or lack of drainage infrastructure, poor urban planning, and poor development control. (NETHERLANDS)	ES statement has been revised
85	69656	22	3	33	3	38	The impacts of climate change in coastal rise is contextual. Therefore generalized statements or extrapolation of impacts in one country to another needs justification (NETHERLANDS)	ES statement has been revised
86	84802	22	3	33	3	38	The clarity of this paragraph could be improved. Are impacts of climate change beyond sea level rise relevant? What is meant by "threaten" more specifically in line 34? In addition, it is not clear how broadly the Kwa Zulu Natal coast example is relevant. Is the author team asserting that this is indicative of what could happen anywhere on the coast of Africa, or in specific areas? Please clarify the appropriate level of generalization. (Michael Mastrandrea, IPCC WGII TSU)	ES statement has been revised
87	70480	22	3	36	3	37	what could happen' is a bit vague and could imply to readers that this will be a normal event. Suggest change to '... in March 2007, is an example of the type of event that would become amplified in the future.' (Caroline Bain, Met Office)	ES statement has been revised
88	61562	22	3	37	3	38	The assertion in the executive summary that the cost of coastal zone sea level impacts "will increase for economic sectors and people living in these zones (medium confidence)" seems a bit weak to us, and at best obvious (?) (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	ES statement has been revised
89	83255	22	3	37	3	38	The relative importance of climate change versus changes in exposure and vulnerability as drivers of this pattern should be specified. On line 38, "medium confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
90	84803	22	3	37	3	38	What evidence is meant here? And is there a basis on which to give a sense of the timeframe of how such impacts will evolve over time? (Michael Mastrandrea, IPCC WGII TSU)	ES statement has been revised
91	64567	22	3	40	3	42	This executive summary statement does not take the presently more crucial role of warming for coral reefs into account, by checking ocean chapters a more balanced statement could be developed. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	ES statement has been revised
92	74387	22	3	40	3	42	It seems odd that all the other bolded sentences have further explanation, but that this one does not. It might be helpful to add a sentence or two of explanation here. (UNITED STATES OF AMERICA)	ES statement has been revised
93	83256	22	3	40	3	42	This finding should be carefully coordinated with chapter 6 and 30. Beyond the changes mentioned, for example, warming is a relevant driver. The magnitude of effects for economic activities should be very carefully specified, avoiding overstatement--it should also be clarified whether the statement regarding economic activities and fisheries pertains primarily or only to coral-reef supported activities. (Katharine Mach, IPCC WGII TSU)	ES statement has been revised
94	84804	22	3	40	3	42	Sea surface warming is also mentioned in the relevant chapter text. (Michael Mastrandrea, IPCC WGII TSU)	ES statement has been revised
95	78352	22	3	44	0	0	This "uncertain" is an unusual context for "high confidence". (Dáithí Stone, University of Cape Town)	The statement has been completely revised and the contradicton addressed.
96	79644	22	3	44	3	44	It seems incorrect to say there is high confidence that something is uncertain. IPCC guidance on uncertainty says high confidence confers something for which there are multiple, consistent independent data lines. Surely the reason for this uncertainty is lack of evidence? We suggest you consider re-framing this. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)	The statement has been completely revised and the contradicton addressed.
97	74388	22	3	44	3	52	Shouldn't agriculture and population be considered as components of water availability? (UNITED STATES OF AMERICA)	These issues are covered in detail in section 22.3.3.
98	83257	22	3	44	3	52	The logic of statements in this paragraph should be very carefully considered. The 1st sentence asserts with high confidence that the impact is uncertain, while later statements much more strongly assert that impacts will be felt primarily through water in the near-term and long-term--these statements could be interpreted as seemingly contradictory. The final statement of the paragraph is somewhat prescriptive. (Katharine Mach, IPCC WGII TSU)	The statement has been completely revised and the contradicton addressed.
99	84805	22	3	44	3	52	Please clarify the logic of this paragraph. If impacts are uncertain as stated in the first bold sentence, it is not clear how the nonbold sentences follow. Or does the first sentence refer to observed impacts while the others are forward looking? Please clarify. In addition, the associated sections make other points that could be considered for presentation here. (Michael Mastrandrea, IPCC WGII TSU)	The statement has been completely revised and the contradicton addressed.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
100	74389	22	3	46	3	47	The claim that 'water is the primary medium through which climate change impacts will be felt' may be too strong, and seems to contradict other sections of the chapter that emphasize the large impacts that temperature increases will have on crops. Perhaps consider 'Water and agriculture are ....' (UNITED STATES OF AMERICA)	The statement has been completely revised.
101	85227	22	3	49	3	42	Some parts of the ocean actually emit carbon dioxide without evident harm to sea creatures. Increased carbon dioxide will moderately increase these regions slightly. It will always be alkaline, not acid. (Vincent Gray, Climate Consultant)	The chapter authors weigh the preponderance of evidence from peer-review literature.
102	77108	22	3	51	0	0	Also through disaster risk reduction. (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	Added.
103	83258	22	4	2	4	2	Casual usage of "likely" should be avoided as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Likely removed.
104	74390	22	4	4	4	7	The authors might reconsider this claim. At the very least it needs a confidence level associated with it. Are references backing up this statement given later in the text? Furthermore, if the livelihood approaches will be insufficient, the preferred alternate options should be stated. (UNITED STATES OF AMERICA)	The statement has a confidence statement assigned to it. Yes, references backing up this statement are given later in the text. See for example page 20, lines 3-12.
105	83259	22	4	5	4	5	Casual usage of "likely" should be avoided as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Likely removed.
106	83260	22	4	13	4	15	The approach taken in this finding is not necessarily the most preferable option. Additionally, given the vagueness implied by "severely" it would be preferable to specify the relevant time frame and scenarios of climate change for impacts that are more specifically defined. Additionally, the chapter team may wish to assign only a level of confidence here, avoiding "likely," if the likelihood assignment is not sufficiently supported by a probabilistic basis in the available information. (Katharine Mach, IPCC WGII TSU)	The bold headline statement has been rewritten.
107	84806	22	4	13	4	15	I would recommend a different approach than repeating an AR4 finding in the executive summary. It would be preferable to present a new finding that communicates the current state of knowledge, with discussion of the relationship with AR4 in the chapter text. There is material in 22.3.4.1 that could be suitable for this purpose. (Michael Mastrandrea, IPCC WGII TSU)	The bold headline statement has been rewritten.
108	69657	22	4	13	4	21	Emerging challenges to food security in Africa include foreign direct investment in agriculture (often referred to as "land/water grabbing") for either the production of biofuel crops, cut flowers, food crops etc. In addition to land grabbing are also the politics of seed, market reforms, migration and urbanization and livelihood diversification that challenge food security. Reassessment needs to be done in addition to the issues of biofuel discussed by the authors. They should also be highlighted in the executive summary, technical summary as well as in the SPM. (NETHERLANDS)	These are very important issues. However, due to space constraints in the Executive Summary we are unable to cover the full breadth of issues.
109	74391	22	4	15	4	17	It might be helpful to clarify if the reduction in growing season length mentioned here is associated with temperature changes or changes in rainfall patterns. As written it is implied, but not stated explicitly, that it is associated with temperature. (UNITED STATES OF AMERICA)	That has been clarified in section 22.3.4. The statement is no longer in the Executive Summary,
110	78317	22	4	15	4	17	The chapter does not provide strong evidence that there is a trend towards shorter growing seasons. In the rest of the chapter, reference to this climatic change (which indeed is very relevant and can have very adverse effects) is made several times without strong evidence that this change is actually observed or expected. There must be literature on this. Perhaps check this source: Kniveton, D R, Layberry, R, Williams, C J R and Peck, Mika (2009) Trends in start of the wet season over Africa. International Journal of Climatology, 29 (9). pp. 1216-1225. (Kees van der Geest, United Nations University)	The authors agree that there is insufficiently strong evidence of growing season length to include the statement in the Executive Summary. It has been removed.
111	83261	22	4	16	4	16	The chapter team should indicate more specifically what is meant by "significantly" and "strong adverse." If it is not possible to indicate more specifically what is meant, the strength of these descriptors used could be reconsidered. Finally, if "very likely" is being used as a likelihood term, reflecting a probabilistic basis for its assignment, it should be italicized; casual usage should be avoided. (Katharine Mach, IPCC WGII TSU)	'Significantly' has been removed, and 'very likely' has been italicized.
112	84807	22	4	17	4	19	This sentence is not presented with high confidence in 22.3.4.3, but that is what is implied here by its association with the bold finding. Please clarify when nonbold sentences are associated with calibrated language that differs from the bold finding of a paragraph. (Michael Mastrandrea, IPCC WGII TSU)	Confidence statements for the nonbolded sentences have been added.
113	84808	22	4	23	4	23	Please clarify what is meant by "wider" here--compared to what? (Michael Mastrandrea, IPCC WGII TSU)	Wider deleted

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
114	83262	22	4	23	4	24	Instead of beginning a sentence with a descriptor of evidence, it would be preferable to provide a summary term for evidence within the parentheses. Additionally, casual usage of "likely" should be avoided. It is also not clear what is meant by "wider." (Katharine Mach, IPCC WGII TSU)	Sentence structure made parallel to other key findings.
115	74392	22	4	23	4	31	While cc impacts on the incidences of highland malaria has been well reported, meningitis is one other diseases which has been well documented to be highly linked to weather/climate patterns and has been spreading from the Sahel to other parts (Ethiopia, northern Uganda, etc) , thus the African Meningitis belt has been expanding ( e.g Agier et al., 2012). Therefore it would be good to mention this (even though the confidence may be low-to-medium). (UNITED STATES OF AMERICA)	Thank you for pointing this out. Meningitis is now included in the paragraph.
116	78353	22	4	23	4	31	This seems at odds with Chapter 11. While there are specific cases of spread of specific vector-borne diseases, there does not appear to be a clear understanding if this amounts to an increase in disease burden. However, there is a clear issue with what a e.g. 5C warming would do to outdoor labour conditions, with associated health impacts. (Dáithí Stone, University of Cape Town)	A sentence was added on the challenge of detection and attribution of trends to climate change.
117	63223	22	4	24	4	25	It is unclear which scenarios will result in more malaria in South Africa. RCP8.5 projects less precipitation in large parts of SA, and currently regions which are malaria free today lack efficient malaria mosquitoes. These mosquitoes would have to migrate or disperse to malaria free regions to increase the potential for malaria transmission. I suggest the language is softened, for example by writing "increased potential for malaria transmission". Also need harmonization with chapter 11. (Torleif Markussen Lunde, University of Bergen)	Sentence rewritten to include this point.
118	83263	22	4	24	4	25	Instead of alluding to the findings of the 4th assessment report, it would be preferable to specify the findings of this assessment more clearly. Additionally, what is the relevant time frame for this statement--is it an observed outcome or a projection? (Katharine Mach, IPCC WGII TSU)	Reference to the AR4 deleted.
119	84809	22	4	24	4	25	Please state the findings of the chapter regarding malaria, rather than referencing the AR4 findings without complete details. (Michael Mastrandrea, IPCC WGII TSU)	Statement revised.
120	84810	22	4	26	4	27	This statement on leishmaniasis is not clearly supported in 22.3.5. Please ensure clear support and traceability in the chapter text. (Michael Mastrandrea, IPCC WGII TSU)	The sentence is a summary of the text on page 25, lines 39-53. sub-Saharan Africa changed to West and East Africa for those unfamiliar with the geography.
121	84811	22	4	27	4	28	The "indirect" mechanism referenced here is not discussed in the associated chapter text, and children but not women are referenced in this context. Please ensure consistency with the chapter text. (Michael Mastrandrea, IPCC WGII TSU)	Deleted.
122	83264	22	4	29	4	53	For these paragraphs, it would be preferable to present in each paragraph only a bold initial key finding followed by supporting non-bold statements. (Katharine Mach, IPCC WGII TSU)	Two paragraphs now cover the key messages.
123	67456	22	4	37	4	37	'ad hoc' should be in italics. (Peter Burt, University of Greenwich)	They will be italicized
124	67457	22	4	45	4	45	Delete comma after 'approaches' (Peter Burt, University of Greenwich)	ok
125	74393	22	4	45	4	46	In the executive summary related to adaptation in Africa - text related to obstacles (and related to section 22.4.6) should be added, and it would be good to add more concrete examples. (UNITED STATES OF AMERICA)	Additional text and some concrete examples of barriers to developing the desired enabling environment for adaptation, as well as on barriers to adaptation in general, has been added to the Executive Summary.
126	70419	22	4	49	0	0	Page 4, Line 49: more research into livelihood diversification alternatives is needed such that the alternatives are also 'climate proof' That is, some alternative livelihoods/economic diversification initiatives adopted by some countries are also vulnerable to climate change. For example nature based tourism is at the top of the list for economic diversification away from the mineral sector in Botswana. Hence nature based tourism has a large stake in Community Based Natural Resources Management. in order to reduce vulnerability and enhance resilience it is important to factor in climate change vulnerability assessment for livelihood alternatives and appropriate adaptation strategies prior to adoption and implementation of the alternatives. (Wame Lucretia Hambira, University of Botswana )	The need for alternative livelihoods to be climate resilient is included in the text - see for example, section 22.4.5.2, as well as relevant comments made in the section dealing with maladaptation (22.4.5.8). While there is insufficient space in the Executive Summary to go into all this level of detail, a sentence capturing the key elements of these risks has been added to the ES.
127	74394	22	4	49	4	50	Why is this confined to local scales and isolated initiatives? governance? Governance issues? Funding generally targeted at particularly vulnerable communities? (UNITED STATES OF AMERICA)	Additional text has been added to provide reasons for the local and isolated nature of many adaptation initiatives.
128	78354	22	4	52	4	53	"Coastal adaptation" seems a very broad concept for such a specific statement. (Dáithí Stone, University of Cape Town)	Coastal adaptation term has been deleted
129	74395	22	4	52	5	2	These two sentences seem out of place. Should they be their own paragraph? (UNITED STATES OF AMERICA)	I agree with this comment and have re-formulated the ES messages to address this.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
130	78315	22	4	52	5	2	Considering this is part of the executive summary, I felt that the examples used for adaptation options here (on coastal zones, health systems and early warning) are a bit a vague and/or do not really touch on the most urgent adaptation needs for the African continent). (Kees van der Geest, United Nations University)	In re-writing the Executive Summary messages on adaptation, in response to the full set of comments and after the next stage in the assessment process, this comment has been addressed by highlighting greater adaptation priorities and common principles for building adaptive capacity.
131	61563	22	5	4	5	5	It is curious to see the executive summary assert with mere "medium agreement" the importance of "soft path" options and flexible/iterative learning approaches for effective adaptation (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Thank you for this useful comment, I have re-considered the evidence in the chapter for this assertion and have concluded that there is sufficient wide-ranging evidence to rate this as 'high confidence'.
132	74396	22	5	6	5	7	Are policies implemented considered "soft" measures as well? (UNITED STATES OF AMERICA)	Policies are not considered soft measures in this context, as they are dealt with separately in a discrete ES statement on buildign the governance system for adaptation.
133	77374	22	5	9	5	9	" I suggest removing 'the' in this ..... '.... the cultural....." (UNITED REPUBLIC OF TANZANIA)	This grammatical suggestion has been adopted.
134	83265	22	5	12	5	12	The phrase "reinforces the need" could be interpreted as prescriptive, and wording here could be considered. (Katharine Mach, IPCC WGII TSU)	The statement has been re-worded.
135	69658	22	5	12	5	14	It is not clear why low-regrets adaptation strategies are the preferred option here. Some of the options like planting trees among crops have been tried for so long in Africa and it never seems to work, except for a few isolated cases promoted by environmental NGOs. Secondly what do we really call low-regret strategies? (NETHERLANDS)	The traceable account has been expanded here to provide additional reinforcement for this assessment. There is significant evidence, at scale, for the contribution of integration of trees into cropping systems to resilience of smallholder farming systems - see section 22.4.5.6 and Box 22.2.
136	74397	22	5	12	5	14	This is a pretty significant statement, and it would be helpful if there were a few sentences of explanation added afterwards, especially examples of how current development strategies are inadequate, which not everyone might agree with. (UNITED STATES OF AMERICA)	This statement has been re-worded, expanded and the traceable account strengthened.
137	84812	22	5	12	5	14	This finding is fairly vague--please consider ways to focus the points being made. (Michael Mastrandrea, IPCC WGII TSU)	This statement has been re-worded, expanded and the traceable account strengthened.
138	74398	22	5	12	5	43	It is important to not only mention interlinkages between adaptation and development but also funding and institutional reform. The need for mechanisms to absorb and manage large amounts of funding is mentioned in line 35, but this not sufficient. Institutional reform should also be mentioned. Adaptation is hindered by lack of incentives for policy makers to act early. See the 2013 Chatham House report by Rob Bailey "Managing Famine Risk: Linking Early Warning to Early Action." Furthermore the statement starting in line 41 "the potential for ineffective and mismanged climate funds are- among other reasons - rooted in the level of complexity and uncertainly and novelty that surrounds many climate issues" is false. Corruption of climate funding is well know and rooted in basic governance failures not only in the complexity of climate change (see Transparency International's 2011 "Global Corruption Report: Climate Change", U4's Report "Standing, Andri©. 2012. Corruption and REDD+. Berlin: U4, Anti-Corruption Resource Centre", UNEP's March 2013 Global Environment Alert Bulletin <a href="http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=97">http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=97</a> ) (UNITED STATES OF AMERICA)	Additional ES statements on the need for institutional strengthening, based on existing text in section 22.4, have been added. Section on climate finance revised. Issue of mismanagement of funds has been formulated in a way that avoids giving the impression that mismanagement of climate funds is a particular problem compared with developing finance in general.
139	61564	22	5	16	5	24	On the limits to adaptation, the executive summary flags a "need for new development trajectories that place climate resilience, ecosystem stability, equity and justice at the centre of development efforts". Assuming this is feasible, it is unclear (at first view) how that would solve the problem identified which is "limits to adaptation", including maladaptation. Therefore, the placement and wording of this call might need reconsideration, to avoid confusing policymakers or the general public. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	The ES statements have been re-worded to address this useful comment, and to clarify the implications of the growing evidence on limits to adaptation.
140	78357	22	5	16	5	24	Despite the limited evidence, this strikes me as an extremely important point that should either be near the beginning of the ES or the very last concluding point, rather than lost where it currently is. (Dáithí Stone, University of Cape Town)	Agree, this statement has been placed at the end of the ES text.
141	83266	22	5	17	5	17	The key finding asserts potential limits to adaptation, but limits are not really specified with precision within the paragraph. (Katharine Mach, IPCC WGII TSU)	Limits have been specified with greater precision.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
142	83267	22	5	23	5	23	Instead of asserting a "need" it would be preferable to specify the benefits of such trajectories, to avoid a potentially prescriptive formulation. (Katharine Mach, IPCC WGII TSU)	This statement has been re-worded accordingly.
143	77375	22	5	26	5	25	" I propose to replace 'climate variability' with 'changed climate variability'" (UNITED REPUBLIC OF TANZANIA)	Sentence removed
144	83268	22	5	26	5	26	This finding relates to literature that is strongly in flux. Thus, the chapter team is strongly encouraged to coordinate this finding carefully with chapter 12 and also 19 to ensure harmonized treatment in this report. Additionally, it should be clarified what is meant by "increasingly threatened," as well as whether any role of climate change is being asserted here and, if not, which drivers support the assertion of "increasingly." (Katharine Mach, IPCC WGII TSU)	ES has been rephrased and formulated more cautiously
145	74399	22	5	26	5	27	This sentence implies that human security is threatened by climate variability, but not change. Is this the intended message? (UNITED STATES OF AMERICA)	No, this was not intended. Thank you. The revised ES now refers to climate change and climate variability
146	60380	22	5	26	5	33	As per my previous overarching comment, this finding makes me very hesitant. The link between conflict and climate change is still very lacking in evidence - I think we risk overselling certain arguments too early if it is included. (Emma Archer van Garderen, CSIR)	ES rephrased to emphasise more clearly the problem of causality
147	69659	22	5	26	5	33	The climate change component and its impact on human security of people in Africa should be carefully characterized. For example, page 27, Line 48-51 indicates that African civil wars can be explained by generic structural and contextual conditions: prevalent ethno-political exclusion, poor national economies, and the collapse of the Cold War System. (NETHERLANDS)	Statement rephrased.
148	83270	22	5	26	5	33	It would be preferable in this paragraph to structure it with a key finding in bold followed by non-bold supporting text. (Katharine Mach, IPCC WGII TSU)	Done
149	84813	22	5	26	5	33	Please consider and coordinate with the findings of Chapters 12 and 19 on these topics, as the findings here are not consistent with the assessment of those chapters. In addition, lines 30-33 are not supported by section 22.3.6. Please provide line of sight for this material. (Michael Mastrandrea, IPCC WGII TSU)	The text was in line with ES statement Chapter 12 SOD. However, statement has been rephrased to reflect better the problem of causality. lines 30-33 have been removed.
150	83269	22	5	28	5	30	These statements do not seem fully consistent with related findings in chapters 12 and 19, and coordination should be ensured. (Katharine Mach, IPCC WGII TSU)	Statement rephrased
151	79646	22	5	29	0	30	But section 22.3.6 says 'the evidence base in the field of migration in Africa is patch and Varied' we suggest these two statements contradict each other and messaging of one or both should be reconsidered. (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)	Yes, message has been rephrased to align with main text.
152	83271	22	5	30	5	31	It is not clear what is meant by "will be decisive," and the degree to which adaptation can reduce risks--and how--ideally should be specified more precisely. (Katharine Mach, IPCC WGII TSU)	Sentence removed
153	78355	22	5	31	5	32	Based on some scenario... (Dáithí Stone, University of Cape Town)	phrase removed
154	79645	22	5	31	5	33	I can't see the reference to this study within the section quoted (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND)	Sentence removed
155	83272	22	5	31	5	33	The logic of support within this statement could be clarified--what, beyond climate projections, informs this determination of risk levels? (Katharine Mach, IPCC WGII TSU)	Sentence removed
156	78356	22	5	33	0	0	Do we have guidance as to what "medium" or "very high" risk is? (Dáithí Stone, University of Cape Town)	Sentence removed
157	61565	22	5	35	5	43	On the last point in the executive summary, related to governance, the reference to the need for "strong institutional capacity to manage climate funds" should not be excluded from the sentence immediately following, which explains the potential for ineffective/mismanaged climate finance funds in merely conceptual terms: namely the "complexity, uncertainty, and novelty" of climate issues. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Sentence changed
158	74400	22	5	35	5	43	It is surprising that the problem of relevant capacity development is being highlighted here as an inability or lack of capacity in African institutions to absorb and manage large funds allocated/received for CC adaptation and mitigation, without emphasizing/mentioning the dire need to strengthen capacity development in local institutions that can produce robust and actionable cc information that can be effectively used for cc assessments and adaptation strategies in the key sectors. (UNITED STATES OF AMERICA)	Statement revised. Issue of capacity development has been addressed within the available limits

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
159	80144	22	5	35	5	43	A connection ought to be made between the need for increasing institutional capacity and the importance of reaching marginalized populations; i.e., attention still needs to be paid to issues of local participation, including means of institutionalizing it (A. Peter Castro, Maxwell School, Syracuse University)	This is a valid point. Statement revised. Due to lack of space we cannot go more into detail in the finance section. The Issue of participation has however been included throughout the chapter, e.g. with regard to participatory adaptation processes, increasing participation of women, youth and poor and vulnerable people in adaptation policy and implementation.
160	78316	22	5	38	5	40	Potentially confusing use of the word 'while' in this sentence (Kees van der Geest, United Nations University)	okay, revised.
161	77376	22	5	39	5	40	" I propose to replace 'climate variability' with 'climate variability and climate change'" (UNITED REPUBLIC OF TANZANIA)	Key finding has been revised
162	70420	22	5	41	0	0	priority should not only be on institutional capacity to manage climate finance funds but also on how to source the funds given that the procedures are often not easy. (Wame Lucretia Hambira, University of Botswana )	The final draft points out that challenges associated with directing funds to the people most vulnerable exist. It would, however, go beyond the scope and task of this chapter to go into the details of procedural issues with regard to climate finance.
163	70431	22	5	41	0	0	priority should not only be on institutional capacity to manage climate finance funds but also on how to source the funds given that the procedures are often not easy. (Wame Lucretia Hambira, University of Botswana )	It has been addressed in section 22.6.4
164	83273	22	5	46	0	0	Section 22.1. The chapter team should continue to tighten this introductory section. (Katharine Mach, IPCC WGII TSU)	We have tried to do this in the final draft.
165	80470	22	5	50	5	52	Before describing briefly the socio-economic and political context of Africa, the ecological context (The ecological regions) should be mentioned here. This is relevant as the report talks about climate change in Africa. The fact of mentioning these ecological regions will help highlighting the strong relationship between Africa and CC and emphasize the specificities of each regions (Aliou Diouf, ENDA Energie-Environnement-Développement)	Due to limited space we could not expand the discussion on ecological regions.
166	77377	22	6	8	6	8	"for consistency may I propose the re-writing of 'NEPAD (New Partnership fo Africa' to 'New Partnership for Africa (NEPAD)'" (UNITED REPUBLIC OF TANZANIA)	Done
167	69660	22	6	16	6	19	Second sentence in Footnote 1, please note that Costa Rica is not in Africa! (NETHERLANDS)	Yes, indeed. But it can also freeze diplomatic relations with an African state (Sahrawi Arab Democratic Republic). To avoid confusion, Costa Rica has however been removed.
168	77378	22	6	17	6	18	"Costa Rica is not an African state' ..... (UNITED REPUBLIC OF TANZANIA)	Yes, indeed. But it can also freeze diplomatic relations with an African state (Sahrawi Arab Democratic Republic). To avoid confusion, Costa Rica has however been removed.
169	78358	22	6	17	6	18	Is sounds here as though Costa Rica is in Africa. (Dáithí Stone, University of Cape Town)	To avoid confusion, Costa Rica has however been removed.
170	74401	22	6	18	6	18	Costa Rica is listed here. Should it be? It is not African country (UNITED STATES OF AMERICA)	To avoid confusion, Costa Rica has however been removed.
171	83274	22	6	24	0	0	Section 22.1.2.1. In the title for this section, the reference to chapter 9 is ambiguous and should be clarified. Additionally, the language in this section should be further edited for clarity. (Katharine Mach, IPCC WGII TSU)	reference clarified
172	78359	22	6	28	6	29	There is something wrong with verb tense here, but I cannot correct because I am not clear whether the statement is about the situation before the report, as described in the report, or since the report. (Dáithí Stone, University of Cape Town)	revised section
173	67458	22	6	31	6	31	Insert space after 'decision'. (Peter Burt, University of Greenwich)	ok
174	77379	22	6	33	6	33	" I propose the use of 'was' rather than 'is' ....'focus is on.....'" (UNITED REPUBLIC OF TANZANIA)	ok
175	83275	22	6	36	6	36	The logic of this assertion is weak, and it would be preferable to reference actual findings. (Katharine Mach, IPCC WGII TSU)	The paragraph has been deleted.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
176	74402	22	6	39	6	40	Does this sentence then imply that Africa's vulnerability is NOT owing to elevated exposure or sensitivity (i.e., it is simply owing to adaptive capacity). I thought I read in other sections that Africa is also particularly sensitive to climate change given its high dependence on agriculture. (UNITED STATES OF AMERICA)	The paragraph has been deleted.
177	69661	22	6	47	6	49	Sentence ".....case study illustrate that African communities have prior experience with climate variability, although this knowledge will be sufficient to face climate change impacts". Do you mean to say "will not"? We think the experimental knowledge will not be sufficient! (NETHERLANDS)	The paragraph has been deleted.
178	70481	22	6	48	3	48	Should it be 'insufficient' rather than 'sufficient'? The narrative doesn't make sense otherwise (Caroline Bain, Met Office)	The paragraph has been deleted.
179	74403	22	6	48	6	48	Should the phrase "will be sufficient" actually read "may not be sufficient" (UNITED STATES OF AMERICA)	The paragraph has been deleted.
180	77380	22	6	48	6	48	"replace the word 'sufficient' with 'insufficient'" (UNITED REPUBLIC OF TANZANIA)	The paragraph has been deleted.
181	70421	22	6	50	0	0	these studies have led to a steady growth in literature in this field for the African continent. With regards to tourism and climate change in Botswana see: Saarinen, J., Hambira, W.L, Athopheng, J. and H. Manwa (2013). Tourism and Climate Change in Southern Africa: Perceived impacts and adaptation strategies of the tourism industry to changing climate and environment in Botswana. In Reddy, V. and K. Wilkes (Eds) Tourism, Climate Change and Sustainability. Routledge, London ISBN: 978-1-84971-422-8 Saarinen, J., Hambira, W., Athopheng, J., and Manwa, H. (2012) Tourism Industry reaction to climate change in Kgalagadi South District, Botswana. Development Southern Africa Vol. 29 No. 2, pp. 273–285 Hambira, Wame L. (2011). Screening for Climate change vulnerability in Botswana's tourism sector in the bid to explore suitable adaptation measures and policy implications: A case study of the Okavango Delta. International Journal of Tourism Policy. Vol. 4, No. 1, pp. 51-65. (Wame Lucretia Hambira, University of Botswana )	These references have been considered and some of them have been included in relevant places in the adaptation section.
182	78360	22	7	4	0	0	I think you mean this more generally, i.e. "the high vulnerability of the African continent to climate change". (Dáithí Stone, University of Cape Town)	Sentence has been revised.
183	74404	22	7	4	7	4	It should be noted that it is not just our confidence level in the predicted physical changes, but also their potential magnitude. We may be uncertain of what changes may occur, but if they have the potential to be large changes, they are likely important as well. (UNITED STATES OF AMERICA)	Yes we agree, this is a key finding emerging from the WGII assessment. We have also tried to clarify it.
184	83276	22	7	6	7	6	It could be helpful to also indicate understanding of projections. (Katharine Mach, IPCC WGII TSU)	projection information has been added in the revised paragraph.
185	69878	22	7	6	7	7	It could be useful to state the reason that confidence is low e.g. inadequate observations, or quality of observations. (John Caesar, Met Office Hadley Centre)	Since this statement is a conclusion from the assessment done in SREX we do not provide any statement about the underlying literature.
186	67459	22	7	8	7	8	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	These edits will be taken care by the copy editor
187	83277	22	7	12	0	0	Section 22.2. The chapter team should continue to shorten this section as much as possible. (Katharine Mach, IPCC WGII TSU)	yes
188	74405	22	7	12	9	32	The choice of 1906-1925 as a starting baseline period for the observed climate change plots shown in Figure 22-1 is not scientifically credible. An examination of the station databases (such as the GHCN) or the station influence files from the CRU can be used to verify that the 1906-1925 station density is very low in most of Africa. A 1950-1969 baseline, consistent with the time series show in Figure 22-2 would be preferable. I would hazard that the 1901-1925 temporal variations for the regions shown in 22-2 do not vary very much, due to the lack of actual information. Figures 22-1 and 22-2 should use the same time periods, and 1950-2006 is much more credible based on the true information available. (UNITED STATES OF AMERICA)	The regional climate figure has been revised at the WGII level to ensure consistency across volume and with WGI assessment. Analysis uses model data and methods building from WGI AR5 Figure SPM.8. See also Annex I of WGI AR5.
189	74406	22	7	12	9	43	Where is figure 1 referenced and discussed? (UNITED STATES OF AMERICA)	The figure has been integrated to the chapter text.
190	80428	22	7	12	10	19	Sections 22.2.1 and 22.2.2: Please update to ensure consistency and cross-referencing with relevant WGI AR5 chapters and Annex I: Atlas of global and regional climate projections. Currently, not a single reference to the WGI AR5 contribution is included. (Gian-Kasper Plattner, IPCC WGI TSU)	cross reference to WGI chapters have been added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
191	61568	22	7	12	10	44	There is some new literature missing which has been published 2011 to 2013 (submitted in time and up-loaded to the TSU system), which is related to the simulation of today's seasonal rainfall characteristics (Haensler, A., Hagemann, S., & Jacob, D. (2011). Dynamical downscaling of ERA40 reanalysis data over southern Africa: added value in the simulation of the seasonal rainfall characteristics. International Journal of Climatology, 31(15), 2338-2349), a new precipitation climatology (Grigory Nikulin, Colin Jones, Filippo Giorgi, Ghassem Asrar, Matthias Büchner, Ruth Cerezo-Mota, Ole Bøssing Christensen, Michel Déqué, Jesus Fernandez, Andreas Hänsler, Erik van Meijgaard, Patrick Samuelsson, Mouhamadou Bamba Sylla, Laxmi Sushama, Precipitation Climatology in an Ensemble of CORDEX-Africa Regional Climate Simulations, Journal of Climate, 2012, 25, 18, 6057), and regional climate change in the Congo basin with associated impacts on forestry and water management (grey lit: CSC (2013): Climate Change Scenarios for the Congo Basin. [Haensler A., Jacob D., Kabat P., Ludwig F. (eds.)]. Climate Service Centre Report No. 11, Hamburg, Germany, ISSN: 2192-4058. and Saeed F., Haensler A., Hagemann S. & Jacob D. (submitted Jan 2013): Representation of extreme precipitation events leading to opposite climate change signals over the Congo basin. Submitted to Atmosphere (in revision)) and for central Africa (Haensler A., Saeed F., & Jacob D. (submitted Jan 2013): Assessing the robustness of projected precipitation changes over central Africa on the basis of a multitude of global and regional climate projections. Submitted to Climatic Change (in revision) and Southern Africa (Haensler, A., Hagemann, S., & Jacob, D. (2011). The role of the simulation setup in a long-term high-resolution climate change projection for the southern African region. Theoretical and applied climatology, 106(1-2), 153-169. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Haensler, A., F. Saeed, and D. Jacob, 2013: Assessing the robustness of projected precipitation changes over central Africa on the basis of a multitude of global and regional climate projections. Climatic Change, 1-15. has been added to the assessment.
192	83278	22	7	14	0	0	Section 22.2.1. The chapter team should ensure consideration of the relevant sections and key findings of the working group 1 contribution to the 5th assessment report, with cross-references provided. Especially relevant may be the key findings of chapter 14 and the content of the working group 1 Atlas. (Katharine Mach, IPCC WGII TSU)	cross reference to WGI chapters have been added.
193	80466	22	7	16	7	40	Evidences of observed trends are very well analysed. But, any evidence is provided about the anthropogenic signal of these trends in Western, Eastern and Southern Africa even if the reference is quoted (Min and Hense, 2007). It is very important to explain how these observed trends in Africa are related to anthropogenic process. (Aliou Diouf, ENDA Energie-Environnement-Développement)	The discussion on anthropogenic climate change is given in section 22.3 in page 12, also see figure 22-3.
194	85228	22	7	16	7	40	You have failed to notice that there has been no change for fifteen years. Also 0.5°C is a negligible amount, well below the level of statistical significance for the low quality information used. There is, effectively no significant temperature change in Africa for the past 100 years and all the "impacts: and vulnerability" you ascribe to it are highly dubious. (Vincent Gray, Climate Consultant)	Please check WGI report for the discussion on changes observed in the last 15 years.
195	74407	22	7	18	7	18	Again, it should be clarified here, and elsewhere, that mean annual temperature is what is being discussed. (UNITED STATES OF AMERICA)	Done
196	74408	22	7	18	7	40	More could be made of studies that attribute likelihood of temperature rise being due to human activity compared to natural variability, if those studies are credible. (UNITED STATES OF AMERICA)	Acknowledged - statement and references added
197	77382	22	7	19	7	19	"near-surface temperature is it the same as surface temperature?" (UNITED REPUBLIC OF TANZANIA)	Near surface is usually two meter temperature - it is not surface temperature.
198	83279	22	7	21	7	21	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. If the term has been assigned reflecting a probabilistic basis in the available information, the likelihood term should be italicized. Additionally, within this statement, are the variations in El Niño considered part of natural variability? This could be clarified. (Katharine Mach, IPCC WGII TSU)	Sentence is removed
199	61911	22	7	21	7	22	El Niño itself is also natural variability, so this sentence doesn't really make sense. (David Rowell, Met Office Hadley Centre)	Sentence is removed
200	74409	22	7	21	7	22	What is the source of the statement on lines 21-22 re West Africa and El Niño? This needs a citation. (UNITED STATES OF AMERICA)	Sentence is removed
201	77383	22	7	21	7	22	"from this wording it seems as if El Niño southern oscillation is not a natural variability; please clarify" (UNITED REPUBLIC OF TANZANIA)	Sentence is removed
202	84814	22	7	21	7	22	ENSO is a form of natural variability, so please clarify the distinction being made here. (Michael Mastrandrea, IPCC WGII TSU)	Sentence is removed
203	56843	22	7	24	7	25	Which periods are compared here when stating that the frequencies of droughts in the Sahel have increased? (Tor A. Benjaminsen, Norwegian University of Life Sciences)	The paper referenced states 1901-2002.
204	70482	22	7	24	7	25	Remove reference to number of droughts - this should be in the precipitation section not the temperature section (Caroline Bain, Met Office)	This is done and moved to the precipitation section

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
205	74410	22	7	24	7	25	The line about the increase in droughts in the Sahel (24-25) also seems problematic - even a hostage to fortune - unless more can be said that these may be made worse by human induced climate change rather than being part of not-well-understood natural cycles. (UNITED STATES OF AMERICA)	This is a conclusion reached in the paper cited which highlights the attribution work that needs to be done.
206	74411	22	7	24	7	25	This section need more discussion of the varying opinions on the Sahel (e.g. Giannini vs Folland/Hoerling vs Cook). (UNITED STATES OF AMERICA)	This has been introduced
207	78361	22	7	24	7	25	The Sahel drought fits oddly in a section about observed trends in temperature. It should be in 22.2.3, along with the drought discussion there. (Dáithí Stone, University of Cape Town)	This is done and moved to the precipitation section
208	83280	22	7	28	7	30	It would be preferable to specify the general time frame of this change. (Katharine Mach, IPCC WGII TSU)	Time frame inserted
209	77384	22	7	31	7	31	"reconcile with page 7 line 19" (UNITED REPUBLIC OF TANZANIA)	Done
210	78362	22	7	37	7	38	"which has decreased the diurnal temperature range" is redundant. (Dáithí Stone, University of Cape Town)	Removed
211	74412	22	7	37	7	39	The last bit of this sentence does not seem to make sense. Please try to clarify what is being stated here. (UNITED STATES OF AMERICA)	Sentence changed
212	77385	22	7	37	7	39	"I propose the sentence to be re-written and it does not end nicely. It two sentence could be written it will convey a good story. " (UNITED REPUBLIC OF TANZANIA)	Sentence changed
213	78363	22	7	39	0	0	Have they been observed? (Dáithí Stone, University of Cape Town)	Kruger and Sekele (2012) look at extremes of temperature so the text has been removed. It is already mentioned in the extremes section.
214	61566	22	7	43	8	16	The text and the Exec Summary highlight that temperature rise by 2100 over Africa will exceed a 2 degree threshold. Conventionally the 2 degree threshold refers to global average, so is there a defined threshold whereby local changes of 2 degrees are defined as "dangerous"? This could cause confusion between discussions of a 2 degree world, and 2 degrees of regional/local change. The text in the section 22.2.1.2 more accurately states that projections indicate temperatures over Africa will rise faster than global mean temperatures. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Text changed to address this
215	85229	22	7	43	8	16	These are all incompatible with the absence of warming for the past 15 years (Vincent Gray, Climate Consultant)	Thank you for bring this to our attention, however, this view is incompatible with the body of scientific evidence reviewed over the past 20 years.
216	74413	22	7	45	8	16	It might be helpful to explain what is driving these warming trends, and whether they are expected to be uniform over Africa. (UNITED STATES OF AMERICA)	Acknowledged - some region-specific text added
217	67460	22	7	48	7	48	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Corrected
218	61912	22	7	49	7	50	The phrase about drier/wetter climates would be better placed in section 22.2.2.2. (David Rowell, Met Office Hadley Centre)	The text has been placed in section 22.2.2.2
219	74414	22	7	49	7	50	Section 22.2.1.2. on projected temperature trends seems a bit muddled as it includes wetter/drier climate projections (lines 49-50) - put those in the next section on precipitation. (UNITED STATES OF AMERICA)	The text has been placed in section 22.2.2.2
220	74415	22	7	49	7	51	This sentence seems out of place given that it is talking about "drier" which implies rainfall and not just temperature, but is in a section focused almost solely on temperature. (UNITED STATES OF AMERICA)	The text has been placed in section 22.2.2.2
221	83281	22	8	1	8	4	The relevant scenario of climate change should be specified for these statements. (Katharine Mach, IPCC WGII TSU)	Senarios inserted
222	67461	22	8	3	8	3	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Acknowledged
223	83282	22	8	6	8	6	In place of "global warming," it may be clearest to say "global mean temperature increase," assuming this is what is meant. (Katharine Mach, IPCC WGII TSU)	Acknowledged
224	70483	22	8	11	8	11	remove 'thus' or change to 'also' as increases in temperature do not necessarily imply drought (Caroline Bain, Met Office)	Acknowledged

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
225	74416	22	8	13	8	16	While it may be tempting to give the economic perspective of climate change over different parts of Africa, it may also be difficult to provide values and show trends over specific political regions/economic blocks. This is because of the differential responses to climate change over many parts of Africa given the large variability of climate within short distances- a function of physical features, seasonality, and responses/sensitivity to global teleconnections such as ENSO, DMI, NAO, etc. The authors should more clearly address this aspect of the issue in this chapter. (UNITED STATES OF AMERICA)	We agree, but there is no agreement on ecological regions in Africa in the underlying literature and economic regions are relevant from the climate policy perspective.
226	83283	22	8	15	8	16	The specific temperature increase meant could be specified further--2°C annual average warming across Africa? (Katharine Mach, IPCC WGII TSU)	deleted
227	61913	22	8	22	8	24	Measuring the standard deviation of 20yr means using overlapping periods starting in consecutive years 1906-1925 or 1986-2005 is equivalent to calculating the standard deviation from only two (nearly) independent data points. Consequently this will give a very poor, almost meaningless, measure of the standard deviation of 20yr means. Better would be to use the 5 independent 20yr means available in the whole of the 20th century, or use data from long model control runs. (David Rowell, Met Office Hadley Centre)	The regional climate figure has been revised at the WGII level to ensure consistency across volume and with WGI assessment. Analysis uses model data and methods building from WGI AR5 Figure SPM.8. See also Annex I of WGI AR5.
228	61914	22	8	22	8	28	I found the description of the colours and symbols for the CMIP5 panels confusing. I suggest (a) phrasing all percentages of models as ">" (ie. line 23 change "<66% of models exhibit a change greater than" to ">66% of models exhibit a change less than", and line 25 change "<66% of models agree" to ">66% of models disagree"; and (b) have a separate sentence that states "Colours indicate the ensemble mean change." (since I assume that colours without circles also indicate the ensemble mean change, which is currently not stated). (David Rowell, Met Office Hadley Centre)	The regional climate figure has been revised at the WGII level to ensure consistency across volume and with WGI assessment. Analysis uses model data and methods building from WGI AR5 Figure SPM.8. See also Annex I of WGI AR5.
229	67462	22	8	32	8	32	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Acknowledged
230	61917	22	8	46	8	46	It sounds like "land" and "exclusive economic zone territories" are different regions, but I guess the latter are land in which case the mention of land for temperature becomes redundant (and in fact confusing). (David Rowell, Met Office Hadley Centre)	Corrected
231	83284	22	8	49	0	0	Section 22.2.2. The chapter team should ensure consideration of the relevant sections and key findings of the working group 1 contribution to the 5th assessment report, with cross-references provided. Especially relevant may be the key findings of chapter 14 and the content of the working group 1 Atlas. (Katharine Mach, IPCC WGII TSU)	Acknowledged
232	77469	22	8	51	9	32	Suggested addition: The findings by Nyeko-Ogiramo et al. (2013) indicated that rainfall extremes in the Lake Victoria basin in Eastern Africa are, generally, experiencing positive linear trends. Albeit positive trend was generally demonstrated, the presence of significant linear trend was manifested in the extremes of the data obtained from the stations located in the northern and eastern parts of the Lake Victoria basin. This may suggest that the monotony in the positive trend is a result of an ever increasing and consistent external enhancement of the natural climate agitation. Ref: • Nyeko-Ogiramo, P., Willems, P., Ngirane-Katashaya, G. (2013), 'Trend and variability in observed hydrometeorological extremes in the Lake Victoria basin', Journal of Hydrology, 489, 56-73 (Patrick Willems, KU Leuven)	Information added
233	77470	22	8	51	9	32	Suggested addition: Taye et al. (2013) examined the long-term historical changes in frequency and amplitude of hydroclimatic extremes in the Blue Nile basin using data from the second half of 20th century. No clear trends were detected, but strong decadal variations linked to the Pacific Ocean sea surface temperature variations. Refs: • Taye, M.T., Willems, P. (2012). 'Temporal variability of hydro-climatic extremes in the Blue Nile basin', Water Resources Research, 48, W03513, 13p. (Patrick Willems, KU Leuven)	Information added
234	67463	22	8	53	8	53	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Acknowledged
235	74417	22	8	53	8	54	This needs a reference. (UNITED STATES OF AMERICA)	Reference added
236	67464	22	8	54	8	54	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Acknowledged
237	80467	22	8	54	9	2	The period covered by the data analysed by Mohamed should be specified, so that one can now if this confident. Because, since 1990, it seems that the most strong evidence one can note is an increase of the variability of rainfall. (Aliou Diouf, ENDA Energie-Environnement-Développement)	Sentence removed - referenced paper does not show this
238	56844	22	9	1	9	1	Decrease in rainfall compared to which period? Which periods are being compared here? (Tor A. Benjaminsen, Norwegian University of Life Sciences)	Sentence removed - referenced paper does not show this

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
239	70484	22	9	1	9	2	When is this decrease measured from? The earlier decades of the 20th century? Recent years have seen an increase in rainfall so it is important to be clear about the baseline you use for this statement. (Caroline Bain, Met Office)	Sentence removed - referenced paper does not show this
240	74418	22	9	1	9	2	A decrease is a relative term, and therefore the timeframe needs to be identified over which this decrease occurred. (UNITED STATES OF AMERICA)	Sentence removed - referenced paper does not show this
241	70805	22	9	1	9	5	For which time periods are the trends described by the Mohamed and Chineke papers? This is important because otherwise it is unclear whether they are more likely to be due to climate change or decadal variability. (Robin Chadwick, UK Met Office)	Both sentences removed - referenced papers do not conclusively show this
242	70485	22	9	2	9	2	I couldn't find the citation for the Mohamed, (2011) in the references. This is an important statement and I can't comment on its validity without seeing the reference (Caroline Bain, Met Office)	Sentence removed - referenced paper does not show this
243	70486	22	9	2	9	5	I strongly think the reference to the Chineke 2010 study should be removed along with any suggestion that the rainy season break is depreciating. The study does not investigate changes in rainfall and there is no evidence in it for a reduction in breaks in the rainy season despite their discussion saying there was. There is no evidence of trends, no evidence that there was ever a situation where no rain was recorded regularly in August (the no-breaks are evident in their data since the 1980s). Also, it is only 4 stations, all quite close to each other so it can't be said to represent the Gulf of Guinea. Data was only available from the 1980s and very stringent criteria were used to assess breaks in the rainy season meaning that it is very easy for a reduction in rainfall (but still some present) to be disregarded as an official 'break'. (Caroline Bain, Met Office)	Acknowledged and done
244	61918	22	9	4	22	5	Is a 2-3 day break really distinguishable at all from the normal short breaks that occur during the wet season? If not, and if this result has been observed to be sustained over many seasons, then it would be more accurate to state that the "temporary rainfall cessation" has disappeared altogether. (David Rowell, Met Office Hadley Centre)	Sentence removed - referenced paper does not show this
245	78237	22	9	5	0	0	Also, over the past forty years, recorded volumes of torrential rains increased 20 percent across various southern states, some of which already see up to 160 inches of rainfall a year, with wet seasons lasting eight to ten months (Aaron, 2011) [Aaron Sayne, Climate change Adaptation and Conflict in Nigeria. Special Report 274 of The United States Institute of Peace, 2011] (Elochukwu Ezenekwe, Nnamdi Azikiwe University )	Thank you for this information, the message in the comment is conveyed in the text.
246	67465	22	9	8	9	8	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Acknowledged
247	67466	22	9	15	9	15	Quantify 'substantially'. (Peter Burt, University of Greenwich)	Word deleted, reference is available
248	61919	22	9	18	9	20	No, the observed decline is not "contrary" to the AR4 findings. The former refers to the past, the latter refers to the future. I suggest instead referring to this as a surprising result, but also a result that can be explained in a number of ways that can be uncovered by further research (eg. errors or natural variability in models or observation, or an evolution of the combination of forcings that leads to change in trend direction). (David Rowell, Met Office Hadley Centre)	Sentence removed
249	70806	22	9	18	9	20	Do you mean that the IPCC AR4 future projections for East Africa are contrary to the observed trend? If so this should be clarified, as the current sentence could be interpreted as meaning that AR4 stated an increase in East African Precipitation over the historical period. (Robin Chadwick, UK Met Office)	Sentence removed
250	78364	22	9	18	9	20	Were these observed or projected changes? It sounds like observed, but the explanation following this only works if they were projected changes. (Dáithí Stone, University of Cape Town)	Sentence removed
251	67467	22	9	19	9	19	Delete 'Fourth...Change' and the brackets: the AR4 is already defined. (Peter Burt, University of Greenwich)	Sentence removed
252	74419	22	9	20	9	23	This sentence brings up a great point, that current trends do not always match model predictions. It would be helpful if the authors were able to attribute this mismatch to certain processes, or indicate whether this implies anything about the accuracy of the model predictions. A mismatch between current and future trends does not imply that one must be incorrect, but without an explanation, many people may assume that it does. (UNITED STATES OF AMERICA)	Acknowledged
253	67468	22	9	25	9	25	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Acknowledged
254	74420	22	9	25	9	25	Late summer precipitation is mentioned. But what is late summer? This should be interpreted differently by readers in different regions (e.g. South Africa vs. Europe) (UNITED STATES OF AMERICA)	austral added
255	67469	22	9	28	9	28	The sense of this is not clear. Do you mean 'in' rather than 'along'? (Peter Burt, University of Greenwich)	changed to 'in'



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
256	70487	22	9	28	9	28	Is this a 'downward trend' in aridity or rainfall? Please clarify (Caroline Bain, Met Office)	clarified to be rainfall
257	57864	22	9	35	0	0	In the Tana River in Kenya, the long rains season is projected to have almost the same peak precipitation amount in April with an earlier onset, while the short rains season is projected to have significant precipitation increases (Nakaegawa et al. 2012). This result may be suitable for this subsection: T. Nakaegawa, C. Wachana, and KAKUSHIN Team-3 Modeling Group. First impact assessment of hydrological cycle in the Tana River basin, Kenya, under a changing climate in the late 21st Century. Hydrological Research Letters., Vol. 6, pp.29-34, (2012) . (Toshiyuki Nakaegawa, Meteorological Research Institute)	Thank you for the reference, it has been incorporated into the text.
258	78365	22	9	35	0	0	One thing that is not pointed out here is that in fact all of these precipitation projections imply a drier surface. A 5C warming involves an increase in the evaporation potential of 30-35%, and in Figure 22.1 we essentially do not see any corresponding 30-35% increase in precipitation. (Dáithí Stone, University of Cape Town)	Thank you for this comment, this is perhaps better directed to the appropriate chapter in WG1 (Ch 14).
259	74421	22	9	37	9	37	This paragraph makes this seem much more certain than it likely is. The models diverge significantly around what will occur in the Sahel with regard to rainfall, with about half the models predicting increased and half predicting decreases. (UNITED STATES OF AMERICA)	The uncertainty in the projections has been noted
260	80471	22	9	37	9	42	It should be good to read papers published by Mouhammad Bamba Sylla on the West African Region. It on projections of climate by 2030 and 2050; (Aliou Diouf, ENDA Energie-Environnement-Développement)	Thank you, a reference has been added.
261	56845	22	9	37	9	44	For the Sahel, there are also models predicting an increase in rainfall that should also be mentioned. See eg Haarsma, R. J., F. M. Selten, S. L. Weber, and M. Kliphuis (2005), Sahel rainfall variability and response to greenhouse warming, Geophys. Res. Lett., 32, L17702, doi:10.1029/2005GL023232. (Tor A. Benjaminsen, Norwegian University of Life Sciences)	Thank you for the reference, this has been addressed.
262	70489	22	9	37	9	44	This paragraph seems at odds with the multi-model ensemble which shows moistening in most areas with some drying projected along the west coast of West Africa. Although these studies are valid and present the opposite case (i.e. Drying over most of the Sahel) they are not the consensus - at the moment it reads as though substantial drying is a given and this is only one potential scenario so the paragraph could be considered misleading or bias. (Caroline Bain, Met Office)	Line has been removed and uncertainty in projections has been made more explicit
263	70808	22	9	37	10	19	In this section it should be indicated whether studies are based on a single model or on multiple models, as this is important for how robust the results may be. In particular the Paeth & Thamm paper projects very large changes in rainfall, but as this is only the result of one study from a single model the results should be interpreted with care. (Robin Chadwick, UK Met Office)	Line has been removed and uncertainty in projections has been made more explicit
264	61920	22	9	39	9	41	This study is based on just one model and one rather severe land cover scenario. So that readers are not misled, I suggest either these 2 sentences are removed, or very clear caveats are added about the uncertainties and about the of land cover changes, and also that the results of this study likely lie at the upper end of the range of possibilities. (David Rowell, Met Office Hadley Centre)	Line has been removed and uncertainty in projections has been made more explicit
265	70488	22	9	40	9	41	I strongly think that this sentence should be removed (referring to the reduction in annual rainfall of up to 40% in Congo and the Sahel by 2025) this figure was based on one study using one model and is out of context/ contradictory to the multi-model ensembles showing more rainfall, as in the projections shown in Figure 22-1. At the least it should be rephrased to emphasise it is one study and does not represent consensus. (Caroline Bain, Met Office)	Done
266	67470	22	9	41	9	41	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Corrected
267	61921	22	9	41	9	42	Re. the Sahel, need to add (a) that the sign of rainfall change over the rest of the Sahel is highly uncertain (see AR5 WG1 draft), and (b) that likely changes in onset and cessation date are more robust (see studies by Biasutti). (David Rowell, Met Office Hadley Centre)	The uncertainty in projections has been made more explicit
268	83285	22	9	41	9	42	It could be helpful to specify whether this is an outcome expected across scenarios and across relevant time frames (near-term and long-term). (Katharine Mach, IPCC WGII TSU)	The sentence has been changed
269	70490	22	9	43	9	44	Patricola and Cook (2010a) do not suggest drought of the Guinean Coast region - the context of their findings suggest that there is contradictory information from models depending on the emission scenarios used (Caroline Bain, Met Office)	Reference removed
270	74422	22	9	46	9	48	Shonwe (p 9, lines 46-48) seems to be contradictory to Funk et al. at p 9, line 13 - Shongwe could be cited earlier as one of the studies that support IPCC4's assessment for a wetter East Africa. (UNITED STATES OF AMERICA)	Inserted a line that current trends need not be reflected in future projections.
271	83286	22	9	46	9	48	It could be helpful to specify whether this is an outcome expected across scenarios and across relevant time frames--or to what timeframe the uncertainties about rate are relevant, generally. (Katharine Mach, IPCC WGII TSU)	Line added suggesting there are still large regional uncertainties

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
272	74423	22	9	46	9	52	The contradictions on the projected wetting/drying over parts of Africa (especially eastern Africa) from studies utilizing same CMIP3 data (Shongwe et al. 2011 and Patricola&Cook (2010) need to be mentioned as that depict the huge uncertainty in long term projections that may also depend on the sub-set of CMIP3/5 models employed in the studies. (UNITED STATES OF AMERICA)	Line added suggesting there are still large regional uncertainties
273	67471	22	9	47	9	47	Delete 'seasons' (they are months rather than seasons). (Peter Burt, University of Greenwich)	Word 'seasons' removed
274	70491	22	9	48	9	48	Patricola and Cook study was published in 2011 - this should be updated in the references as well (Caroline Bain, Met Office)	Corrected
275	67472	22	9	49	9	49	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Corrected
276	67473	22	9	51	9	51	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Corrected
277	61923	22	10	1	10	19	Does this whole paragraph refer to southern Africa? If so, please state this at the start of the paragraph. If not, please clarify throughout the paragraph the location of the areas being discussed. (David Rowell, Met Office Hadley Centre)	Clarified to be southern Africa
278	74424	22	10	1	10	19	This paragraph seems to capture the nuances a lot better than other parts of the chapter. Is there any way to broaden its scope to all of Africa and not just Southern Africa. Probably this would simply require a little word smithing to indicate that such nuance is true for all of Africa, and then use examples from Southern Africa. (UNITED STATES OF AMERICA)	A paragraph has been added at the beginning of the section (22.2.2.2)
279	83287	22	10	4	10	10	Given the statement on line 11, it could be beneficial to specify further how these projected changes depend on the scenario of climate change and for what time frames they are relevant. (Katharine Mach, IPCC WGII TSU)	Acknowledged
280	67474	22	10	11	10	11	Delete comma after 'magnitude'. (Peter Burt, University of Greenwich)	Corrected
281	61924	22	10	14	10	15	Only one downscaling method is used in this study. Trials of other methods (including a variety of RCMs) may lead to considerable uncertainty, so I suggest this is acknowledged in the text. (David Rowell, Met Office Hadley Centre)	Acknowledged and sentence added to acknowledge this
282	70807	22	10	16	10	17	This sentence about CMIP5 projections across Africa would fit better at the start of the section (p9 L37), before moving on to projections for individual regions. (Robin Chadwick, UK Met Office)	Acknowledged and moved to the start of the section
283	83288	22	10	16	10	17	It could be helpful to indicate explicitly the relevant scenarios here (RCP4.5, 8.5). (Katharine Mach, IPCC WGII TSU)	Done - WHAT ABOUT A REFERENCE?
284	83289	22	10	22	0	0	Section 22.2.3. The chapter team should ensure consideration of the relevant sections and key findings of the working group 1 contribution to the 5th assessment report, with cross-references provided. (Katharine Mach, IPCC WGII TSU)	This is done for SREX but very few statements wrt extreme are made in WG1 AR5 in an African context.
285	77471	22	10	22	10	44	Suggested addition: Taye et al. (2011) studied the potential impact of climate change on the hydrological extremes of Nyando River and Lake Tana catchments, which are located in two source regions of the Nile River basin. The results reveal increasing mean runoff and extreme peak flows for Nyando catchment for the 2050s while unclear trend is observed for Lake Tana catchment for mean volumes and high/low flows. Ref: • Taye M.T., Ntegeka V., Ogiramo N.P., Willems P. (2011), 'Assessment of climate change impact on hydrological extremes in two source regions of the Nile River Basin', Hydrology and Earth System Sciences, 15, 209-222 (Patrick Willems, KU Leuven)	Thanks for the comment. The section is confined to changes in climate extremes and not downstream effects. This comment is better placed elsewhere in the chapter.
286	80429	22	10	22	10	44	Section 22.2.3: Although the old reference to WGI AR4 has been removed, there is still no link to the current WGI AR5 assessment. No cross-referencing is currently provided to the SREX or the relevant WGI AR5 chapters. Ensure consistency with both SREX Ch3 and WGI AR5. Both, SREX and WGI AR5, have to be cited in this context. (Gian-Kasper Plattner, IPCC WGI TSU)	This is done for SREX but very few statements wrt extreme are made in WG1 AR5 in an African context.
287	80468	22	10	24	10	24	In my point of view, floods should not be considered as climate (weather) extreme events as they are not caused only by climate events. They have strong land use dimension, so human dimension. They are strongly related to poor land management. (Aliou Diouf, ENDA Energie-Environnement-Développement)	Word "Floods" changed to "heavy rainfall"
288	83290	22	10	24	10	24	In place of "aggravated," it could be helpful to be more specific regarding directions of change for relevant characteristics of droughts and floods. (Katharine Mach, IPCC WGII TSU)	For space reasons this section of the sentence has been removed
289	61925	22	10	24	10	25	It is not yet clear whether the recent droughts over E.Africa are anthropogenic or natural, so I think this should be clarified. For example, cf. the early 19th century droughts shown in Fig.10 of Nicholson et al. (2012, Bull Am Met Soc, p1219). (David Rowell, Met Office Hadley Centre)	Sentence has ben added to address this
290	70809	22	10	24	10	25	Please state the timescale of this trend in rainfall extremes. I believe the Funk and Williams & Funk papers are for the past 30 years, is this also true of the other studies? (Robin Chadwick, UK Met Office)	Sentence has ben changed to address this

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
291	74425	22	10	24	10	44	The title of this section is a little confusing as there is a difference between extreme events (e.g., storms) and climate extremes (e.g., droughts), at least in terms of responses to them, and this section seemed to focus solely on the later and not on the single, one-off extreme events many people associated with the term "extreme event". (UNITED STATES OF AMERICA)	Section title has been changed to be more specific
292	70492	22	10	26	10	26	Recent research' - can you cite a paper please? (Caroline Bain, Met Office)	Cited (Williams and Funk, 2010)
293	61926	22	10	26	10	28	Most models suggest that there will be more rainfall over E.Africa and so fewer droughts. The contrast between this and the recent downward trend of rainfall has yet to be resolved, but there are other plausible theories besides the possibility that model projections for the future are wrong. In particular other climate processes are important in addition to the impact of SSTs stated here. I suggest either discussing these uncertainties and range of processes more fully, or removing this sentence. (David Rowell, Met Office Hadley Centre)	The discussion of uncertainties is included in the paragraph.
294	70810	22	10	26	10	28	A reference is needed here (Williams & Funk 2010?). The Lyon & Dewitt hypothesis about the connection of East African drying with Pacific SSTs should also be mentioned as an alternative hypothesis. It is unclear whether these recent droughts are the results of anthropogenic climate change or natural variability. (Robin Chadwick, UK Met Office)	This has been added
295	83291	22	10	27	10	27	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	This has been corrected
296	69879	22	10	30	10	34	Newer studies over other parts of Africa on observational extremes include Aguilar, E. et al., 2009: Changes in temperature and precipitation extremes in western central Africa, Guinea Conakry, and Zimbabwe, 1955–2006, J. Geophys. Res., 114, D02115, doi:10.1029/2008JD011010, and Donat et al. (2013), Changes in extreme temperature and precipitation in the Arab region: long-term trends and variability related to ENSO and NAO. Int. J. Climatol.. doi: 10.1002/joc.3707. The main results of these should also be referred to in this section. (John Caesar, Met Office Hadley Centre)	Thank you for the references, cited where appropriate.
297	83292	22	10	36	10	37	For the described outcome at the end of the century, it could be helpful to indicate whether this occurs across scenarios of climate change. (Katharine Mach, IPCC WGII TSU)	Scenario statement added
298	67475	22	10	42	10	42	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Corrected
299	70493	22	10	42	10	42	Are floods projected to intensify in magnitude or frequency? This will be of interest to many people so it is important to clarify. (Caroline Bain, Met Office)	Sentence removed for lack of citations
300	78367	22	10	42	10	43	But note that floods might be expected to be less severe elsewhere because of increased evaporation in the warmer air, e.g. see P. Wolski, D. Stone, M. Tadross, M. Wehner, and B. Hewitson. Attribution of floods in the Okavango Basin, Southern Africa. Journal of Hydrology, submitted. (Dáithí Stone, University of Cape Town)	Sentence removed for lack of citations
301	69880	22	10	42	10	44	Does 'intense floods' here refer specifically to runoff, or just heavy precipitation? (John Caesar, Met Office Hadley Centre)	Sentence removed for lack of citations
302	83293	22	10	43	10	43	Casual uses of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Corrected
303	67476	22	10	44	10	44	Capital 'C' required for 'century' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Corrected
304	78368	22	10	49	0	0	Maybe "The section examines the vulnerability of Africa to climate change...?" (Dáithí Stone, University of Cape Town)	Sentence has been revised
305	69881	22	10	54	10	54	Clarify what "highest" means here. (John Caesar, Met Office Hadley Centre)	sentences have been deleted
306	74426	22	11	1	11	4	This paragraph is confusing. It was not clear what was being implied. Could the authors attempt to make the meaning of this section, especially the last phrase, more clear? (UNITED STATES OF AMERICA)	sentences have been deleted
307	83294	22	11	1	11	4	The rationale underpinning this statement could be explained further. Detection of impacts of precipitation changes can be done with high confidence, but attribution is challenged?? (Katharine Mach, IPCC WGII TSU)	sentences have been deleted
308	74427	22	11	1	12	49	22.3.1 - It would be helpful to refer the reader to relevant sections of Ch 12 and 13. (UNITED STATES OF AMERICA)	we have added ref to chapter 12 and 13 later in the chapter.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
309	78238	22	11	4	0	0	Increased precipitation in southern Nigeria (Aaron, 2011) has resulted to increases in the loss of farms, forests, pasture and the creation of badlands by expanding gully erosion activities especially around the south eastern areas (Ajaero, 2010). The vulnerability of these landscapes is further enhance by the nature of the soil characterized by low bulk density, high hydraulic conductivity, low organic matter content and hence friability of the soil (Onwuka et al., 2012) References [Aaron Sayne, Climate change Adaptation and Conflict in Nigeria. Special Report 274 of The United States Institute of Peace, 2011] Chukwuedozie Kelechukwu AJAERO, Arinze Tagbo MOZIE. The Agulu-Nanka gully erosion menace in Nigeria: what does the future hold for population at risk? Department of Geography, University of Nigeria, Nsukka. Email:ajaerock@yahoo.co,mTel: +234(0)803-7511-422 Onwuka, S.U.; Okoye, C. O.; Nwogbo, N. The Place of Soil Characteristics on Soil Erosion in Nanka and Ekwulobia Communities in Anambra State. Journal of Environmental Management and Safety, 2012 (Elochukwu Ezenekwe, Nnamdi Azikiwe University )	sentences have been deleted
310	83295	22	11	19	0	0	Section 22.3.1. In further development, this section should be shortened as much as possible. (Katharine Mach, IPCC WGII TSU)	The section was edited to condense it
311	84816	22	11	19	0	0	Section 22.3.1: Please consider ways to condense this section, as this is general background information that can be obtained from other sources. (Michael Mastrandrea, IPCC WGII TSU)	The section was edited to condense it
312	60381	22	11	28	11	37	This suddenly appears discordant - a quick switch from human rights to MDGs? I would make the link more explicit; such that the section flows better. (Emma Archer van Garderen, CSIR)	A sentence has been added to provide such a link
313	74428	22	11	28	11	52	There may be need to point out some concise linkable parameters between CC and MDGs (UNITED STATES OF AMERICA)	The text was edited to stress this linkage
314	84815	22	11	34	11	35	Please clarify the ways climate change may adversely affect progress towards attaining the MDGs. This is currently unclear. (Michael Mastrandrea, IPCC WGII TSU)	The text was edited to stress this linkage
315	83296	22	11	34	11	37	No citations are provided for this statement, yet it is made a key finding for the chapter. This issue must be addressed. (Katharine Mach, IPCC WGII TSU)	references were added
316	61567	22	11	39	12	49	The executive summary of this chapter refers to significant progress in a number of MDGs including education, gender equality and empowerment of women. The latter two points do not seem to be discussed in much detail in this section. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Executive summary text has been edited to link MDGs with adaptive capacities
317	80145	22	12	1	0	0	Beyond agriculture, mining and energy sectors are undergoing expansion, stimulating growth and adding potentially to state revenues. (A. Peter Castro, Maxwell School, Syracuse University)	More information was added and text edited
318	74429	22	12	1	12	9	Perhaps this section should reference NEPAD/CAADP plans and goals? (UNITED STATES OF AMERICA)	More information was added
319	56846	22	12	1	12	49	This whole page is based on various reports from development agencies and not peer reviewed publications. This is clearly below the standard that should be followed by the IPCC (Tor A. Benjaminsen, Norwegian University of Life Sciences)	All documents referring to MDGs are reports by development agenices, no peer reviewed that I came across dicussed this issue
320	74430	22	12	2	12	2	Regarding stagnant agricultural yields citing UN 2008 - please cite a 2012 source to confirm this. This is a blanket statement and it may need qualifying if there are some places and recent changes that are more positive. (UNITED STATES OF AMERICA)	A text cited from an 2012 reference was added
321	67477	22	12	3	12	3	Delete '(' before 2008. (Peter Burt, University of Greenwich)	done
322	74431	22	12	3	12	4	Regarding recent rises in global food prices - again, cites UN 2008 - Are these as "right" as claimed, given the complete lack of integration with world markets that characterise much African food systems? i.e. there is very little global price influence locally. This blanket statement may obscure a mixed picture .... Does the UNDP Human Development Report 2012 say more? (this issue comes up again on page 22). (UNITED STATES OF AMERICA)	A text cited from an 2012 reference was added
323	78369	22	12	4	0	0	Would that be mainly the urban poor? (Dáithí Stone, University of Cape Town)	this was addressed by adding the word urban before poor
324	77386	22	12	8	12	8	"for consistency I suggest the use of 'rainfall variability' rather than 'rain variability'" (UNITED REPUBLIC OF TANZANIA)	done
325	60382	22	12	15	12	15	I'm assuming that it is not the *lack* of extension services that can prevent utilization and spread of innovations and technologies? (Emma Archer van Garderen, CSIR)	The sentence was rewritten

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
326	78370	22	12	22	12	26	I am not following here. Global financial crises have tended to be the exception rather than the rule, so in the next several decades we might expect more jobs in the formal sector, right? The reason that "responsibility for subsistence agriculture" might imply that women are more vulnerable is unclear too. It may mean they are more exposed to weather, if, say, the men work in buildings or mines. But I do not see how vulnerability of agricultural productivity to climate necessarily makes the provider more vulnerable; on the contrary it might empower the provider in a closed agricultural market. (Dáithí Stone, University of Cape Town)	Vulnerability of women in subsistence agriculture is explained further in the text. Global and/or national downturns can affect jobs in the formal sector and thus can have similar effects but with different magnitude. The sentence was edited to reflect such linkage.
327	67478	22	12	33	12	33	Delete comma after 'tuberculosis'. (Peter Burt, University of Greenwich)	done
328	74432	22	12	33	12	35	I would suggest providing a more precise picture about how "malaria is still endemic in most African countries". Some countries have had their malaria morbidity and mortality numbers reduced following major control measures. The chapter should provide references to countries where malaria incidence has been reduced following control measures. (UNITED STATES OF AMERICA)	some lines were deleted as they're discussed more technically in other parts of the chapter
329	78371	22	12	37	0	0	So 7.8% in total? Or is it more complicated than that? (Dáithí Stone, University of Cape Town)	some lines were deleted as they're discussed more technically in other parts of the chapter
330	78372	22	12	39	12	41	The fact that monitoring of extinction status occurred suggests that monitoring is not necessarily bad... (Dáithí Stone, University of Cape Town)	some lines were deleted as they're discussed more technically in other parts of the chapter
331	60383	22	12	40	12	41	This sentence reads rather oddly, and should be rewritten. Presumably the facing of extinction doesn't follow on from a lack of monitoring in the way the sentence implies? (Emma Archer van Garderen, CSIR)	some lines were deleted as they're discussed more technically in other parts of the chapter
332	74433	22	13	1	0	0	Section 22.3.2: Aside from a box, there is no mention of mountain ecosystems but these will clearly be affected by climate change and exist in Africa. But the Atlas mountain or Rwenzori should also be mentioned. See UNEP's Global Environment Alert Bulletin on this topic published in August 2012 ( <a href="http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=90">http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=90</a> ). (UNITED STATES OF AMERICA)	we have added some discussion in the revised terrestrial section, you will find detailed discussion in chapter 4
333	83297	22	13	1	0	0	Section 22.3.2. In further development, this section should be shortened as much as possible. (Katharine Mach, IPCC WGII TSU)	yes
334	70422	22	13	1	17	0	wetlands could also be covered under ecosystems or any subsection in this section that would be appropriate. For example of the Okavango delta in Botswana, one of the largest inland deltas in the world is vulnerable to climate change. (Wame Lucretia Hambira, University of Botswana)	We tried to have a case study on the Okavango delta but this was not possible. We also said that we added available material since AR4
335	83298	22	13	5	13	7	The recommended citation for this chapter should be provided here, in addition to the more casual reference. (Katharine Mach, IPCC WGII TSU)	This has been done. See the new version of sod
336	67479	22	13	7	13	7	Bad English: replace 'like' with 'such as'. (Peter Burt, University of Greenwich)	OK. Done
337	83299	22	13	7	13	9	The chapter team should clarify if this statement also originates from the 4th assessment report or if it is a conclusion of the current chapter, in which case calibrated uncertainty language should be presented. (Katharine Mach, IPCC WGII TSU)	No It doesn't, section revised.
338	67480	22	13	10	13	10	Change 'freshwater' to 'fresh water' and delete comma after 'water'. (Peter Burt, University of Greenwich)	OK. Done
339	83300	22	13	14	0	0	Section 22.3.2.1. This section should be further coordinated with the relevant material and findings of chapter 4, with cross-references provided. (Katharine Mach, IPCC WGII TSU)	This was done.
340	74434	22	13	16	13	16	The phrase "a shift in the geographic location" is confusing. It is sort of clarified later in the paragraph, but it might be helpful if the authors rephrased this. (UNITED STATES OF AMERICA)	Yes, the phrase has been changed.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
341	56847	22	13	16	13	50	The claims made here about 'southward shift of biomes' and 'southward expansion of the Sahara' clearly go against the literature on the 'greening' of the Sahel (Olsson 2012 ( <a href="http://www.eoearth.org/article/Greening_of_the_Sahel">http://www.eoearth.org/article/Greening_of_the_Sahel</a> ), Hiernaux et al 2009 (see reference list), Hiernaux, P., Mougin, E., Diarra, L., Soumaguel, N., Lavenu, F., Tracol, Y. & Diawara, M. (2009) Sahelian rangeland response to changes in rainfall over two decades in the Gourma region, Mali. IN Journal of Hydrology, 375. 114–127, Mougin, E., Hiernaux, P., Kergoat, L., Grippa, M., De Rosnay, P., Timouk, F., Le Dantec, V., Demarez, V., Lavenu, F., Arjounin, M., Lebel, T., Soumaguel, N., Ceschia, E., Mougnot, B., Baup, F., Frappart, F., Frison, P.-L., Gardelle, J., Gruhier, C., Jarlan, L., Mangiarotti, S., Sanou, B., Tracol, Y., Guichard, F., Trichon, V., Diarra, L., Soumaré, A., Koité, M., Dembele, F., Lloyd, C. R., Hanan, N. P., Damesin, C., Delon, C., Serça, D., Galy-Lacaux, C., Seghieri, J., Becerra, S., Diarra, B., Gangneron, F. & Mazzega, P. (2009) The AMMA-CATCH Gourma observatory site in Mali: Relating climatic variations to changes in vegetation, surface hydrology, fluxes and natural resources. IN Journal of Hydrology, 375. 14–33, Reij C, Tappan G, Belemvire A (2005) Changing land management practices and vegetation on the Central Plateau of Burkina Faso (1968–2002). Journal of Arid Environment 63:642–659, Herrmann SM, Anyamba A, Tucker CJ (2005) Recent trends in vegetation dynamics in the African Sahel and their relationship to climate. Global Environmental Change 15:394–404) (Tor A. Benjaminsen, Norwegian University of Life Sciences)	The discussion on biome shifts has been updated and extensively shortened. Please see the considerably revised section 22.3.2.1
342	80472	22	13	19	13	22	The clear link between southward shift in ecosystems and climate change should be specified. This would give more credibility to the report. (Aliou Diouf, ENDA Energie-Environnement-Développement)	The discussion on biome shifts has been updated and extensively shortened. Please see the considerably revised section 22.3.2.1
343	74435	22	13	32	13	32	The second to last word seems to be a spelling error. (UNITED STATES OF AMERICA)	The entire sentence has been removed
344	77387	22	13	32	13	32	"Can a simpler word be used in place of 'induextent'" (UNITED REPUBLIC OF TANZANIA)	The entire sentence has been removed
345	80473	22	13	32	13	32	Change the penultimate word in the line "induextent" (Aliou Diouf, ENDA Energie-Environnement-Développement)	The entire sentence has been removed
346	78373	22	13	45	0	0	The CMIPs skipped 4 in their labels. CMIP3? (Dáithí Stone, University of Cape Town)	Yes - changed.
347	78374	22	13	45	0	0	Do you mean vegetation model? "Earth system model" is term used in the IPCC to refer to coupled atmosphere-ocean-land-cryosphere-vegetation models covering physical, chemical, and ecological aspects of those systems. (Dáithí Stone, University of Cape Town)	The article by Zeng and Yoon (2009) says that they used an Earth system model.
348	67481	22	13	45	13	45	Capital 'E' for 'Earth' as a proper noun in this context. (Peter Burt, University of Greenwich)	OK. Done
349	74436	22	13	45	13	45	The reference to CMIP4 GCMSis most likely a typo. Almost certainly should be either CMIP3 or CMIP5. Please investigate and correct. (UNITED STATES OF AMERICA)	Yes. It has been changed
350	67482	22	14	1	14	2	Bad English, but I am not clear what you mean. (Peter Burt, University of Greenwich)	? I dont understand
351	67483	22	14	7	14	7	Split infinitive: move 'directly' to after 'shift'. (Peter Burt, University of Greenwich)	OK. Done
352	67488	22	14	7	14	7	Change to 'Normalised Difference Vegetation Index' (Peter Burt, University of Greenwich)	OK. Done
353	67484	22	14	8	14	8	'et al.' should be in italics. (Peter Burt, University of Greenwich)	OK. Done
354	67485	22	14	10	14	10	'et al.' should be in italics. (Peter Burt, University of Greenwich)	OK. Done
355	67486	22	14	10	14	10	Please give taxonomic details (genus, species) of the aloe. (Peter Burt, University of Greenwich)	Yes - added.
356	67487	22	14	13	14	13	Is this all species or some species? (Peter Burt, University of Greenwich)	species clarified
357	83301	22	14	18	0	0	Section 22.3.2.1.1. This subsection should also be further coordinated with relevant material and findings from chapter 4, with cross references provided. (Katharine Mach, IPCC WGII TSU)	This was done. See the new version of sod
358	74437	22	14	18	15	34	Section 22.3.2.1.1: The Forest section is often badly worded and needs greater elaboration. For example, what does line 43 mean "The forests are at a cross roads between development and conservation." Also, REDD+ if mentioned should be discussed in detail and its potential utility and challenges discussed in detail. One sentence on first experiences is insufficient. What does line 48 to 49 mean?Ths should should be taken out or expanded. (UNITED STATES OF AMERICA)	Due to space constraints, the forests section has been removed. Key findings from the section has been integrated in section 22.3.2.1 and table 22.3
359	80146	22	14	20	14	34	The importance of trees outside forests (farmland, pasture, savanna) ought to be acknowledge, as they play major economic, environmental and cultural roles within communitie. For example, see J. Arnold and P. DeWees (eds), Tree Management in Farmer Strategies, which contains many classic articles on African rural practices (A. Peter Castro, Maxwell School, Syracuse University)	Due to space constraints, the forests section has been removed. Key findings from the section has been integrated in section 22.3.2.1 and table 22.3. These sections cover discussion on forests, grasslands, savanna, farmland, etc.
360	77388	22	14	29	14	29	"I propose we replace 'They also are' with 'They are also'" (UNITED REPUBLIC OF TANZANIA)	OK. Done

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
361	74438	22	14	39	14	39	Biofuels may not be the correct term, wood for energy (either as fuel wood or charcoal) is a major driver. While biofuels may be technically correct, it carries certain meanings that are not as accurate. (UNITED STATES OF AMERICA)	OK. The word has been changed to bioenergy
362	78375	22	14	45	14	46	African deforestation contributes 20% of global emissions? This sounds high... (Dáithí Stone, University of Cape Town)	The sentence has been clarified to indicate that 20% of global emissions comes from deforestation and not African deforestation. Thanks to the reviewer. The section has been integrated with section 22.3.2.1 to reduce length.
363	70494	22	15	1	15	1	I disagree with the use of the word 'desertification' as it gives a false impression of the projections - it would be better to use the phrase 'ecosystem changes in the Sahel' as there is no suggestion in the report that the Sahel will become a complete desert. In fact the projections in Figure 22-1 indicate rainfall increases across a lot of the Sahel. (Caroline Bain, Met Office)	Due to space constraints, the desertification of sahel section has been removed. Key findings from the section has been integrated in section 22.3.2.1 and table 22.3. In the revised section we are not using the term desertification.
364	70495	22	15	3	15	3	Analyses of the impacts of climate change on Sahel vegetation... (Caroline Bain, Met Office)	Published research and chapters on Africa in the IPCC Third and Fourth Assessment Reports have found linkages among climate change, desertification, and Sahel vegetation.
365	56848	22	15	3	15	34	I find this section on 'Desertification in the Sahel' rather biased and speculative. Literature has been cherry-picked, while other studies going against the idea of 'desertification' have been excluded (see above for some references). A whole region in Mali (the Gourma region covering 90 000 km2) with several empirical studies questioning the idea of an advancing desert is merely metioned as 'one site in Mali'. (Tor A. Benjaminsen, Norwegian University of Life Sciences)	Due to space constraints, the desertification of sahel section has been removed. Key findings from the section has been integrated in section 22.3.2.1 and table 22.3. In the revised section we have tried to highlight the differences in findings of studies. We are also not using the term desertification.
366	70496	22	15	10	15	10	replace 'any' with 'the' (Caroline Bain, Met Office)	This sentence has been removed in the new text
367	74439	22	15	23	15	34	What about the greening that has occurred in Niger since the 1970s? A number of studies have shown significant increases in tree cover in recent decades. This should also lead to a discussion of land and resource tenure and its importance to forest preservation. (UNITED STATES OF AMERICA)	Please see Box 22-2 and Figure 22-8 which present the work in Niger in detail.
368	70497	22	15	34	15	34	...it indicates how climate change may exacerbate ecosystem change in the Sahel' (Caroline Bain, Met Office)	Again, published research and chapters on Africa in the IPCC Third and Fourth Assessment Reports have found linkages between climate change and desertification.
369	83302	22	15	37	0	0	Section 22.3.2.2. This subsection should be further coordinated with relevant material and findings from chapters 3 and 4, with cross-references provided. (Katharine Mach, IPCC WGII TSU)	yes, revised and added
370	83303	22	15	39	15	40	For this potential impact, the relevant scenarios of climate change and timeframe should be specified, along with relevant assumptions. For example, how important is the role of climate change as compared to other drivers, and more specifically, can the nature of the serious risk be indicated? (Katharine Mach, IPCC WGII TSU)	The role of climate change among other factors as a driver of freshwaters resources has been explained. Relevant scenarios and time frame of climatic changes have been specified.
371	77389	22	15	40	15	40	"I propose the deletion of the word 'be' from 'from mainly be through'" (UNITED REPUBLIC OF TANZANIA)	ok
372	83304	22	15	43	15	45	It would be helpful to clarify if the mentioned high variability is associated with natural variability as compared to climate change, over what time frame it has occurred, and the relevance of other drivers of change. (Katharine Mach, IPCC WGII TSU)	The association of high variability with climate change has been specified as well as the time frame and relevance of other drivers.
373	69662	22	15	43	15	47	Change "The East African River Valley" to read the African rift valley? Need to clearly state that the triple increase in Lake Beseka surface area is not linked to climate change. (NETHERLANDS)	East african Rift Valley changed to African Rift Valley as this is more contextual to section. Also mention of non-climatic change in Lake Beseka surface area is made.
374	74440	22	15	52	15	54	A reference is needed for this sentence. Seems like there are a number of other drivers of flow in rivers beyond just rainfall, not least of which is demand from irrigation, and this sentence could lead to the wrong conclusion that just because flow has decreased, that implies that rainfall has decreased, which is not always the case. (UNITED STATES OF AMERICA)	A reference (Conway et al., 2009) has been ascribed to the sentence in question. Other drivers of river flows have been mentioned. Note that some of these are also mentioned in the sentence just before this one.
375	69663	22	15	53	15	54	The statement "Nevertheless, the amount of water inflow for rivers like the Congo, Nile, and Zambezi are determined mainly by the amount of rainfall within their catchments, a process that is influenced by temperature" leaves out other important factors such land use which also influences river inflow. (NETHERLANDS)	This has been addressed in Comment 374

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
376	70498	22	15	54	15	54	remove 'a process that is influenced by temperature' as the relationship between temperature and rainfall is non-linear and varies hugely from region to region, hence causality cannot be suggested. (Caroline Bain, Met Office)	'a process that is influenced by temperature' has been removed from the sentence
377	74441	22	16	1	16	1	Which region is being discussed? All of Africa? Not clear as written. (UNITED STATES OF AMERICA)	text has been condensed and revised
378	83305	22	16	2	16	2	It would be helpful to specify the relevant drivers for this observation and the timeframe over which it has occurred. (Katharine Mach, IPCC WGII TSU)	This section has been significantly revised
379	69664	22	16	2	16	17	Most of the literature cited largely ignores the impacts of human uses on river inflows and lake levels. The statement that moderate warming is reducing lake water inflows and therefore nutrients is not entirely correct. Many basins in Africa are under stress because of increased water use. For instance hydropower water release in lake Victoria and also Kariba may be contributing to the fluctuating water levels, over fishing may be a major factor in the decrease of fish stock in Kariba dam, upstream water and land use in the Victoria and Zambezi basin could be reducing inflow. The authors should consider highlighting some of this in the text as well. (NETHERLANDS)	Other factors besides climate change responsible for changing lake water levels and fish stocks have been highlighted
380	67489	22	16	12	16	12	Capital 'L' required for 'lakes' in this context as proper nouns. (Peter Burt, University of Greenwich)	This has been changed accordingly
381	77390	22	16	12	16	12	"I propose the use of 'Nyasa' rather than 'Malawi'" (UNITED REPUBLIC OF TANZANIA)	Lake 'Malawi/Niassa/Nyasa' has been used instead of 'Malawi'
382	67490	22	16	24	16	24	Capital 'L' required for 'lakes' in this context as proper nouns. (Peter Burt, University of Greenwich)	This has been changed accordingly
383	77371	22	16	24	16	24	" as said in the general remarks and for consistency replace 'Malawi' with 'Nyasa' " (UNITED REPUBLIC OF TANZANIA)	Lake 'Malawi/Niassa/Nyasa' has been used instead of 'Malawi'
384	77391	22	16	24	16	24	"I propose the use of 'Nyasa' rather than 'Malawi'" (UNITED REPUBLIC OF TANZANIA)	Lake 'Malawi/Niassa/Nyasa' has been used instead of 'Malawi'
385	67491	22	16	25	16	25	Delete comma after 'tanganyika'. (Peter Burt, University of Greenwich)	The comma after Tanganyika has been deleted
386	83306	22	16	32	0	0	Section 22.3.2.3. The material throughout this section and all of its subsections should be carefully coordinated with the assessment and findings of chapters 5, 6, and 30, with cross-references provided wherever relevant. (Katharine Mach, IPCC WGII TSU)	provided
387	74442	22	16	32	17	54	The issue of upwelling and downwelling should be added to coastal fisheries. (UNITED STATES OF AMERICA)	This has been added to the new version
388	70499	22	16	34	16	34	climate change factors...' (Caroline Bain, Met Office)	Not appropriate
389	61969	22	16	34	16	43	To which could be added the flood-multiplier effects of large dams in southern Africa disrupting transboundary flow rates and affecting downstream states' coastal flood plain areas (Matthew Bunce, Institute of Marine Engineering, Science and Technology)	paragraph has been revised
390	83307	22	16	37	16	38	This statement should be more directly supported by relevant citations, as for example the role of climate change in the subsequent example is not completely clear. (Katharine Mach, IPCC WGII TSU)	OK. This has been added to the new version
391	84817	22	16	37	16	43	Please clarify why concern is increasing as stated here. What evidence supports this? In addition, please be clear about distinctions between climate variability and climate change as well as their interactions. (Michael Mastrandrea, IPCC WGII TSU)	This has been considered with the addition of references to chapter 5
392	70500	22	16	38	16	39	For example, a storm swell up to...' (Caroline Bain, Met Office)	OK. Done
393	70501	22	16	41	16	41	remove '(' and add a ',' (Caroline Bain, Met Office)	OK. Done
394	78376	22	16	51	0	0	Have been estimated? (Dáithí Stone, University of Cape Town)	This part has been deleted
395	83308	22	16	51	16	51	Was this an analysis of projected outcomes? If so, "projected" may be clearer in place of "determined." (Katharine Mach, IPCC WGII TSU)	This part has been deleted
396	74443	22	16	52	16	54	It might be helpful to indicate if the assessment risk is owing completely to sea level rise, or other other impacts as well. (UNITED STATES OF AMERICA)	This part has been deleted
397	74444	22	17	19	17	30	It might be helpful to indicate that climate change will cause a rise in mean sea level, but it is really relative sea level rise that is important, and that this relative sea level rise is dependent on both climate and non-climate factors and so will vary along the coasts of Africa. Also this section focuses solely on sea level rise, is that the only coastal impact of importance in Africa, or the only one for which we have any sense of certainty? What about storms, in terms of both frequency and magnitude? (UNITED STATES OF AMERICA)	This part has been deleted
398	78377	22	17	21	0	0	Which authors? (Dáithí Stone, University of Cape Town)	This part has been deleted
399	84818	22	17	21	17	21	Which authors are referenced here? Please clarify. (Michael Mastrandrea, IPCC WGII TSU)	This part has been deleted
400	78378	22	17	21	17	22	Vulnerability to the ocean, sure, but it might decrease its vulnerability to other factors. (Dáithí Stone, University of Cape Town)	This part has been deleted

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
401	69665	22	17	23	20	24	What is WIO mentioned in page 17 line 51? Zinyengere et al. cited just been submitted, cannot be verified to confirm the impact of climate change on maize yield losses in Southern Africa. Generalisation from such a study may be misleading (NETHERLANDS)	This part has been deleted
402	70502	22	17	24	17	24	Diamond mining could also be affected.' - how? Where is this information coming from? Is there a citation? (Caroline Bain, Met Office)	This part has been deleted
403	70503	22	17	24	17	24	...the risks are almost everywhere along the coast, with...' (Caroline Bain, Met Office)	This part has been deleted
404	84819	22	17	24	17	24	How could diamond mining be affected? Please clarify. (Michael Mastrandrea, IPCC WGII TSU)	This part has been deleted
405	60384	22	17	29	17	30	Is there no more detail here? This suddenly seems rather short, compared to preceding sections. (Emma Archer van Garderen, CSIR)	This part has been deleted
406	78379	22	17	29	17	30	So Western and Northern Africa (including such places as Lagos and the Nile Delta) get less treatment here than Walvis Bay? (Dáithí Stone, University of Cape Town)	This part has been deleted
407	84820	22	17	33	0	0	Section 22.3.2.3.2: Please focus on material relevant to Africa in this section, cross-referencing relevant discussions in chapters 5, 6, and 30 for more general material rather than discussing it in detail here. (Michael Mastrandrea, IPCC WGII TSU)	OK This has been taken in account
408	83309	22	17	35	17	35	Presumably this 1st statement pertains to coastal fisheries, not necessarily all fisheries, which could be clarified as relevant. (Katharine Mach, IPCC WGII TSU)	Fisheries are coastal
409	74445	22	17	35	17	54	Should possible changes in upwelling be mentioned here? I know there is a ton of uncertainty associated with whether climate change will affect up and downwelling patterns, but as a number of fisheries in Africa are very tied to these patterns, and changes in them can affect significantly local fish abundance (at least in the short term), would it be helpful to at least give this passing mention. (UNITED STATES OF AMERICA)	A part on upwellings has been added
410	78380	22	17	40	0	0	Important for whom? (Dáithí Stone, University of Cape Town)	The term important is not ascribed to somebody
411	80758	22	17	40	17	43	The coverage of the impact on coral reefs is weak. The situation could easily be improved by adding links to chapter 5 5.4.2.4) and the cross-chapter box CC-CR. (Jean-Pierre Gattuso, Centre National de la Recherche Scientifique)	Due to limited space text has been deleted and condensed, additional discussion can be found in chapter 5, 6 and 30
412	64568	22	17	42	17	43	22.3.2.3.2. This assessment appears somewhat narrow with respect to its focus on coral reefs and ocean acidification. As mentioned earlier warming and associated consequences like stratification appear more crucial presently as developed by chapter 6 that would offer a possible reference. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	Due to limited space text has been deleted and condensed, additional discussion can be found in chapter 5, 6 and 30
413	74446	22	17	46	17	54	This discussion focuses on global fisheries and coral reefs. The section or statistics should be specific to Africa. (UNITED STATES OF AMERICA)	text has been revised
414	78381	22	17	46	17	54	But this chapter is about Africa. (Dáithí Stone, University of Cape Town)	text has been revised
415	83310	22	17	52	17	52	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	text has been revised
416	64569	22	17	52	17	54	Again, this assessment appears somewhat narrow with respect to its focus on coral reefs and ocean acidification. As mentioned earlier warming and associated consequences like stratification appear more crucial presently as developed by chapter 6 that would offer a possible reference. Please also consider the distribution shifts of marine species. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	text has been revised, ref to chapters 5,6 and 30 added
417	83311	22	18	3	0	0	Section 22.3.3. In the further development of this section, the chapter team should continue to coordinate with the assessment and findings of chapter 3, providing cross-references wherever relevant. Additionally, the section should be tightened and shortened further. (Katharine Mach, IPCC WGII TSU)	Chapter 3 has been cross-referenced where appropriate.
418	74447	22	18	5	18	12	Most of the projections are based on AR4 GCMs, but would be important to include any studies using CMIP5 projections. (UNITED STATES OF AMERICA)	The full body of relevant literature on water was assessed but no explicit analysis of CMIP5 was done.
419	74448	22	18	5	18	19	This section on water should underline more concern. There is also inconsistency between line 5 and lines 9-10 ("knowledge has advanced.....caution"). (UNITED STATES OF AMERICA)	The inconsistency between the noted lines has been resolved. The passage now relays that while knowledge has advanced regarding water resources, impediments to knowledge remain.
420	74449	22	18	5	19	47	Please consider adding a water quality discussion. (UNITED STATES OF AMERICA)	There is a paucity of peer-review literature on water quality and climate change specific to Africa. This will be noted in the section as an important knowledge gap.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
421	74450	22	18	5	19	47	The discussion of future climate change impacts on water resources is mainly focused on specific basins and could be bolstered by discussion of some pan-African studies: Faramarzi, Monireh; Abbaspour, Karim C.; Vaghefi, Saeid Ashraf; et al. 2013: Modeling impacts of climate change on freshwater availability in Africa. JOURNAL OF HYDROLOGY Volume: 480 Pages: 85-101 DOI: 10.1016/j.jhydrol.2012.12.016. Published: FEB 14 2013 AND de Wit, M; Stankiewicz, J, 2006: Changes in surface water supply across Africa with predicted climate change. SCIENCE Volume: 311 Issue: 5769 Pages: 1917-1921 DOI: 10.1126/science.1119929 Published: MAR 31 2006 (UNITED STATES OF AMERICA)	The 2006 article has been included. The 2013 article is problematic for several reasons, including that it claims downscaling of the GCMs but it's nothing but interpolation (they use the words interpolation once, but confuse it with downscaling). So the hydrological model effectively gets GCM rainfall. Secondly, the 2020-2040 period sits right in the time scale where natural variability dominates, the climate change signal is still pretty small.
422	74451	22	18	5	19	47	The water resources assessment seems off target. As stated in the executive summary, there is high confidence that climate change impacts on water availability are uncertain, and water is the primary medium through which climate change impacts will be felt. This seems to lead to the conclusion that there is high confidence in the uncertainty of climate change impacts. "Spatial heterogeneity" might usefully replace "uncertain" in this executive summary element. Furthermore, there was general agreement within the various section of the Africa chapter, that the likelihood of climate change impacts covaried strongly with climatological aridity patterns. The literature suggests that "water-related climate change impacts in arid and semi-arid regions seem moderately certain, while water-related climate change impacts in humid regions seem uncertain"? Given the vast climate gradients in Africa, lumping humid and arid ecotones seems problematic, and may hide fairly certain and dangerous temperature impacts, for some regions or climatic regimes. If there are high risks in certain areas, these could be better identified. (UNITED STATES OF AMERICA)	The water headline and subsequent text in the executive summary have been changed to resolve confusion and inconsistencies. The section does not lump humid and arid ecotones, rather it covers important river basins (most in semi-arid and dry sub-humid climate regimes) where there is a strong body of peer-review literature to assess.
423	70504	22	18	7	18	7	citation needed for 'long-term studies' (Caroline Bain, Met Office)	Sentence has been eliminated to improve text flow.
424	74452	22	18	7	18	8	This conclusion seems a bit confusing, essentially we are saying that we have only low confidence in an effect not occurring. Also, this effect is likely very nuanced depending on where you are geographically in Africa, so while the continent as a whole may not experience water scarcity, is it not still quite possible that certain areas will, both because of decreasing (or more erratic) supplies and increasing demand (due to warmer temperatures)? (UNITED STATES OF AMERICA)	The sentence in question referred to the fact that climate change is currently having a minimal effect on water resource abundance.
425	74453	22	18	14	18	15	Similar to the comment above, given the huge variation in climates in Africa from the tropical rainforests to the deserts, the authors should be very careful about making general statements concerning the effects on the availability of water. These statements at least have to be caveated with the nuance of geographical dependence. (UNITED STATES OF AMERICA)	This section is caveated. For example: "A growing body of literature generated since the AR4 suggests that climate change in Africa will have an overall modest effect on future water scarcity relative to other drivers, such as population growth, urbanization, agricultural growth, and land use change ....However, broad-scale assumptions about drivers of future water shortages can mask significant sub-regional variability of impacts, particularly in water-stressed regions that are projected to become drier, such as southern and northern Africa."
426	57865	22	18	31	0	0	The following article may be suitable for this paragraph since it assesses the most important river in Kenya: T. Nakaegawa, C. Wachana, and KAKUSHIN Team-3 Modeling Group. First impact assessment of hydrological cycle in the Tana River basin, Kenya, under a changing climate in the late 21st Century. Hydrological Research Letters., Vol. 6, pp.29-34, (2012) . (Toshiyuki Nakaegawa, Meteorological Research Institute)	The article is now included in this section.
427	78382	22	18	31	19	20	There are a lot of "could"s in these paragraphs, which does not indicate whether it is likely or not. (Dáithí Stone, University of Cape Town)	The author has gone through and made changes where appropriate.
428	70505	22	18	32	18	32	How have you reached the conclusion of 'high confidence'? There is disagreement in models over the magnitude in change of southern African rainfall. Suggest this should be downgraded or omitted (Caroline Bain, Met Office)	The designation was changed from high to medium after consulting WG1 Chapter 14, which covers regional climates.
429	70423	22	18	37	0	0	could also add to the literature: Hambira, Wame L. (2011). Screening for Climate change vulnerability in Botswana's tourism sector in the bid to explore suitable adaptation measures and policy implications: A case study of the Okavango Delta. International Journal of Tourism Policy. Vol. 4, No. 1, pp. 51-65. (Wame Lucretia Hambira, University of Botswana )	This section focuses on impacts and vulnerability only. The suggested article is more appropriate for the adaptation section. The article will be included in the adaptation section.
430	67492	22	18	41	18	41	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
431	74454	22	18	43	18	44	Is there a record of historical rate of Atlas mounain glacial melt? (UNITED STATES OF AMERICA)	This finding was based on model results of future snowfall and meltwater discharge.
432	57866	22	18	46	0	0	Nakaegawa et al. (2013) projected the significant increase in riverv discharge in the main stream of Nile River under A1B but not the entire Nile baisns. The estimated uncertainites are low as well. In addition, significant increase with low uncertainites are found in January to April at the gauguing station of the Nile River.. (Toshiyuki Nakaegawa, Meteorological Research Institute)	What is the article? Only the author was given.
433	77472	22	18	46	19	11	Other references for the Nile basin; see also previous point: • Taye M.T., Ntegeka V., Ogiramoi N.P., Willems P. (2011), 'Assessment of climate change impact on hydrological extremes in two source regions of the Nile River Basin', Hydrology and Earth System Sciences, 15, 209-222 • Taye, M.T., Willems, P. (2011). 'Influence of climate variability on representative QDF predictions of the upper Blue Nile Basin', Journal of Hydrology, 411, 355-365 (Patrick Willems, KU Leuven)	The article is now included in this section.
434	67493	22	18	50	18	50	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
435	67494	22	18	52	18	52	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
436	67495	22	19	1	19	1	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
437	74455	22	19	1	19	47	This discussion of ground water depletion is simplistic and may give the impression that climate change is the primary driver affecting groundwater resources, when this is due to technological development, population growth, etc. This complexity should be acknowledged. Also, the science itself is still unclear, as described in the January 2012 Global Environment Alert Bulletin (GEAS) by UNEP ( <a href="http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=76">http://na.unep.net/geas/getUNEPPageWithArticleIDScript.php?article_id=76</a> ): In spite of a growing global reliance on groundwater, there are still large uncertainties about the volume, distribution, recharge and withdrawal of the planet's groundwater resources (8). Various estimates of total global groundwater storage disagree by more than an order of magnitude, (38,39). Historically, most global estimates of groundwater recharge have been built upon data collected at national and sub-national scales, which may be estimated by different methods and based upon differing definitions and which are often out of date (8,38,40). International efforts to improve compatibility and completeness of global groundwater data have made some progress in developing international standards for data collection (38). Recent estimates of global groundwater recharge have used sophisticated hydrological models which have the advantage of consistency across national boundaries but remain difficult to validate (15,40) (UNITED STATES OF AMERICA)	Agree about CC relative importance as a driver of groundwater. This has been added: "Groundwater resources in Africa will be variably affected by climate change, though the overall impact of climate change is expected to be relatively small in comparison with negative impacts on groundwater from non-climatic drivers, including population growth, urbanization, increased reliance on irrigation to meet food demand, and land use change".
438	67496	22	19	3	19	4	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
439	57867	22	19	11	0	0	Nakaegawa et al. (2013) supported the mimial or insignificat annual mean changes at the gauge stationunder A1B but significant decrease in most lower regions of the Congo River basin with low uncertaintiy. In addition, significant increase with low uncertainites are found in January to April at the gauguing station of the Congo River as well as the Nile River. This is due to increase in precipitation in this season in the tropical Africa. (Toshiyuki Nakaegawa, Meteorological Research Institute)	What is the article? Only the author was given.
440	67497	22	19	13	19	13	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
441	74456	22	19	13	19	20	It should be noted that understanding linkages between groundwater and climate change in Africa is hindered by lack of comprehensive groundwater/aquifer mapping in many parts of the continent (e.g See Taylor et al., 2012). (UNITED STATES OF AMERICA)	That is stated in the section already.
442	74457	22	19	13	19	20	This section seems to be poorly nuanced and misleading. Deepwater aquifers typically have very slow recharge rates, so short term changes in rainfall would not affect their levels, while aquifers closer to the surface respond much more quickly to seasonal and yearly changes in rainfall, and thus are more exposed to climate change. Conversely, drawing down deepwater aquifers may have more significant long term effects than for shallow aquifers given the much slower recharge rate of these deeper aquifers. (UNITED STATES OF AMERICA)	These concerns are already noted in this section "An analysis by MacDonald et al. (2009) indicated that changes in rainfall would not be expected to directly impact the recharge of deep aquifers in areas receiving below 200 mm rainfall per year, where recharge is negligible due to low rainfall. " Text added about shallow aquifers and sensitivity to CC.
443	67498	22	19	14	19	15	Split infinitive: move 'directly' to after 'year'. (Peter Burt, University of Greenwich)	Directly ommitted.
444	67499	22	19	15	19	15	'per' should be in italics. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
445	67500	22	19	18	19	18	'per' should be in italics. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
446	74458	22	19	22	19	29	As written this section implies that coastal aquifers are not affected by changes in rainfall patterns? Is this the intended message? (UNITED STATES OF AMERICA)	It is a separate paragraph from the one that preceded it on rainfall. This paragraph is on unique stresses facing coastal aquifers. The word 'particularly' in line 22 has been replaced with 'additionally'. The intent being that there are climate stresses on coastal aquifers in addition to those from rainfall.
447	67501	22	19	34	19	34	Insert comma after ';Thus'. (Peter Burt, University of Greenwich)	Done.
448	78383	22	19	37	19	47	This paragraph seems out of place in a section titled "vulnerability and impacts". (Dáithí Stone, University of Cape Town)	This is true though it is intended to link in with the groundwater text above it.
449	67502	22	19	41	19	41	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
450	74459	22	19	41	19	42	This statement about groundwater is worrisome because it appears to be comparing all groundwater (both renewable and essentially non-renewable on realistic timescales) with just annual renewable freshwater resources. This could lead some to conclude that we should just mine the groundwater. While factually correct, it needs to be better caveated in the groundwater section what the actual characteristics of the groundwater resource is. (UNITED STATES OF AMERICA)	The sentence about theoretical total groundwater reserves are followed by three sentences that state the need to better understand the spatial and temporal dimensions of the resource: "However, borehole yields are variable and in many places water yields are relatively low. Detailed analysis of groundwater conditions for water resource planning would need to consider these constraints. In this respect, developing organizational frameworks and strengthening institutional capacities for more effectively assessing and managing groundwater resources [over the long term--added] are critically important "
451	83312	22	19	50	0	0	Section 22.3.4. In the further development of this section, the chapter team should continue to coordinate with the assessment and findings of chapter 7, providing cross-references wherever relevant. Additionally, the section should be shortened as much as possible. (Katharine Mach, IPCC WGII TSU)	Checking for consistency and cross-referencing with Chapter 7 has been done.
452	69666	22	19	51	24	2	While the authors implicitly recognize that Africa is divided into regions and countries that vary much in their context, they fail to sufficiently substantiate attributions of climate change in the food security crops of different regions, with of course a few exceptions in southern Africa and eastern Africa. The authors need to reassign level of probabilities of changes in production of major staples in each region since there is high confidence that climate change is likely to have an overall negative effect on yields e.g of cereals in Africa. A generalized probabilities of changes in yields can be made for Sahel/West Africa, central Africa as they have done from southern and eastern Africa. (NETHERLANDS)	It is difficult to assign levels of probability given the uncertainty in climate model projections with respect to precipitation (particularly in West Africa where there is high model disagreement regarding precipitation projections ) and given the uncertainty around future emissions trajectories that drive climate forcing.
453	80147	22	19	52	0	0	Perhaps mention that African agriculture systems are also highly resilient due to farming practices, crop varieties, and social mechanisms such as share herding and labor exchange, which foster rapid recovery, even among poorer households; for example, see Peter Little et al. "Moving in Place: Drought and Poverty Dynamics in South Wollo, Ethiopia," <i>Journal of Development Studies</i> 42 (2), 2006, pp. 200-225 (A. Peter Castro, Maxwell School, Syracuse University)	Such endogenous coping strategies are highlighted in Box 22.2 in section 22.4.5.6.
454	56265	22	20	0	0	0	I suggest to add this figure : <a href="http://iopscience.iop.org/1748-9326/8/1/014040/article#erl450197fig2">http://iopscience.iop.org/1748-9326/8/1/014040/article#erl450197fig2</a> from the paper of Sultan et al. (2013). Indeed it clearly points out that future adverse climate impacts on crop yields in West Africa have no equivalents in historical conditions, for which the main controlling variable was rainfall variation. In all climate change scenarios, the projected yield decrease is modelled to be as severe as, or more severe than, during the record droughts of the 1970s and 1980s, which had dramatic consequences. The exact reference is "Sultan B., Roudier P., Baron C., Quirion P., Muller B., Alhassane A., Ciais P., Guimberteau M., Traoré S.B. and M. Dingkuhn (2013) Assessing climate change impacts on sorghum and millet yields in the Sudanian and Sahelian savannas of West Africa, <i>Environ. Res. Lett.</i> 8 014040 doi:10.1088/1748-9326/8/1/014040." (NOTE: Please refer to the supporting material page for the figure and caption) (benjamin Sultan, IRD)	The study is now referenced in this section.
455	80148	22	20	2	0	0	Calestous Juma's <i>The New Harvest</i> (Oxford, 2011) might be worthwhile referencing in discussions on African agriculture. It is especially worthwhile regarding institutional and policy changes that might promote technological innovation (A. Peter Castro, Maxwell School, Syracuse University)	Institutional and policy changes are covered extensively in the adaptation section (22.4).

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
456	60385	22	20	2	20	12	Is it not worth mentioning here in the introduction to this section how livestock systems themselves may also be vulnerable? It is mentioned later on, but should it not also be mentioned in the introduction? (Emma Archer van Garderen, CSIR)	The introductory paragraph now makes mention of this.
457	56264	22	20	5	0	0	In this section, we could mention the work of Sultan et al. (2013) who found evidences of major crop yield losses of the main staple food crops (sorghum and millet) in Africa mainly due to the increase of temperatures. The exact reference is "Sultan B., Roudier P., Baron C., Quirion P., Muller B., Alhassane A., Ciais P., Guimberteau M., Traoré S.B. and M. Dingkuhn (2013) Assessing climate change impacts on sorghum and millet yields in the Sudanian and Sahelian savannas of West Africa, Environ. Res. Lett. 8 014040 doi:10.1088/1748-9326/8/1/014040." (benjamin Sultan, IRD)	The study is now referenced in this section.
458	78384	22	20	5	0	0	"likely" italicised? (Dáithí Stone, University of Cape Town)	Likely replaced with projected
459	83313	22	20	5	20	5	If "likely" is being used as a likelihood term, reflecting a probabilistic basis for its assignment, it should italicize. Casual usage of the reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Likely replaced with projected
460	74460	22	20	6	20	12	This section could make more of the fact that climate change actually represents enormous opportunities for livestock keepers, who are held back by numerous factors (decreasing mobility due to borders, suspicion by central and urban governments, a feeling pastoralists are "primitive" and trouble makers, lack of services etc). The idea of pastoralism as a viable and profitable climate change related economic resource/system has been well brought out in e.g. "Modern and Mobile" report by IIED: <a href="http://www.iied.org/african-livestock-can-triumph-face-climate-change">http://www.iied.org/african-livestock-can-triumph-face-climate-change</a> . See also Escaping the Hunger Cycle, pathways to resilience in the Sahel - Sahel Working Group September 2011 <a href="http://www.e-alliance.ch/fileadmin/user_upload/docs/Publications/Food/20...">http://www.e-alliance.ch/fileadmin/user_upload/docs/Publications/Food/20...</a> (UNITED STATES OF AMERICA)	The adaptation section does contain statements and discussion on the positive role of mobility (and implicitly, pastoralism) for adaptation - e.g. 22.4.5.2 and the last paragraph of 22.4.5.3.
461	84821	22	20	15	0	0	Section 22.3.4.1: Please ensure consistency between the calibrated uncertainty language in this section and in the executive summary. (Michael Mastrandrea, IPCC WGII TSU)	The uncertainty designation of very likely is consistent between this section and the ES.
462	78385	22	20	17	0	0	"very likely" italicised? (Dáithí Stone, University of Cape Town)	Italicized
463	83314	22	20	17	20	17	If "very likely" is being used as a likelihood term, reflecting a probabilistic basis for its assignment, it should be italicized. Casual usage of the reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Italicized
464	74461	22	20	17	20	28	Given the large uncertainty in current GCMs ( CMIP3 & CMIP5) projections of precipitation over many regions of Africa, uncertainty envelopes are necessary when referring to crop yield projections, and should be better presented in this section. (UNITED STATES OF AMERICA)	The authors agree that uncertainty in future precipitation warrants caution in interpreting projections of yield loss. For that reason, this section has avoided giving percentages of projected yield change reported the cited studies but has instead indicated the direction of change.
465	78386	22	20	23	20	24	Losses due to what? It seems unusual referencing past losses against the current (diminished) value, rather than earlier (peak) values. (Dáithí Stone, University of Cape Town)	Recent' was supposed to say 'projected'. This has been changed.
466	67503	22	20	24	20	24	I am not happy about citing references as 'submitted'. What happens if they are not published (and worse, if flaws in the data/methodology arise during review)? (Peter Burt, University of Greenwich)	The reference has passed peer review and been accepted for publication.
467	78387	22	20	30	0	0	"likely"? Is this not trivial, that impacts will not be *exactly* the same? (Dáithí Stone, University of Cape Town)	The word 'likely' has been omitted.
468	83315	22	20	30	20	30	If "likely" is being used as a likelihood term, reflecting a probabilistic basis for its assignment, it should be italicized. Casual usage of the reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	The word 'likely' has been omitted.
469	78388	22	20	30	22	12	There are a lot of "could"s here. (Dáithí Stone, University of Cape Town)	Noted. A number of could statements replaced with suitable alternative text.
470	67504	22	20	31	20	31	Subscript '2' in 'CO2' required (Peter Burt, University of Greenwich)	The IPCC science editor will see to this.
471	83316	22	20	49	20	49	Is the chapter team here referring to a 2°C global mean temperature increase? This could be clarified. (Katharine Mach, IPCC WGII TSU)	It does not refer to a 2 C global temp rise, rather the referenced studies modeled a 2 C temperature rise for the areas of study.
472	74462	22	20	54	20	54	Consider adding a comment on contrasting population growth and agricultural extensification, versus intensification. Africa has primarily maintained its agricultural supply through extensification, which will likely interact with temperature increases in dangerous ways. (UNITED STATES OF AMERICA)	The assessment is based on information from peer-review literature. The author team is unaware of literature that deals with the issue of how extensification will interact with temperature increases.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
473	76892	22	21	8	0	0	This paragraph needs to cross-reference chapter 7. (Food and Agriculture Organization of the United Nations (FAO))	Cross reference to Chapter 7 has been added.
474	60386	22	21	13	21	14	Are there no more recent references available here? (Emma Archer van Garderen, CSIR)	The authors were unable to find more recent references.
475	74463	22	21	15	23	12	This chapter draws very heavily on results based on crop models driven with coupled model outputs; these outputs have a high degree of uncertainty, and this uncertainty needs to be better represented in the discussion. The section could also benefit greatly from more analysis and discussion based on research focusing on OBSERVED trends and simulations driven with OBSERVED data. The singular emphasis on climate change simulations ignores many valid and pertinent avenues to knowledge. (UNITED STATES OF AMERICA)	The uncertainty of crops models is given thorough coverage in Chapter 7. Yes, there are uncertainties in coupled climate-crop modeling, which the studies assessed largely acknowledge. The literature assessed on CC impacts on crops in this chapter represents the predominant body of knowledge on this subject. It is beyond the scope of this regional chapter to evaluate the merits of different impact estimation methods.
476	74464	22	21	16	21	37	In the crop section it is indicated that changes in climate will make some areas no longer suitable for farming, but still suitable for pastoralism. The question then is if the reduction in pastoral lands from climate change is greater than the increase in lands available as farming moves south. This should be addressed, as it is probably as much a policy issue as a physical issue. (UNITED STATES OF AMERICA)	The section states that in some areas farming systems could transition from mixed crop-livestock to predominantly livestock. It does not make any statements about suitability of these areas for pastoralism, as it is unclear how suitability in these areas could change given future population pressures, land degradation and climate change. The authors are unaware of any literature about how areas for pastoralism could shift (some out, some in), though this is an interesting question.
477	67505	22	21	21	21	21	Insert 'by' after 'increase'. (Peter Burt, University of Greenwich)	Done.
478	67506	22	21	27	21	27	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The copy editor will see to this.
479	67507	22	21	27	21	27	'per' should be in italics. (Peter Burt, University of Greenwich)	The copy editor will see to this.
480	60387	22	21	30	21	37	Some solid references, but more to to date references should here also be included. (Emma Archer van Garderen, CSIR)	More recent literature specific to this issue was not found.
481	63231	22	21	30	21	37	In a recent paper we documented how climate variability has influenced cattle in Africa the last 50 years. Precipitation is the main driver, but only influence cattle in dry environments. It is uncertain if responses to climate variability can be translated to climate change. Temperature does not seem to have influenced national cattle holdings to a large degree. In AR4 it was stated that "changes in range-fed livestock numbers in any African region will be directly proportional to changes in annual precipitation". This seems to be wrong, and should be clarified in AR5. 1) Lunde et al. (2013) Cattle and climate in Africa: How climate variability has influenced national cattle holdings from 1961–2008. PeerJ 1:e55 <a href="http://dx.doi.org/10.7717/peerj.55">http://dx.doi.org/10.7717/peerj.55</a> (Torleif Markussen Lunde, University of Bergen)	This article has been included.
482	84822	22	21	40	0	0	Section 22.3.4.3: This material is summarized with high confidence in the executive summary. Please clarify the differences here. (Michael Mastrandrea, IPCC WGII TSU)	Changes have been made to the ES to ensure consistency with this section's text.
483	67508	22	21	43	21	43	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The copy editor will see to this.
484	64325	22	21	53	0	54	Omission of genetically-modified banana; these could have different response to the projection/mentioned temperature increase (see literature on tissue culture banana technology in Kenya by KARI (Kenya agriculture research institute) (Margaret Mwangi, Pennsylvania State University)	This is a very valid point, however the authors were unable to find peer-review literature on GM bananas and climate change.
485	67509	22	22	2	22	2	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The copy editor will see to this.
486	67510	22	22	3	22	3	Mycosphaerella fijiensis' should be in italics. (Peter Burt, University of Greenwich)	The copy editor will see to this.
487	74465	22	22	5	22	12	CC impacts of pests and diseases should be distinctly discussed and not get mixed up with CC impacts on invasive weeds (UNITED STATES OF AMERICA)	The section heading has been changed to include weeds
488	67511	22	22	6	22	6	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The copy editor will see to this.
489	67512	22	22	8	22	8	Striga' should be in italics. (Peter Burt, University of Greenwich)	The copy editor will see to this.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
490	83317	22	22	15	0	0	Section 22.3.4.4. The chapter team should consider merging this section with 22.3.2.3.2. (Katharine Mach, IPCC WGII TSU)	These sections have been better integrated, with material from this section pulled into and merged with 22.3.2.2 and 22.3.2.3.
491	64570	22	22	15	22	44	22.3.4.4. you could refer to ch 30.5. fishery regions are included in some subsections. chapter 6 offers projections of future redistribution of fishery catch potential (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	This chapter has been cross-referenced.
492	74466	22	22	17	22	44	The section on fisheries is repetitive. It seems to be covered in other areas of the chapter related to lakes and also coasts. (UNITED STATES OF AMERICA)	Fisheries text from other sections in the chapter are being merged and integrated.
493	67513	22	22	21	22	21	Insert 'by' after 'increase'. (Peter Burt, University of Greenwich)	Done.
494	74467	22	22	23	22	34	Possible changes in upwelling should be discussed. Also, are there any differences between the effects on marine, coastal and inland fisheries? Are the climate impacts expected to be relatively more important in one area than another? (UNITED STATES OF AMERICA)	Implications of ocean upwelling have been added in section 22.3.2.3.
495	71523	22	22	26	22	26	The reference M.K. Chanded and al, in prepartation, Plos journal should be completed... (Jacques Andre NDIONE, Centre de Suivi Ecologique)	No such reference exists in this chapter.
496	64571	22	22	30	22	30	how many reefs are affected on African coasts? A good general reference would be the CC Box Coral Reefs which gives examples for regional variety for damaged/destroyed reef regions. If you could provide more details, the confidence level in the Executive summary would result more plausible (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	Discussion on coral reefs have been added I section 22.3.2.3. for more information please check chapter 5, 6 and 30
497	67514	22	22	30	22	30	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The copy editor will see to this.
498	67515	22	22	31	22	31	Delete comma after 'Seychelles'. (Peter Burt, University of Greenwich)	Done.
499	64572	22	22	31	22	32	you may refer to 30.5.4.1.5. East Africa coast and Madagascar. They provide confidence levels (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	This chapter has been cross-referenced.
500	61970	22	22	36	22	44	And this does not take into account additional poaching offshore by foreign fleets, whose own patterns of activity may equally be affected by climate change in other regions - causing displacements of fishing effort from those regions and the implication of local Africa fishers in these illegal activities (Matthew Bunce, Institute of Marine Engineering, Science and Technology)	This is a good point though the authors were unable to find any literature on the poaching-climate change issue.
501	67516	22	22	38	22	38	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	The copy editor will see to this.
502	67517	22	22	40	22	40	Delete comma after 'Senegal'. (Peter Burt, University of Greenwich)	Done.
503	78389	22	22	41	0	0	"Could"? (Dáithí Stone, University of Cape Town)	Could replaced with will.
504	69667	22	22	47	23	18	Nowadays the focus of most country's policy is on food sovereignty than food security. As this may affect adaptation strategies to climate change, the authors need to consider including food sovereignty in their discussion as well (NETHERLANDS)	There is mixed evidence in the literature for this. In many cases, national governments are still focused more on food security than food sovereignty, and the food sovereignty push has come from groups within countries concerned about GMOs, land grabs and the like. Literature supporting the link to adaptation planning is at this stage tenuous.
505	74468	22	23	1	23	9	It should be made clear that there is a difference between food production (i.e., the actual production of food) and food security (i.e., the physical access to food). Just because food production decreases does not automatically imply that food security has also decreased, this depends on a number of other factors. This is made implicitly clear in the discussion about urbanization on lines 11-14, and this discussion should be moved forward when defining food production vs food security. (UNITED STATES OF AMERICA)	The section (22.3.4.5) makes very clear that food security is about more than food production and in fact food production per se is not mentioned in this section.
506	78390	22	23	2	0	0	Thinking that most rural poor work on the food production side, would not higher food prices be beneficial in an economic sense? (Dáithí Stone, University of Cape Town)	Actually there is increasing dependency on purchased food in rural areas, particularly during the 'hungry season' that precedes the rainy season when HH food stocks are typically low. Yes, there will be beneficiaries in rural areas but also many small producers (female headed household, for example) who do not benefit but rather are negatively impacted by higher food prices.
507	67518	22	23	7	23	7	Split infinitive: move 'better' to after 'understand'. (Peter Burt, University of Greenwich)	Done.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
508	80149	22	23	9	0	0	Rising food prices in 2007-2008 accelerated the rush for farmland in Africa among global investors. This has intensified competition for land, as well as resulted in displacement and resettlement of communities. This has been covered mainly by NGOs such as the Oakland Institute, though the Journal of Peasant Studies and other academic sources have covered it as well. (A. Peter Castro, Maxwell School, Syracuse University)	This is an excellent point. However, there are chapter space constraints, and the lack of a direct causal link to climate change prevents including it in an IPCC assessment.
509	70424	22	23	11	23	15	consider the following literature: Lane, K., Hovorka, A., and Legwegoh, A. (2012). Urban food dynamics in Botswana: insights from Gaborone's Central Business District. African Geographical Review. 1-15 (Wame Lucretia Hambira, University of Botswana )	This article is very informative, however it was not included because it did not reference climate change.
510	78391	22	23	16	23	17	Do we have any indication that floods are more likely in the future? (Dáithí Stone, University of Cape Town)	Wording change from 'increased floods damage transportation infrastructure ' to 'the potential for increased flooding places transportation infrastructure at higher risk of damage.' The combination of land use change in urban/peri-urban and more intense rainfall under a warming climate does increase the potential of flooding.
511	78392	22	23	21	0	0	This subsection is not following the pattern within 22.3 of discussing vulnerability to and impacts of climate change. Instead it is considering vulnerability to and impacts of economic planning. (Dáithí Stone, University of Cape Town)	Agree with this point. This section is moved to Emerging Issues. Biofuels are an important dimension of energy security and low C development. The emphasis is less on economic planning than it is on opportunities and costs of biofuels in a development context.
512	69668	22	23	21	23	53	This section could discuss more strongly the impact of foreign direct agricultural investments in Africa - land grabbing. The emphasis on biofuel though relevant misses some important points in this topic. It is true we need to characterize biofuel crops, but the main point is their impact on livelihood security of poor farmers. See our comments above row 9 on chapter 22 page 4. (NETHERLANDS)	The authors agree with the essence of this statement, however the addition is beyond the scope of an IPCC assessment.
513	74469	22	23	23	24	2	Much of what is discussed here has little to do with climate change impacts or adaptation. Can the authors make the connections more clear? (UNITED STATES OF AMERICA)	More of a connection will be made with energy security and low C development pathways that intersect with land availability for food production which in turn intersects with VIA.
514	67519	22	23	30	23	30	Delete comma after 'pastoralists': all these depend on the land resource base, not just the migrant farmers. (Peter Burt, University of Greenwich)	Done.
515	83318	22	24	5	0	0	Section 22.3.5. In the further development of this section, the chapter team should continue to coordinate with the assessment findings of Chapter 11, providing cross-references wherever relevant. Additionally, the section should be shortened as much as possible. (Katharine Mach, IPCC WGII TSU)	Thank you
516	60388	22	24	5	27	13	It is very encouraging to see such a large section vector borne diseases - but I'm concerned that there is next to nothing on heat stress and air quality/climate change interactions? (Emma Archer van Garderen, CSIR)	Unfortunately, research on these topics in Africa remains limited. Literature updated.
517	78393	22	24	9	0	0	"Could"? (Dáithí Stone, University of Cape Town)	The extent to which Africa experiences impacts will depend on public health infrastructure, surveillance programs, and other factors.
518	78394	22	24	11	24	15	This could be shortened and more focused on Africa. (Dáithí Stone, University of Cape Town)	Numbers updated and focus on Africa.
519	70506	22	24	12	24	12	repeat of the word 'malaria' (Caroline Bain, Met Office)	Sentence deleted.
520	74470	22	24	14	24	16	There is a reference to deaths from diarrhea on page 24 lines 14-16 regards 1 in 5 deaths citing 2009 WHO and UNICEF reports; this may longer be correct - WHO figures are more like 10-11% of under 5 deaths are now from diarrhea and reflect a steady falling trend. (UNITED STATES OF AMERICA)	Numbers updated.
521	69669	22	24	23	26	2	The climate change component of the impact of Leishmaniasis should be carefully characterized. For example, dam construction were not designed as a response to climate change although the environmental modifications arising from them have an influence on the composition of sandfly species and rodent vectors. Dams were constructed for hydro electric power, irrigation among other reasons not necessarily climate change (NETHERLANDS)	The sentence clarified that activities in other sectors, including adaptation and mitigation options, can increase vulnerabilities. Some regions of Africa have installed dams in response to changing water availability, which can be associated with climate change.
522	78395	22	24	24	0	0	"Could"? (Dáithí Stone, University of Cape Town)	Sentence deleted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
523	67520	22	24	26	24	26	I am not happy about citing references as 'in prep.'. What happens if they are not published (and worse, if flaws in the data/methodology arise during review)? (Peter Burt, University of Greenwich)	Sentence deleted.
524	69670	22	24	26	24	26	M.K. Chahed and al, in preparation, Plos journal is missing in the reference but also can not be confirmed as peer reviewed! Replace with suitable article (NETHERLANDS)	Sentence deleted.
525	78396	22	24	29	0	0	Perhaps: "Current impacts and projections of future impacts" make more sense? (Dáithí Stone, University of Cape Town)	Changed
526	74471	22	24	31	24	33	There have been a number of studies linking climate and health in Africa. For, example, Githeko et al. ( KEMRI)-malaria, Madeline Thomsen et al., (IRI)-malaria,meningitis, etc. So, it may not be accurate to say limited studies linking CC and health have been conducted. (UNITED STATES OF AMERICA)	The amount of literature lags other sectors, as stated.
527	78397	22	24	38	0	0	"Could"? (Dáithí Stone, University of Cape Town)	Sentence rewritten.
528	78398	22	24	38	24	46	I am not sure what to take from this paragraph. It mainly seems to say that cholera outbreaks tend to occur in the wet season. The de Magny paper seems to be the only one implying more. (Dáithí Stone, University of Cape Town)	The literature review is updated.
529	74472	22	24	48	24	50	Please consider citing Jankowska, Marta M., et al. "Climate change and human health: Spatial modeling of water availability, malnutrition, and livelihoods in Mali, Africa." Applied Geography 33 (2012): 4-15. AND Grace, Kathryn, et al. "Child malnutrition and climate in Sub-Saharan Africa: An analysis of recent trends in Kenya." Applied Geography 35.1 (2012): 405-413. (UNITED STATES OF AMERICA)	Added
530	74473	22	24	48	24	50	This is a very interesting statement, and it might be helpful to add through what physical change this increase in malnutrition will be derived. (UNITED STATES OF AMERICA)	As stated, the change is in the prevalence of severe stunting.
531	78399	22	24	48	24	50	I think the scenario needs to be specified here. Supposedly some might expect the health, or other, interventions with prevent this from happening. What are the conditions required? (Dáithí Stone, University of Cape Town)	Scenario added. Prevention of severe stunting, while improved, remains a challenge.
532	78400	22	24	53	0	0	"Could"? (Dáithí Stone, University of Cape Town)	Changed to "is projected to be"
533	78408	22	25	3	0	0	This section could be shortened quite a bit I think, without losing relevance to the assessment. It is certainly going into more detail than previous sections. (Dáithí Stone, University of Cape Town)	Section edited wherever possible.
534	71524	22	25	3	27	13	I've got teh feeling that diseases outbreaks in relation with seasonal, inter-annual, and intra-seasonal variability should be more documented... (Jacques Andre NDIONE, Centre de Suivi Ecologique)	Literature search updated.
535	74474	22	25	5	27	13	An important take away message from the health sector is not just that the area for some diseases may increase, but that diseases may become prelevant in areas that did not previously experience it, and thus the local populations will neither have a built up tolerance nor the ability to cope with it. Thus the total area that a disease affects is not the only metric of importance, but also its potential impact on the people living in those areas. (UNITED STATES OF AMERICA)	A sentence was added to the malaria paragraphs.
536	63225	22	25	8	25	11	New research shows malaria transmission peaks at 25 degrees C, and declines sharply over 28 C. This should be stated, and cited: 1) Lunde, Torleif Markussen, Bayoh, Mohamed Nabie, and Lindtjørn, Bernt: How malaria models relate temperature to malaria transmission., Parasit Vectors 6(1), 20, 2013 2) Mordecai, Erin A, Paaijmans, Krijn P, Johnson, Leah R, Balzer, Christian, Ben-Horin, Tal, de Moor, Emily, McNally, Amy, Pawar, Samraat, Ryan, Sadie J, Smith, Thomas C, Lafferty, Kevin D, and Thrall, Peter: Optimal temperature for malaria transmission is dramatically lower than previously predicted., Ecol Lett, 2013 (Torleif Markussen Lunde, University of Bergen)	Sentence and references added.
537	78401	22	25	9	25	10	Does the nonlinearity matter here? Anyway quadratic and exponential are nonlinear. (Dáithí Stone, University of Cape Town)	Yes, nonlinearity matters. Quadratic and exponential deleted.
538	78402	22	25	11	0	0	"Will likely"? When? "likely" italicised? (Dáithí Stone, University of Cape Town)	Replaced with "are expected to".
539	83319	22	25	11	25	11	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Replaced with "are expected to".
540	63224	22	25	12	25	13	I do not see how ENSO events are relevant in the context of climate change. If this sentence is to be included it must be backed up by research showing the frequency of ENSO events will change with anthropogenic driven climate changes. (Torleif Markussen Lunde, University of Bergen)	The paragraph assesses the associations between malaria and weather and climate.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
541	63230	22	25	28	25	29	The reference to Afrane 2012 is important, since most models projecting changes in the intensity of malaria transmission neglects malaria is transmitted by several species. The sentence could be clearer by stating that changing vector composition due to climate change could lead to changes in malaria transmission. These changes are currently poorly understood. (Torleif Markussen Lunde, University of Bergen)	Sentence clarified.
542	78403	22	25	31	25	33	This must be under some unspecified scenario. (Dáithí Stone, University of Cape Town)	Different scenarios were used in different studies.
543	69671	22	25	31	25	37	Statement "reason for different projection across models including using GCMs versus regional climate models..." is not fitting well within the paragraph. (NETHERLANDS)	Wording changed to clarify the point.
544	63226	22	25	32	25	32	It is stated that areas above 2,000 meters will be particularly affected. This is inaccurate. Writing "with temperatures which are currently too low to support malaria transmission" would be more physical. Malaria transmission is related to elevation due to decreasing temperatures and specific humidity with elevation. (Torleif Markussen Lunde, University of Bergen)	Clarification added.
545	78404	22	25	33	25	35	These two reasons sound similar. Curiously, no uncertainty in the way the malaria system might actually respond to climatic impulses is listed here, while I would guess that that is much larger than any uncertainty on the climate modelling side. (Dáithí Stone, University of Cape Town)	The last phrase is intended to capture this point; phrase edited to clarify.
546	67521	22	25	34	25	34	'versus' should be in italics. (Peter Burt, University of Greenwich)	Copy editor will make versus consist across the report.
547	84823	22	25	39	26	2	The executive summary states a significant positive relation of leishmaniasis with rainfall in North Africa, but the only mention of this here is in the context of Tunisia specifically. Please ensure support for the characterization in the executive summary. (Michael Mastrandrea, IPCC WGII TSU)	References updated.
548	78405	22	25	43	25	44	This seems to say that something that has happened in Algeria is affecting what is happening everywhere else. (Dáithí Stone, University of Cape Town)	Sentence edited to clarify.
549	67522	22	25	49	25	49	Delete comma after 'Algeria': the disease is endemic in all these areas. (Peter Burt, University of Greenwich)	Copy editor will ensure consistency of serial commas.
550	67523	22	26	8	26	8	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Copy editor will ensure consistency of italics.
551	67524	22	26	10	26	10	'enye' required over the 'n' in 'Nina'. (Peter Burt, University of Greenwich)	Copy editor will address.
552	69672	22	26	15	26	24	Need a proper reference to support the US\$ 2 billion cost of livestock diseases (NETHERLANDS)	Deleted. Numbers taken from the African Union.
553	74475	22	26	15	26	24	There should be at more focus on impacts of CC on pastoralism and pastoralists' livelihoods. (UNITED STATES OF AMERICA)	This issue is covered in the chapter on livelihoods and poverty.
554	67525	22	26	18	26	18	Mix up of disease and pathgoen. Theileriosis is the illness caused by ticks of the genus Theileria. (Peter Burt, University of Greenwich)	Thank you. Change made.
555	67526	22	26	21	26	21	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Copy editor will ensure consistency of italics.
556	83320	22	26	22	26	24	The relevant timeframe and drivers for this observation could be specified. Additionally, what is an economically important tick species? This could be clarified. (Katharine Mach, IPCC WGII TSU)	Information added. Ticks that have significant economic costs.
557	78406	22	26	24	0	0	What is meant by "economically important tick species"? (Dáithí Stone, University of Cape Town)	Ticks that have significant economic costs.
558	74476	22	26	27	26	28	This tie into increase irrigation is an interesting secondary effect, and it could also be called out in the water resource section. Increases in demand for irrigation driven by more erratic rainfall and increasing temperatures may have significant impacts on water availability, especially at certain times of the year. (UNITED STATES OF AMERICA)	Thank you for pointing out the correction.
559	69673	22	26	41	26	42	Missing article in the reference - Haydent et al. (NETHERLANDS)	Added.
560	67527	22	26	42	26	42	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Copy editor will ensure consistency of italics.
561	74477	22	26	51	27	3	Be careful making claims about causality. As presented, climate change is the sole factor contributing to changes in spread or behaviour of vectors of emerging viruses (e.g. hantavirus). Surely changes in habitat or increasing human activities in forests, etc. are more important influences on changes in exposure to shrews, bats, moles, etc. Only one reference is listed and there is significant work on emerging zoonoses and factors that influence these. Climate may contribute but should not be made out as a major factor for viruses. See the work of Nathan Wolfe for examples. (UNITED STATES OF AMERICA)	Sentences edited to include point.
562	78407	22	26	52	26	53	All of these sentences centre around a "could" or a "may". (Dáithí Stone, University of Cape Town)	Thank you.
563	67528	22	27	2	27	2	'Glossina' should be in italics (Peter Burt, University of Greenwich)	Change made.
564	78410	22	27	5	27	6	Is there really nothing more about heat exposure on a hot continent in which most people work outdoors? This would strike me as the top of the list. (Dáithí Stone, University of Cape Town)	References updated.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
565	78409	22	27	5	27	13	These do not sound like vector-borne diseases. (Dáithí Stone, University of Cape Town)	Title of sub-section changed.
566	83321	22	27	6	27	6	It would be helpful to specify whether these are health effects related to climate change. (Katharine Mach, IPCC WGII TSU)	The reader is referred to chapter 11.
567	67529	22	27	10	27	10	Delete comma after 'cover'. (Peter Burt, University of Greenwich)	Copy editor will ensure consistency of serial commas.
568	83322	22	27	16	0	0	Section 22.3.6. In the further development of this section, the chapter team should be sure to carefully coordinate with the assessment and findings of chapter 12, providing cross-references and ensuring harmonized assessment. (Katharine Mach, IPCC WGII TSU)	Yes. Revised Section should now be harmonized with findings of Chapter 12 SOD has been and cross-references included where possible
569	84824	22	27	16	0	0	It is important that this section cross-references and coordinates with Chapters 12 and 19. Please also ensure clarity about distinctions between climate variability and climate change as well as their interactions in the context of extremes. (Michael Mastrandrea, IPCC WGII TSU)	Checked for alignment with Chapters 12 and 19 SOD. Cross-references added; checked for clarity on climate variability and climate change
570	60389	22	27	16	28	54	As mentioned earlier, I am extremely hesitant about this section. The evidence is really thin - we need to treat it with caution. I am not sure that it merits an entire section at present. (Emma Archer van Garderen, CSIR)	This is a valid point. However, interrelating issues between climate change and human security , conflict and migration in particular, are increasingly subject to debate and should be contained in this chapter. Section has however been reduced in length though and the lack of robust evidence has been mentioned
571	74478	22	27	18	27	18	Climate variability be extended to include change. While that could be implied, people often talk about current variability and future change as being separate, and so the text as phrased (while correct) could be misleading (UNITED STATES OF AMERICA)	Sentence has been removed
572	83323	22	27	18	27	18	This statement should be very carefully coordinated with chapter 12, as well as clarified. Is the chapter team referring to a current observation of the effect of climate variability? Or is it asserting a future outcome? If so, can this future assertion be robustly supported by the literature? A more qualified formulation may be preferable. (Katharine Mach, IPCC WGII TSU)	Statement removed, cross reference to Chapter 12 added
573	70507	22	27	27	27	27	significantly' should be removed as no statistical significance is implied and it is not necessary in the statement (Caroline Bain, Met Office)	removed
574	83324	22	27	27	27	27	The chapter team should clarify and specify what is meant by "ultimate damages." (Katharine Mach, IPCC WGII TSU)	Rephrased: "Damages related to climate change"
575	78411	22	27	29	0	0	"Could"? (Dáithí Stone, University of Cape Town)	As formulated in Ahmed et al 2011
576	83325	22	27	29	27	29	It would be helpful to further clarify what is meant by "climate volatility" here. (Katharine Mach, IPCC WGII TSU)	rephrased: "changes in the mean and extremes of climate variables"
577	83326	22	27	31	27	32	It would be preferable to specify the full range of the simulated effect instead of "up to 5%." Additionally, is this percentage a yearly value or a summed value over the 20 years? (Katharine Mach, IPCC WGII TSU)	Full range of the simulated effect has been specified. The percentage refers to annual losses as stated in the text
578	84825	22	27	31	27	33	Does this mean that the total over 20 years is 5%, or that it is 5% per year, or another interpretation? Please clarify. (Michael Mastrandrea, IPCC WGII TSU)	"annual" losses. Meaning per year
579	78239	22	27	35	0	0	The varied climate change impacts in Nigeria – more heat and less rain in the arid north, increased torrential rains in the south which engenders gully erosion activities, and sea level rise along the southern coastline – would cost between 6 percent and 30 percent of Nigeria’s GDP by 2050, worth between \$100 billion and \$460 billion (Aaron, 2011) [Aaron Sayne, Climate change Adaptation and Conflict in Nigeria. Special Report 274 of The United States Institute of Peace, 2011] (Elochukwu Ezenekwe, Nnamdi Azikiwe University )	Thank you for this interesting estimates. Unfortunately, the figures in the Sayne reference actually come from a 2009 study by the UK’s Department for International Development (DFID), and Sayne does not give further details as to the scenario of changes related to the GDP estimates
580	78412	22	27	44	0	0	This subsection could be shortened, given the lack of much evidence one way or the other. (Dáithí Stone, University of Cape Town)	Subsection has been revised and slightly shortened
581	83327	22	27	44	0	0	Section 22.3.6.2. This subsection should be very carefully coordinated with the assessment and findings of chapter 12, with cross-references used as appropriate. (Katharine Mach, IPCC WGII TSU)	Checked for alignment with Chapter 12. Cross reference added
582	80150	22	27	46	0	0	The spread of small arms has been a major contributing factor to increased insecurity, not only warfare but also criminal activities. (A. Peter Castro, Maxwell School, Syracuse University)	True without doubt. Space restrictions for this chapter do not allow us to go into more detail. On the association between increases in temperature and violent crime see Chapter 12.5.1
583	74479	22	27	46	28	10	The possible conflicts associated with climate change go well beyond just violent civil wars, and many propose that most climate related conflicts (at least where climate plays a role) might be more localized conflicts. This section should be expanded to include some of the new literature on other types of conflict and their possible relation to a changing climate (UNITED STATES OF AMERICA)	Yes, but we have to keep the section within the limits available. Cross reference has been made to Chapter 12 and 19 SOD for more information

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
584	83328	22	27	51	27	51	Is "diametrically" a stronger term than needed? (Katharine Mach, IPCC WGII TSU)	deleted, section revised
585	56777	22	27	52	28	1	While the chapter is largely informative and clear, this reference to Burke et al 2009b is especially troubling, especially as specific numbers of battle deaths etc have been included. The problem is twofold: the statistical analysis for this article has been rounded, refuted and overturned (by three separate authors in the same journal as the original article appeared); the analysis was largely based on samples that maximized the outcome and violated several standard statistical rules; the implications and original premise of the work is reductive and represents some of the worst examples of modern 'environmental determinism' and 'Africanism' that runs throughout this literature. There would be serious consequences if a respected body such as the IPCC were to give such poor literatures a respectable position within the debate, and those consequences are very serious. As the contributing author for this section, I highly disagree with the tone of the paragraph, as it does not problematize the literature as has been done in multiple quantitative and qualitative works on the subject. (CLIONADH RALEIGH, TRINITY COLLEGE DUBLIN)	Section revised. Burke et al. Have also been quoted in Chapter 12. Specific numbers of battle deaths have been removed. Revised section has been sent to Clionadh Raleigh for her perspective on it.
586	84826	22	27	54	27	1	Please clarify the assumptions underlying this projection, and its citation. (Michael Mastrandrea, IPCC WGII TSU)	Sentence deleted, section revised
587	70508	22	27	54	27	54	include a citation along with the statement 'warmer years leading to significant increases in the likelihood of war' or tone it down/ remove it. (Caroline Bain, Met Office)	Sentence deleted, section revised
588	74480	22	27	54	27	54	Please reference the source of the statement re 54% increase in armed violence etc. (UNITED STATES OF AMERICA)	Sentence deleted, section revised
589	83329	22	27	54	27	54	For this projection, it would be helpful to specify the relevant scenario of climate change, assumptions, and drivers used in the analysis. (Katharine Mach, IPCC WGII TSU)	Sentence deleted, section revised
590	69674	22	27	54	28	3	It is difficult to believe that by 2030 conflict will have increased by 54% !! Several studies have found that cooperation tends to emerge in such conflicting situations (See Theisen, 2012. Peace Research 49[1]; Koubi, et al. 2012. Peace Research 49[1]; Yoffe et al., 2003 JAWRA 39[5]; Wolf, 1998. Water Policy 1[2]). Clear reference could add potency to this projection. In addition the reasoning behind the level of likelihood is not accessible to a non-expert reviewer. (NETHERLANDS)	Sentence deleted, section revised
591	74481	22	28	1	28	3	Explain how high productivity leads to conflict. This statement isn't clear. (UNITED STATES OF AMERICA)	Sentence deleted, section revised
592	56778	22	28	5	0	6	As the author of the piece that supposedly argues that, I find this sentence deeply troubling. I most certainly do not. My piece in 2010 argued that population growth and resource scarcities were products of political marginalization, and that those most severely affected were the poorest, and hence the least likely to actually rebel. Several articles since (both mine and others) have argued on the short term strategic impact of environmental change in determining the timing of events, suggesting that the wet season (and plenty) have a stronger relationship to conflict patterns than the dry. This section overall is not a good representation of the conflict debate. (CLIONADH RALEIGH, TRINITY COLLEGE DUBLIN)	Section has been revised
593	70509	22	28	8	28	8	How do armed conflicts exacerbate drought? Should this be rephrased to 'drought impacts'? (Caroline Bain, Met Office)	Section revised
594	70510	22	28	9	28	9	This suggests there has been an increase in charcoal exports since the war - is this correct? (Caroline Bain, Met Office)	Section revised
595	56849	22	28	10	28	10	How can deforestation lead to drought in a dryland area such as Somalia? I think most climatologists would argue that rainfall in Somalia comes from the sea. The reference here is to Kolmannskog (2010). Kolmannskog is a lawyer. (Tor A. Benjaminsen, Norwegian University of Life Sciences)	Section revised
596	67530	22	28	15	28	15	Delete comma after 'economic'. (Peter Burt, University of Greenwich)	done
597	78318	22	28	15	28	17	A study of migration in Ghana (from the poorer savannah zone in the North to the wealthier forest and coastal zone in the South) unravels the interplay between environmental and economic and political causes of migration. Reference: Van der Geest (2011). North-South migration in Ghana: What role for the environment? International Migration, Vol 49 (S1): 69-94. (Kees van der Geest, United Nations University)	Thank you for this reference, it has been added to the revised section within the available space limits
598	74482	22	28	15	28	51	Most people who migrate due to an extreme event (flooding, drought) soon return, and so are only temporary migrants, while there is also a more permanent shift of folks from rural areas to urban areas. This difference is captured somewhat in this section, but that difference could be made more clearly, and the consequences of the different types of migration elucidated. (UNITED STATES OF AMERICA)	This is a valid point. Due to space constraints, we cannot go into more detail within this chapter. Cross reference to chapter 12 SOD has been added where migration is discussed in more detail.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
599	69675	22	28	15	30	28	An increase in net migration of 0.6 per 1000 arising due to environment disaster is difficult to verify. It is difficult to isolate the combined impacts of other variables on migration. Naude, 2010, cited in the chapter, also mention the shortcoming on the data on net migration used - lack of gross migration data, the unreliability of country level data and the difficulty of measuring migration. Since human migration in Africa depends on complex interaction of social, political, demographic, economic and environmental factors, it is unrealistic to extrapolate impacts in isolated cases of Somalia, Ghana and Mozambique to other countries. The climate change components and its impact on human migration and urbanization should be carefully characterized (NETHERLANDS)	Section revised, figures removed
600	67531	22	28	16	28	16	Insert space before 'l'. (Peter Burt, University of Greenwich)	Done
601	78413	22	28	20	28	22	We only really need the African number. (Dáithí Stone, University of Cape Town)	removed
602	70511	22	28	23	28	23	displaced due to other climate related drivers...' the drivers you mentioned are also due to natural variability so cannot be solely related to climate change. (Caroline Bain, Met Office)	removed
603	83330	22	28	23	28	23	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	removed
604	78414	22	28	23	28	24	"Likely"? (Dáithí Stone, University of Cape Town)	removed
605	83331	22	28	23	28	24	Here, the chapter team is potentially asserting attribution to climate change for these impacts--wording should be very carefully considered to best reflect available understanding. (Katharine Mach, IPCC WGII TSU)	sentence removed
606	67532	22	28	25	28	25	'per' should be in italics (Peter Burt, University of Greenwich)	sentence removed
607	67533	22	28	26	28	26	'per' should be in italics (Peter Burt, University of Greenwich)	removed
608	83332	22	28	31	28	31	By "rapid-onset climate events," does the chapter team mean extreme weather events? If so, this could be clarified. (Katharine Mach, IPCC WGII TSU)	rephrased to: "extreme weather events"
609	78415	22	28	36	28	51	These two paragraphs seem to be repeating the message of the previous paragraph. (Dáithí Stone, University of Cape Town)	Yes, to some extent but giving some examples for Africa.
610	83333	22	28	46	28	46	It would be beneficial to specify further what is meant by "major migration consequences" here--most basically, consequences of what. (Katharine Mach, IPCC WGII TSU)	Consequences of migration
611	74483	22	28	46	28	51	This paragraph is especially important, as it gets at some of the nuance here. The problem with linking climate to social impacts is that the context in which the physical impact occurs is so important to the social outcomes and impacts. This could be made more clear in all sections. (UNITED STATES OF AMERICA)	Thank you. We have tried to address social impacts within the space limits.
612	83334	22	28	48	28	48	It would be helpful to clarify what is meant by "climate disaster"--"type of extreme weather event"? (Katharine Mach, IPCC WGII TSU)	rephrased to: "type of extreme weather event"
613	83335	22	29	1	0	0	Section 22.3.7. In the further development of this section, the chapter team should further coordinate with the assessment and findings of chapter 8, providing cross-references where relevant. (Katharine Mach, IPCC WGII TSU)	This has been taken care of
614	80469	22	29	1	29	1	There is a recent study done by ENDA Energie and IIED on vulnerability of the city of Pikine to climate change. (Aliou Diouf, ENDA Energie-Environnement-Développement)	A copy of this study could not be obtained
615	78419	22	29	1	30	18	With the exception of the final paragraph, each paragraph in this subsection seems to be starting anew. Some of the material could be merged and condensed in order to avoid redundancy. (Dáithí Stone, University of Cape Town)	This has been taken care of
616	74484	22	29	1	30	28	The increases in urbanization in Africa has two broad consequences associated with adaptation to climate change. The first is that the migration is in fact an adaptive measures, so that urbanization may be at least partially driven by climate change. It also has consequences for adapting to climate change as the adaptive options in an urban setting are very different than those in a rural setting. This section hits on both of these, but the distinction between the two could be made more clear. Also, in urban areas, the most vulnerable often live in the most exposed areas, increasing their vulnerability. (UNITED STATES OF AMERICA)	Different consequences has been stressed
617	74485	22	29	2	30	28	There is limited or no exposition on how unurbanization can exacerbate local/regional climate impacts. (UNITED STATES OF AMERICA)	please check chapter 8
618	78416	22	29	3	0	0	This seems a pretty bold statement without citation or explanation. (Dáithí Stone, University of Cape Town)	The sentence has been rephrased and references added
619	67534	22	29	5	29	5	Use of etc is imprecise and tells the reader nothing. Please give all relevant examples (or use 'for instance'). (Peter Burt, University of Greenwich)	This has been taken care of

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
620	70512	22	29	6	29	6	replace 'will' with 'could' (Caroline Bain, Met Office)	This has been taken care of
621	70513	22	29	6	29	9	Can you rephrase this sentence, it's meaning is very unclear (Caroline Bain, Met Office)	The sentence has been rephrased
622	70514	22	29	10	29	10	...impacts of climate change as well as sociopolitical factors' (Caroline Bain, Met Office)	This has been taken care of
623	78417	22	29	12	0	0	"will treble" to "is projected to treble" (Dáithí Stone, University of Cape Town)	This has been taken care of
624	78418	22	29	12	29	15	This seems more of the introductory paragraph than the one preceding it. (Dáithí Stone, University of Cape Town)	The two paragraphs has been switched
625	70515	22	29	20	29	20	with its associated erratic rainfall and extreme weather events' should be removed as there has been no evidence presented on this that is directed at Africa. The sentence stands without it. (Caroline Bain, Met Office)	This has been taken care of
626	74486	22	29	37	29	54	What is relevance of text in lines 37 -42? Move line 50-54 to coastal section. (UNITED STATES OF AMERICA)	The two sections have been merged
627	83336	22	29	45	29	45	Usage of "already" should be reconsidered, as it could imply that such flooding has been attributed to climate change already, which presumably is not the case. (Katharine Mach, IPCC WGII TSU)	This has been taken care of
628	67535	22	29	47	29	47	Move comma from after 'Tanzania' to after 'Uganda' (Peter Burt, University of Greenwich)	This has been taken care of
629	67536	22	29	48	29	48	Delete first 'in'. (Peter Burt, University of Greenwich)	This has been taken care of
630	70516	22	29	50	29	50	Change 'Another' to 'One' (Caroline Bain, Met Office)	This has been taken care of
631	70517	22	29	51	29	51	is there any mining in the coastal inundation zones? (Caroline Bain, Met Office)	Yes, in the case of Namibia for instance
632	83337	22	29	51	29	51	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	This has been taken care of
633	74487	22	30	1	30	7	Perhaps it would be helpful to discuss briefly the long life spans of much urban infrastructure, which makes interventions in the urban area very different than in rural areas where much of the infrastructure has a shorter life span. (UNITED STATES OF AMERICA)	The wording has been changed to stress this difference
634	70518	22	30	3	30	3	do you mean 'continent's' rather than 'regions's' (Caroline Bain, Met Office)	This has been taken care of
635	83338	22	30	9	30	9	In place of a footnote, this reference could be made parenthetically. (Katharine Mach, IPCC WGII TSU)	This has been taken care of
636	83339	22	30	11	30	12	In place of a direct quote, it would be preferable to more explicitly assess the information. (Katharine Mach, IPCC WGII TSU)	This has been taken care of
637	67537	22	30	13	30	13	Change to 'et al.' and italicise (Peter Burt, University of Greenwich)	This has been taken care of
638	83340	22	30	13	30	13	Is chapter 7 the chapter meant, as it does not seem very relevant? (Katharine Mach, IPCC WGII TSU)	This was chapter 5 rather than 7
639	83341	22	30	31	0	0	Section 22.4. This section should be substantially shortened in the final draft of the chapter. Its length should be reduced by more than 50%. (Katharine Mach, IPCC WGII TSU)	This section has been substantially shortened. The chapter team did not agree with the TSU prescription to reduce it by more than 50%.
640	84827	22	30	31	0	0	This section needs condensation. Please consider opportunities to focus the discussion to clearly present the key messages emerging from the assessment of the literature. Consider further opportunities to present other material more succinctly, for example in additional tables. (Michael Mastrandrea, IPCC WGII TSU)	This section has been substantially shortened. Tables have been attempted and found not to assist with condensing this kind of text. The discussion has been focused on key messages emerging from the literature assessment.
641	74488	22	30	31	37	40	The adaptation section seemed very well written, but the point should be made (better) that adaptation strategies must take into account local norms and practices. (UNITED STATES OF AMERICA)	Thank you! The text has been revised throughout the section to highlight the important point that adaptation strategies should take into account local norms and strategies.
642	67538	22	30	36	30	36	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
643	67539	22	30	39	30	39	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
644	67540	22	30	40	30	40	I am not happy about citing references as 'forthcoming'. What happens if they are not published (and worse, if flaws in the data/methodology arise during review)? (Peter Burt, University of Greenwich)	all forthcoming have been removed

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
645	74489	22	30	43	35	30	Consider adding examples of interesting and innovative approaches to working on adaptation and trying to do it at/from various levels to enable scale-up, e.g. ACCRA, Africa Climate Change Resilience Alliance, which is a consortium in 4 countries of ODI, World Vision, Save the Children, CARE and Oxfam that has created a research and local adaptive capacity framework, done innovative training using games and had a good influence with governments in Ethiopia, Uganda and elsewhere - <a href="http://community.eldis.org/accra/">http://community.eldis.org/accra/</a> (UNITED STATES OF AMERICA)	Given the pressure to reduce the chapter significantly, there is unfortunately insufficient space to add additional examples.
646	74490	22	30	43	35	30	The important role of Africa's New Partnership for Africa's Development's Comprehensive Agriculture Development Programme (CAADP) should be discussed. The role of agricultural development as a (potentially) adaptive interaction should be given more priority. (UNITED STATES OF AMERICA)	CAADP has been referred to in section 22.3.1
647	69676	22	30	45	30	46	Is it really true that Africa's adaptive capacity as a whole is low? Can one have such a continental level generalisation given the diversity of socio-political, economic and environmental differences? Regional generalisation to limited extent may be possible. Africa is highly vulnerable to the impact of climate change but is it also true of adaptive capacity? (NETHERLANDS)	Thank you for this thoughtful comment. Assessment carried out by a contributing author has indicated the overall low levels of adaptive capacity, but the author team concurs that this could be made more specific. As time is now limited, some minor adjustments to the text have been made in this regard, including additional citations.
648	74491	22	30	45	31	41	Most adaptation policies and/or strategies do not clearly emphasize making CC information more reliable & accessible as a core gap in many African institutions in Africa. (UNITED STATES OF AMERICA)	Additional information on research gaps has been added in the chapter, including in the dedicated section at the end of the chapter.
649	67541	22	30	46	30	46	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
650	67542	22	30	50	30	51	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
651	67543	22	30	53	30	53	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
652	67544	22	30	54	30	54	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
653	74492	22	30	54	30	54	This statement seems to contradict the statement earlier in the Executive Summary that stated that Africa's vulnerability was merely a function of its low adaptive capacity. This sentence seems to indicate it is also a function of its high exposure. Can the authors clarify this or make the results more consistent? (UNITED STATES OF AMERICA)	The position taken is that vulnerability is a function of sensitivity and exposure to hazards, and adaptive capacity. This has been clarified in a number of places the text. The ES statements have been re-written.
654	74493	22	31	3	31	4	NAPA stands for National Adaptation Programme of Action; not Plan. In addition, once a country has completed its NAPA, it can begin implementation of programs to address the priorities identified in the NAPA. (UNITED STATES OF AMERICA)	Text has been amended accordingly. Subsequent text in the chapter discusses limited implementation of the NAPAs.
655	70425	22	31	5	0	0	add Botswana to countries that have conducted a technology needs assessment, to download the document go to: <a href="http://unfccc.int/ttclear/sunsetcms/storage/contents/stored-file-20130313110631967/TNA_Report_Final.pdf">http://unfccc.int/ttclear/sunsetcms/storage/contents/stored-file-20130313110631967/TNA_Report_Final.pdf</a> (Wame Lucretia Hambira, University of Botswana)	Text to which this comment refers has been deleted.
656	74494	22	31	5	31	6	Are these multi-country technology needs assessments part of a comprehensive initiative or all financed by the same climate fund? (UNITED STATES OF AMERICA)	The text refers to technology needs assessments funded by the GEF, as indicated by the citation.
657	67545	22	31	6	31	6	Delete comma after 'Sudan'. (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted.
658	74495	22	31	8	31	19	We certainly need to provide better and more accurate information, but we also need to be realistic about what we can provide. In certain areas (i.e., the Sahel) and for certain variables (i.e., dry spells) our models may simply not be able to provide the needed data in the near term. This knowledge that our uncertainty is not likely to decrease in the near future has significant consequences for the adaptive measures we propose. (UNITED STATES OF AMERICA)	The author team agrees with this comment. This is why we have emphasised that a priority is to design and implement low-regrets adaptation, and to focus on building resilience in the face of uncertainty. See also the last paragraph in section 22.4.2 which highlights that uncertainty in the climate information should not be used as a reason to delay action.
659	70519	22	31	10	31	10	short and fragmented digitised records' - the digitised part should be emphasised as often there are long records in existence but they only exist on paper - this might be a topic worth highlighting here as well. (Caroline Bain, Met Office)	Change has been made.
660	67546	22	31	11	31	11	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
661	67547	22	31	11	31	11	Replace '&' with 'and' for consistency. (Peter Burt, University of Greenwich)	Change has been made.
662	67548	22	31	11	31	11	Date missing from Jaloh reference (Peter Burt, University of Greenwich)	Reference has been corrected.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
663	70520	22	31	13	31	14	..exacerbated by under-resourcing of Meteorological Agencies and a lack of in-country expertise on climate science..' (Caroline Bain, Met Office)	Agree, change has been made.
664	67549	22	31	15	31	15	Replace '&' with 'and' for consistency. (Peter Burt, University of Greenwich)	Change has been made.
665	67550	22	31	16	31	16	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
666	67551	22	31	16	31	16	Date missing from Jaloh reference (Peter Burt, University of Greenwich)	Reference has been corrected.
667	67552	22	31	22	31	22	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
668	67553	22	31	28	31	29	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
669	67554	22	31	28	31	29	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
670	67555	22	31	29	31	29	Replace '&' with 'and' for consistency. (Peter Burt, University of Greenwich)	Change has been made.
671	80126	22	31	32	0	0	Please avoid the use of the imprecise term "stimuli" - what are we talking about specifically? (Jochen Harnisch, KfW)	Text has been made more specific.
672	67556	22	31	32	31	33	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
673	67557	22	31	33	31	33	Replace '&' with 'and' for consistency. (Peter Burt, University of Greenwich)	Change has been made.
674	78420	22	31	35	31	36	Is this policy prescriptive? I am not sure, but figure I should flag it. (Dáithí Stone, University of Cape Town)	Text has been re-worded to avoid being prescriptive.
675	67558	22	31	40	31	41	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
676	74496	22	31	44	0	0	Section 22.4.3: This section could really benefit from more emphasis on improved climate observing systems and climate trend analyses. (UNITED STATES OF AMERICA)	Section 22.4.3 focuses specifically with equity considerations in adaptation. Climate observing systems and trend analysis are covered in section 22.4.2, as well as in the section n research gaps.
677	74497	22	31	46	31	49	Section 22.4.3: The focus on resilience is good (Line 46 - 49). Could this be expanded to help structure the entire adaptation section? As written, it seems like policy makers could choose to focus on soft path or hard path (ecosystems services or infrastructure) but really the question should be on how to build resilience. (UNITED STATES OF AMERICA)	The emphasis on building resilience has been expanded and clarified at numerous places throughout the text, including in the Executive Summary.
678	74498	22	31	47	31	50	It is likely not just an issue of 'inadequate development strategies'. There are rather good development strategies that faces significant implementation challenges due to complex cultural, political and insitutional factors. (UNITED STATES OF AMERICA)	Agree, text has been amended accordingly.
679	67559	22	31	49	31	49	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
680	83342	22	31	49	31	49	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
681	67560	22	31	49	31	50	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
682	78421	22	31	52	31	53	Does climate change have a migrant status? (Dáithí Stone, University of Cape Town)	Text has been adjusted.
683	67561	22	31	54	31	54	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
684	67562	22	32	4	32	5	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
685	78422	22	32	15	0	0	Do you mean 22.4.4? (Dáithí Stone, University of Cape Town)	Yes,thanks, change has been made.
686	67563	22	32	28	32	28	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
687	67564	22	32	33	32	33	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
688	83343	22	32	33	32	33	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
689	74499	22	32	33	32	34	The GEF website is reporting that there is only one NAPA currently in the final stages of completion, while the other 48 have been completed. (UNITED STATES OF AMERICA)	Text to which this comment refers has been deleted.
690	67565	22	32	37	32	37	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
691	74500	22	32	41	32	43	The phrase "only a small percentage of the NAPA activities have been funded" needs to be clarified. Or at least expanded. The GEF is currently finalizing and disbursing funds for dozens of proposals for NAPA implementation through funding from the LDCF and SCCF. (UNITED STATES OF AMERICA)	This has been clarified.
692	67566	22	32	42	32	42	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
693	67567	22	32	46	32	46	'medium' confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
694	83344	22	32	46	32	46	"medium confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
695	67568	22	32	48	32	48	Change 'coordinating' to co-ordinating' (cf page 33, line 41). (Peter Burt, University of Greenwich)	Change has been made.
696	67569	22	32	49	32	49	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
697	67570	22	33	3	33	3	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
698	67571	22	33	12	33	12	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
699	67572	22	33	15	33	15	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
700	83345	22	33	15	33	15	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
701	67573	22	33	16	33	16	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
702	67574	22	33	16	33	17	Reference style needs correcting. (Peter Burt, University of Greenwich)	Change has been made.
703	67575	22	33	19	33	19	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
704	67576	22	33	21	33	21	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
705	67577	22	33	24	33	24	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
706	67578	22	33	26	33	26	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
707	67579	22	33	27	33	27	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
708	67580	22	33	28	33	28	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
709	67581	22	33	30	33	30	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
710	74501	22	33	35	33	45	The latest initiatives on Climate services by WMO ( Global Framework for Climate Services-GFCS) provides a very comprehensive platform for tailoring climate information that can also be very enriching to regional CC adaptation policies/strategies. (UNITED STATES OF AMERICA)	Thank you for this useful comment. Space restrictions do not permit incorporation of this comment into the text.
711	67582	22	33	45	33	45	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
712	83346	22	33	47	33	47	The phrase "will need" could be interpreted as a prescriptive formulation, and it would be preferable to rewrite this statement. (Katharine Mach, IPCC WGII TSU)	Text has been re-worded to avoid being prescriptive.
713	74502	22	33	47	33	54	See 2013 Chatham House report "Managing Famine Risk: Linking Early Warning to Early Action" for additional suggestions on governance/ institutional changes that are needed. (UNITED STATES OF AMERICA)	This comment has been incorporated into section 22.4.5.2, where it fits better.
714	67583	22	33	49	33	51	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
715	67584	22	33	50	33	50	Replace '&' with 'and' for consistency. (Peter Burt, University of Greenwich)	Change has been made.
716	67585	22	34	1	34	1	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
717	77329	22	34	1	34	1	full reference: Sietz, D., Boschütz, M. and Klein, R.J.T. (2011) Mainstreaming climate adaptation into development assistance: rationale, institutional barriers and opportunities in Mozambique. Environ. Sci. Policy 14(4): 493-502. (diana sietz, Wageningen University)	Full reference has been added to the list.
718	67586	22	34	2	34	2	Change 'coordinating' to co-ordinating'. (Peter Burt, University of Greenwich)	Change has been made.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
719	63756	22	34	3	0	0	The authors refer to some evidence of evolution to a more integrated, multi-level and multi-sector approach to adaptation planning. More empirical evidence from Africa should be included in this section. GIZ has developed and applied a methodology for integrating adaptation into multiple sectors (Fröde et al. 2013). Lessons learned from the application of the approach in Mali include the importance of creating a common understanding of impacts of climate change in a given area, identifying the right stakeholders, finding good entry points in the planning process, and integrating the results into monitoring and evaluation procedures. The following sentences should be inserted: Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) has developed and applied a methodology for integrating adaptation into multiple sectors (Fröde et al. 2013). Early evidence from an application of the methodology in Mali highlights the importance of creating a common understanding of impacts of climate change in a given area, identifying the right stakeholders, finding good entry points in the planning process, and integrating the results into monitoring and evaluation procedures (Fröde et al. 2013). Fröde, Alexander, Michael Scholze, and Nadia Manasfi. "Taking a climate perspective on development: GIZ's climate proofing for development approach." <i>Climate and Development ahead-of-print</i> (2013): 1-5. (GERMANY)	This citation and a brief mention of this experience has been included in section 22.4.4.2.
720	63757	22	34	3	0	0	Sentence for addition: "UNESCO Biosphere Reserve management units can facilitate such coordination of relevant stakeholders on the local level, strengthening their role as model regions for sustainable development with a special regard to climate change adaptation (Dresden Declaration on Biosphere Reserves and Climate Change 2011 URL: <a href="http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/DRESDEN_DECLARATION_MAB.pdf">http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/DRESDEN_DECLARATION_MAB.pdf</a> and Bonnin, Marie 2011: <i>Le rôle potentiel des Réserves de biosphère dans l'adaptation au changement climatique. Aspects juridiques.</i> GIZ Rabat/Morocco. 27 pages)." (GERMANY)	This comment has not been integrated - due to the need to significantly reduce the chapter length, it is not possible to add new statements at this level of detail.
721	67587	22	34	3	34	3	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
722	67588	22	34	10	34	11	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
723	83347	22	34	10	34	11	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
724	67589	22	34	14	34	14	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
725	78423	22	34	18	34	23	Does this contradict line 9 above? (Dáithí Stone, University of Cape Town)	A sentence has been inserted to clarify that there is no contradiction.
726	67590	22	34	23	34	23	Reference style wrong (Peter Burt, University of Greenwich)	This has been corrected.
727	67591	22	34	23	34	23	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
728	64326	22	34	28	0	44	Recent research unmentioned: For example, the striga mentioned as impact in page 22: there are community-based adaptations documented for Africa Bonye et al (2012): "Promoting Community-Based Extension Agents as an Alternative Approach to Formal Agricultural Extension Service Delivery in Northern Ghana" and other initiatives in Africa through the various CGIAR centers; Chishakwe et al (2012): "Building climate change adaptation on community experiences: lessons from community-based natural resource management in southern Africa"; Genetically-modified banana efforts in Africa with involvement of local small-scale farmers can be viewed as a form of community-based adaptation for example this ref: Impact of tissue culture banana technology in Kenya: A difference-in-difference estimation approach; Recha et al (2013) "Empowering a local community to address climate risks and food insecurity in Lower Nyando, Kenya" (Margaret Mwangi, Pennsylvania State University)	Chishakwe et al (2012) has been included as a citation in this section. A number of the other references proposed were not considered to be directly relevant to this section.
729	74503	22	34	28	34	44	The effectiveness of CBA is very much owing to the ability of communities to retain benefits of their efforts, which typically requires both ownership over the process and the resources. Resource tenure and its importance should at least be mentioned in this section, as it is more than CBA, but the empowerment of these communities to both make decisions and reap the rewards of their choices that are important. (UNITED STATES OF AMERICA)	The fundamental enabling aspect of land tenure and access to other key resources for CBA has been included in this section.
730	80151	22	34	28	34	44	Clarify that community-based means both (1) located at the community level; and (2) community-initiated, or drawing upon community knowledge or resources. The latter implies a greater degree of participation than the former (A. Peter Castro, Maxwell School, Syracuse University)	Agree, this point has been clarified and a cross-reference to the AR5 Glossary included.
731	83348	22	34	29	34	29	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
732	67592	22	34	31	34	31	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
733	67593	22	34	31	34	31	Replace '&' with 'and' for consistency. (Peter Burt, University of Greenwich)	Change has been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
734	63758	22	34	35	0	0	Sentence part to extend the existing sentence: "... and UNESCO Biosphere Reserves where good practices were developed in Ethiopia, Kenya, South Africa and Senegal, among others (For life, for the future: biosphere reserves and climate change; a collection of good practice case studies 2011 URL: <a href="http://www.unesco.de/fileadmin/medien/Dokumente/Wissenschaft/Biosphere_reserves_climate_change_web_9MB.pdf">http://www.unesco.de/fileadmin/medien/Dokumente/Wissenschaft/Biosphere_reserves_climate_change_web_9MB.pdf</a> )." (GERMANY)	This comment has been incorporated as suggested.
735	67594	22	34	37	34	37	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
736	67595	22	34	38	34	38	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
737	67596	22	34	39	34	39	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
738	67597	22	34	40	34	40	Delete comma after 'Ghana'. (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted.
739	67598	22	34	44	34	44	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
740	67599	22	34	51	34	51	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
741	83349	22	34	51	34	51	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
742	67600	22	34	54	34	54	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
743	67601	22	35	2	35	2	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
744	67602	22	35	5	35	5	Comma required after 'al.'. (Peter Burt, University of Greenwich)	Change has been made.
745	67603	22	35	9	35	9	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
746	67604	22	35	14	35	14	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
747	67605	22	35	15	35	15	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
748	67606	22	35	19	35	19	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
749	67607	22	35	21	35	21	Change 'coordinating' to co-ordinating'. (Peter Burt, University of Greenwich)	Change has been made.
750	63759	22	35	25	0	0	Sentences for addition: "UNESCO requests the so far 81 African Biosphere Reserves to provide an evaluation report at least every ten years which requires continuous monitoring of the various facets of the human-nature relationship, including climate change ( <a href="http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Periodic_review_form_english_2013.pdf">http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/pdf/Periodic_review_form_english_2013.pdf</a> ; <a href="http://www.fao.org/gtos/doc/brim1.pdf">http://www.fao.org/gtos/doc/brim1.pdf</a> ). Biosphere Reserves represent focus sites for research under UNESCO's Man and the Biosphere (MAB) Programme and can ensure increased institutional sustainability of implemented measures beyond the duration of single projects." (GERMANY)	This addition cannot be included due to the level of detail and the necessity to significantly reduce the length of the chapter.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
751	63760	22	35	25	0	0	More empirical evidence should be cited when referring to local-level assessments of adaptation action. The authors refer only to one study by Archer et al. (2008) that build on a participatory action research framework. However, the emerging body of research on this topic is much more diverse (e.g. Below et al. 2012, Gbetibou et al. 2010, Hahn et al. 2009). Below et al. (2012) have developed an approach to assess farmers' adaptation performance in rural Tanzania using a multi-method approach that combines qualitative and quantitative empirical techniques. The advantage of this bottom-up approach is that it captures the complexity of local adaptation processes in a single index avoiding the high risk of wrongly specified weights of traditional composite index approaches. The following sentences should be inserted: Other approaches for assessing adaptation action at local and regional levels have been developed by Below et al.( 2012), Gbetibou et al. (2010), and Hahn et al. (2009). Below et al. (2012) assess farmers' adaptation performance in rural Tanzania using a multi-method bottom-up approach that combines qualitative and quantitative empirical techniques. The advantage of this approach is that it captures the complexity of local adaptation processes in a single index avoiding the high risk of wrongly specified weights of traditional composite index approaches. Below, T.B., K.D. Mutabazi, D. Kirschke, C. Franke, S. Sieber, R. Siebert and K. Tscherning (2012): Can farmers' adaptation to climate change be explained by socio-economic household-level variables? Global Environmental Change – Human and Policy Dimensions 22, No. 1, pp. 223-235. Gbetibouo, G.A., Ringler, C., Hassan, R., 2010b. Vulnerability of the South African farming sector to climate change and variability: an indicator approach. Natural Resources Forum 34, 175–187. Hahn, M.B., Riederer, A.M., Foster, S.O., 2009. The Livelihood Vulnerability Index: a pragmatic approach to assessing risks from climate variability and change – a case study in Mozambique. Global Environmental Change 19, 74–88. (GERMANY)	Agree. The additional citations and suggestions for text have been incorporated in section 22.4.4.6.
752	67608	22	35	25	35	25	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
753	70426	22	35	28	0	0	examples of experiences and lessons learnt with regards to adaptation to climate change and the tourism sector in Botswana could be cited as examples in this section. See the following literature: Saarinen, J., Hambira, W.L, Athlopheng, J. and H. Manwa (2013). Tourism and Climate Change in Southern Africa: Perceived impacts and adaptation strategies of the tourism industry to changing climate and environment in Botswana. In Reddy, V. and K. Wilkes (Eds) Tourism, Climate Change and Sustainability. Routledge, London ISBN: 978-1-84971-422-8 Saarinen, J., Hambira, W., Athlopheng, J., and Manwa, H. (2012) Tourism Industry reaction to climate change in Kgalagadi South District, Botswana. Development Southern Africa Vol. 29 No. 2, pp. 273–285 Hambira W. L., Saarinen J., Manwa H. & Athlopheng J., (in press) Climate change adaptation practices in nature-based tourism in Maun in the Okavango Delta area, Botswana: how prepared are the tourism businesses? Tourism Review International journal. Vol 17, ppXX (Wame Lucretia Hambira, University of Botswana )	Saarinen et al (2012) has been incorporated into the section, as has Hambira (2011) - on screening for climate change vulnerability in the Okavango Delta.
754	67609	22	35	38	35	38	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
755	67610	22	35	42	35	42	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
756	67611	22	35	45	35	45	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
757	83350	22	35	45	35	45	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
758	67612	22	35	50	35	50	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
759	74504	22	35	50	35	50	Whereas short-path CC adaptation policies may be effective short-term measures, they tend to be location/region/community specific and their value-chain and scalability may be limited and thus comprehensive CC policies may not be based on them per se. (UNITED STATES OF AMERICA)	It is presumed that this comment refers to 'soft-path'adaptation measures, and not 'short-path'ones, as this is the topic of line 50 on page 35. If so, the author team does not agree with this assertion - soft path measures such as those that underpin ecosystem-based adaptation are often designed to be scaleable, and there is good evidence of scaleability of for example farmer-managed natural regeneration. Comprehensive adaptation programmes would greatly benefit from being based on soft-path measures, which are often likely to be at lower cost than hard path measures, and capable of providing long-term solutions. There is ample evidence in the chapter for these points.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
760	74505	22	35	52	36	8	The focus on these low cost or no regrets options is understandable, but one question that has not been addressed is that if there are such great ideas, then why are they not being taken up, why is donor funding needed? Often this is because there are either high upfront costs with a long payback time, or because such options require behavior change that the local populations are not at first willing to undertake. We cannot assume that all folks are rational actors, and while they will always act in what they think is their best interest, that does not mean this will align with what appears to us as their best interest. When designing options, we have to remember that people and their cultures, beliefs and societal norms will impacts the decisions they make. (UNITED STATES OF AMERICA)	We agree on the importance of culture and norms in adaptation decision making, and have provided evidence in the chapter for this. Farmer-managed natural regeneration in the Sahel is an example of good uptake of low-regrets adaptation measures, although not necessarily motivated by climate change imperatives. The question of psychological aspects of adaptation choices is relevant for both low regrets adaptation and adaptation that is designed to counter specific climate impacts and scenarios. Therefore this comment has not been taken up in the text.
761	83351	22	36	1	36	1	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Text has been re-formulated to avoid casual usage of likely.
762	67613	22	36	5	36	5	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
763	67614	22	36	6	36	6	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
764	80152	22	36	19	0	0	Specify what is meant by livelihood diversification. This section also downplays the role of remittances as a means of reducing risk and contributing to recovery (see Little et al. 2006 cited above) (A. Peter Castro, Maxwell School, Syracuse University)	The role of remittances in reducing risk is dealt with in Chapter 9, and a cross reference to this chapter has been made.
765	78432	22	36	34	36	47	The problem with EWS though is that it focuses on year-to-year variability, which in Africa means rainfall. Anthropogenic climate change is mainly a temperature phenomenon. (Dáithí Stone, University of Cape Town)	Unclear what this comment is getting at - EWS provide a means to deal with extreme events, and there is evidence - e.g. in the SREX - of the changes in extreme events in Africa due to climate change.
766	67615	22	36	37	36	37	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
767	67616	22	36	37	36	37	Delete space after second 'l'. (Peter Burt, University of Greenwich)	Change has been made.
768	67617	22	36	37	36	37	Delete comma after 'local' (Peter Burt, University of Greenwich)	Change has been made.
769	67618	22	36	46	36	47	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
770	70762	22	36	49	35	52	Kienberger 2012: Integrated spatial assessment methods at the local and district level in Mozambique. The example could be cited here. Kienberger, S., 2012. Spatial modelling of social and economic vulnerability to floods at the district level in Búzi, Mozambique. Natural Hazards 64(3), 2011-2019. <a href="http://dx.doi.org/10.1007/s11069-012-0174-9">http://dx.doi.org/10.1007/s11069-012-0174-9</a> (Stefan Kienberger, University of Salzburg)	This relevant citation has been included.
771	74506	22	36	49	36	54	It should be mentioned that Adaptation strategies should not be based on limited case studies and pilots that may not necessarily encompass the full scope of CC impacts in time, space and across entire populations. (UNITED STATES OF AMERICA)	This comment was not felt to be relevant to the text to which it refers, and hence was not incorporated.
772	78433	22	36	54	0	0	Does this not just mean that because we do not have a full understanding of risk sometimes we may be in error? (Dáithí Stone, University of Cape Town)	It is more accurately referring to the need to be aware that the most obvious candidates for higher risk - such as poor and marginalised populations - may not always be the most at risk from a specific climate hazard.
773	67619	22	37	4	37	5	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
774	67620	22	37	8	37	8	Delete comma after 'Swaziland'. (Peter Burt, University of Greenwich)	Change has been made.
775	67621	22	37	10	37	10	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
776	67622	22	37	18	37	18	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
777	67623	22	37	25	37	25	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
778	67624	22	37	27	37	28	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
779	80153	22	37	28	0	0	A political risk associated with safety net programs, as well as other rural development and relief assistance, is that they can become tools of political patronage; for example see Peter Gill, <i>Famine and Foreigners</i> . (A. Peter Castro, Maxwell School, Syracuse University)	Agreed, but there is insufficient space - in a chapter which still needs to be cut by more than 30% - to add this level of detail.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
780	67625	22	37	33	37	33	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
781	67626	22	37	52	37	52	Comma missing after author surname in reference. (Peter Burt, University of Greenwich)	Reference has been changed.
782	67627	22	38	4	38	4	Comma missing after author surname in reference. (Peter Burt, University of Greenwich)	Change has been made.
783	67628	22	38	7	38	7	Comma missing after author surname in reference. (Peter Burt, University of Greenwich)	Change has been made.
784	70521	22	38	11	38	16	Should the need for increased capacity in Nation Meteorological Centres be mentioned here? It seems the logical place to mention it as they are often responsible for issuing warnings. (Caroline Bain, Met Office)	This point has been added to the text.
785	74507	22	38	11	38	16	The resolution of the information is a challenge, as we can often not provide the necessary information as the necessary small spatial scales for many individuals to make decisions. (UNITED STATES OF AMERICA)	This point has been added to the text.
786	67629	22	38	13	38	13	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
787	67630	22	38	15	38	15	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
788	67631	22	38	21	38	21	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
789	67632	22	38	22	38	22	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
790	67633	22	38	23	38	23	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
791	67634	22	38	24	38	24	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
792	78434	22	38	31	0	0	Could it be vulnerable to positive effects? Actually, I am not sure what a positive effect is. According to convention, warming is positive, and it is an effect. (Dáithí Stone, University of Cape Town)	Text to which this comment refers has been removed.
793	67635	22	38	34	38	34	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
794	67636	22	38	36	38	36	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
795	74508	22	38	38	38	41	While it may be important to emphasize agriculture-based adaptation strategies, diversification out of agriculture and/or pastoralism should also be promoted as sustainable options. (UNITED STATES OF AMERICA)	This point is covered in the text - for example, in the statement "Over the past 20 years, households in the Sahel have reduced their vulnerability and increased their wealth through livelihood diversification, particularly when diversifying out of agriculture (Mertz et al., 2011)." in section 22.4.5.2. It was unfortunately not possible to provide additional discussion on this topic, given the need to reduce the length of the chapter. A cross-reference to relevant sections in Chapter 9 has been made.
796	67637	22	38	39	38	39	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
797	67638	22	38	42	38	42	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
798	78249	22	38	42	38	42	Remove Scheffran et al. 2011 because it is identical to Scheffran et al. 2012 which is in the reference list. (Jürgen Scheffran, University of Hamburg)	Text to which this comment refers has been deleted.
799	67639	22	38	44	38	44	Citations required. (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted.
800	67640	22	38	50	38	50	medium evidence, medium agreement' should be in italics (Peter Burt, University of Greenwich)	Change has been made.
801	83352	22	38	50	38	50	"medium evidence" and "medium agreement" as calibrated summary terms should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
802	67641	22	38	53	38	53	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
803	67642	22	39	1	39	1	Comma missing after author surname in reference. (Peter Burt, University of Greenwich)	Added.
804	67643	22	39	7	39	8	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
805	67644	22	39	8	39	8	I would put the undated reference first in the list. (Peter Burt, University of Greenwich)	Change has been made.
806	67645	22	39	10	39	11	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
807	67646	22	39	11	39	11	delete 'l' after '2010' (Peter Burt, University of Greenwich)	Change has been made.
808	67647	22	39	11	39	11	I am not happy about citing references as 'forthcoming'. What happens if they are not published (and worse, if flaws in the data/methodology arise during review)? (Peter Burt, University of Greenwich)	All forthcoming sources have been removed
809	67648	22	39	24	39	24	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
810	67649	22	39	28	39	28	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
811	77486	22	39	30	39	36	The points raised in this paragraph are all quite relevant. However it might be useful to note (somewhere in this section) the contribution that ICTs including mobile phones, radio, and the internet can play in facilitating these processes and helping to overcome some of the challenges. Some of these tools are mentioned in the section below but not in the context of participatory learning processes (see Harvey B, Ensor J, Carlile L, Garside B, Patterson Z, Naess LO. 2012. Climate change communication and social learning—Review and strategy development for CCAFS. CCAFS Working Paper No. 22. CGIAR Research Program on Climate Change, Agriculture and Food Security (CAAFS), Copenhagen, Denmark. Available online at www.ccafs.cgiar.org) (Blane Harvey, IDRC)	This point has been added to the text.
812	67650	22	39	33	39	33	Comma missing after author surname in reference. (Peter Burt, University of Greenwich)	Change has been made.
813	67651	22	39	40	39	40	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
814	67652	22	39	43	39	43	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
815	67653	22	39	47	39	47	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
816	60390	22	39	50	41	22	There is a great deal of repetition in this section - it needs a careful edit, since some elements repeat what is in the previous section. (Emma Archer van Garderen, CSIR)	This section has been edited to reduce repetition and to significantly shorten it.
817	69677	22	40	7	40	9	It is not clear why farmers are singled out here. Why not cities, or livestock keepers. (NETHERLANDS)	This point has been clarified by replacing 'farmers' with 'users'.
818	70427	22	40	8	0	0	the new Southern African, Science Service Centre for Climate Change and Adaptive Land Use (SASSCAL) program could come a long way in addressing climate information accuracy. See www.sasscal.org (Wame Lucretia Hambira, University of Botswana)	As this programme is yet to be implemented, this point is not considered relevant for inclusion at this stage.
819	67654	22	40	9	40	9	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
820	67655	22	40	10	40	10	Insert space after 'decision'. (Peter Burt, University of Greenwich)	Change has been made.
821	67656	22	40	13	40	13	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
822	67657	22	40	14	40	14	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
823	67658	22	40	16	40	16	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
824	74509	22	40	18	40	32	The authors might emphasize that we need more research on local knowledge, and improving the evidence base for traditional indicators, such as the start of the raining season. This knowledge is key to behavior change, but we need to better understand its scientific basis, and how climate change might affect its effectiveness in the future. (UNITED STATES OF AMERICA)	There is unfortunately insufficient space to include this valid point, as the length of this sub-section has needed to be reduced by 50%.
825	80154	22	40	18	40	32	perhaps clarify that indigenous or local knowledge are not static, but continuously draw on new sources of information, as well as experiences with new conditions and technologies. Thus it is as much a cultural hybrid as it is traditional in nature. (A. Peter Castro, Maxwell School, Syracuse University)	This point is included in the statement: Based on analysis of the responses to the Sahel droughts during the 1970s and 1980s, Mortimore (2010) argues that local knowledge systems are more dynamic and robust than what is often acknowledged
826	83353	22	40	21	40	21	"high agreement" and "robust evidence" as calibrated summary terms should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
827	67659	22	40	24	40	24	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
828	67660	22	40	30	40	30	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
829	74510	22	40	30	40	34	This issue of reconciling, or understanding the differences, between farmer's perceptions and meteorological data is important and interesting - see Steve Jennings and John Magrath "what happened to the seasons?" chapter 2 in the book "Seasonality, Rural Livelihoods and Development, edited by Stephen Devereux, Rachel Sabates-Wheeler + Richard Longhurst, earthscan/Routledge, 2012, ISBN: 978-0-203-13982-0 (ebk). (UNITED STATES OF AMERICA)	The need to reduce the length of text in this section by 50% has precluded the ability to include this point.
830	67661	22	40	35	40	35	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
831	70522	22	40	36	40	36	Can you explain what a 'rainmaker' is - I assume it is a tribal elder with knowledge of rain trends who relies on natural indicators to predict the rainy season - but can this be clarified? (Caroline Bain, Met Office)	Text to which this comment refers has been deleted.
832	78435	22	40	38	40	39	What is the difference between a scientific record and a local observation? (Dáithí Stone, University of Cape Town)	Text to which this comment refers has been deleted.
833	67662	22	40	39	40	39	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
834	67663	22	40	40	40	40	'et al.' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
835	67664	22	40	40	40	40	Where are these other studies undertaken? (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted, in the process of shortening the section.
836	67665	22	40	43	40	43	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
837	67666	22	41	2	41	2	Use of hyphens is misleading, I suggest replacing them with commas. (Peter Burt, University of Greenwich)	Change has been made.
838	74511	22	41	2	41	7	This seems like a great place to bring in gender more, and how climate change is likely to have very different impacts on different groups, two of which are men and women. For example, men and women often grow different crops, have different household duties, and respond differently (i.e., women rarely migrate in search of work). (UNITED STATES OF AMERICA)	Gender-related impacts are covered in the section on vulnerability and impacts - i.e. section 22.3. Points regarding the need for gender equity in adaptation approaches are raised in section 22.4.3.
839	67667	22	41	6	41	6	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
840	70428	22	41	7	0	0	the Southern African Regional Network of Universities (SARUA) is also instrumental in this regard. It has initiated a programme that aims to build capacity for climate compatible development (CCD) within the Southern African region (Wame Lucretia Hambira, University of Botswana )	This comment has not been adopted as the SARUA programme does not have an overt focus on the importance of culture in adaptation, which is the subject of this paragraph.
841	74512	22	41	9	41	16	Similar to above, traditional knowledge is very important, but we still need to develop an evidence base for its effectiveness (UNITED STATES OF AMERICA)	This point has been included in the text.
842	67668	22	41	11	41	11	Tidy up referenc style and italicise 'et al.'. (Peter Burt, University of Greenwich)	Change has been made.
843	78436	22	41	11	41	16	I like this text, but does it belong here? It seems more appropriate to integrate into the beginning of 22.4.6, which discusses the same topic but more broadly. (Dáithí Stone, University of Cape Town)	This text has been deleted in the process of shortening the adaptation section and reducing redundancies.
844	69678	22	41	14	41	16	Section 22.4.5.9 is not there in the document, is it 22.4.6?. But also why women and not children or some other vulnerable group. (NETHERLANDS)	Text to which this comment refers has been deleted.
845	67669	22	41	16	41	16	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
846	67670	22	41	16	41	16	Capital 'S' required for 'section' (in this context it is a proper noun and is also in keeping with other usage in the document). (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
847	67671	22	41	21	41	22	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
848	67672	22	41	21	41	22	2010' references should be in alphabetical order. (Peter Burt, University of Greenwich)	Change has been made.
849	67673	22	41	32	41	32	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
850	67674	22	41	33	41	33	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
851	67675	22	41	41	41	41	Quantify 'a number of countries' and give examples. (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted.
852	67676	22	41	45	41	46	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
853	67677	22	42	1	42	1	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
854	67678	22	42	2	42	2	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
855	67679	22	42	6	42	6	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
856	67680	22	42	9	42	9	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
857	67681	22	42	11	42	11	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
858	74513	22	42	14	42	50	Section 22.4.5.6: This discussion on ecosystem-based adaption needs elaboration. What role are they playing specifically? In development in general (which aids livelihood resilience) or in disaster risk reduction? Or as early warnings of climate change? There is a great deal of literature on this and the section could touch on each of these aspects, highlighting success stories. Also the timescale of responses needs to be mentioned. Ecosystem based adaption may take many years to implement, while a flood wall may be built sooner. (UNITED STATES OF AMERICA)	There is unfortunately insufficient space to include this valid point, as the length of this sub-section has needed to be reduced by 50%. A cross reference has been inserted to Chapter 4 and cross-chapter box CC-EA.
859	80155	22	42	17	0	0	What does "effective" mean here (effective in meeting local needs or in addressing climate change, or both)? (A. Peter Castro, Maxwell School, Syracuse University)	This has been clarified in the text.
860	67682	22	42	17	42	17	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
861	67683	22	42	19	42	19	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
862	67684	22	42	20	42	20	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
863	77392	22	42	29	42	29	"delete a double word 'for' (UNITED REPUBLIC OF TANZANIA)	Change has been made.
864	67685	22	42	30	42	30	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
865	67686	22	42	34	42	34	'et al' should be in italics, with a full stop after the 'l' and a comma before the date. (Peter Burt, University of Greenwich)	Change has been made.
866	67687	22	42	41	42	41	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
867	67688	22	42	43	42	43	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
868	67689	22	42	45	42	45	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
869	67690	22	42	50	42	50	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
870	67691	22	43	6	43	6	Delete comma after 'sustainable'. (Peter Burt, University of Greenwich)	Change has been made.
871	67692	22	43	12	43	12	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
872	67693	22	43	14	43	14	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
873	67694	22	43	15	43	15	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
874	67695	22	43	17	43	17	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
875	67696	22	43	18	43	18	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
876	67697	22	43	21	43	21	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
877	74514	22	43	21	43	24	This section seems very important and correctly emphasizes the importance of resource tenure. Resource ownership should also be discussed outside of this case example. (UNITED STATES OF AMERICA)	The important point on security of tenure and access to vital resources to enable local adaptation is emphasised after the case study - see the Robledo et al (2011) citation, is highlighted in section 22.4.4.5, is further emphasised in section 22.4.6, and is additionally highlighted in the Executive Summary
878	67698	22	43	30	43	30	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
879	67699	22	43	31	43	31	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
880	67700	22	43	32	43	32	Delete comma after 'developmental'. (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted.
881	67701	22	43	35	43	0	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
882	74515	22	43	37	43	47	Please consider mentioning that a challenge we face is that we are not very good at adequate valuation of environmental services, and thus have a difficult time accurately capturing the value of future benefits from adapting to climate change through soft measures if we cannot also value the other benefits that will be added to the system. This is easier at a community level where people better understand the connections, but more difficult at the national level (UNITED STATES OF AMERICA)	Points related to valuation of ecosystem services are covered in Chapter 4 and Chapter 17 and cannot be further covered here, owing to limited space.
883	81444	22	43	41	43	47	Box CC-EA should be cross referenced here. (Yuka Estrada, IPCC WGII TSU)	Cross reference has been inserted.
884	67702	22	43	47	43	47	Citations required. (Peter Burt, University of Greenwich)	The text to which this comment refers has been deleted n the necessary process of shortening the section.
885	70523	22	43	47	43	47	There is a note at the end of the sentence to add citations but none have been added - should add some! (Caroline Bain, Met Office)	The text to which this comment refers has been deleted n the necessary process of shortening the section.
886	67703	22	43	51	43	51	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
887	78437	22	44	3	0	0	Is the "green" label viewed negatively by those living on the land, the national planners, international funders, or others? (Dáithí Stone, University of Cape Town)	This has been clarified.
888	67704	22	44	6	44	6	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
889	67705	22	44	8	44	8	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
890	80156	22	44	13	0	0	Juma's book cited above might be worthwhile incorporating here as it deals extensively with issues of technological change in smallholder agriculture. (A. Peter Castro, Maxwell School, Syracuse University)	There was insufficient time to consult this book, and therefore this comment could nt be addressed.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
891	78438	22	44	18	44	24	The examples do not necessarily support the assertion in the first sentence that this is a response to climate stimuli. They could for instance be planting different varieties simply because they can now obtain them. (Dáithí Stone, University of Cape Town)	The assertion is that farmers are changing their practices in response to increased food security risks, linked to climate variability and change, and this is backed up by the numerous citations provided.
892	67706	22	44	20	44	21	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
893	67707	22	44	20	44	21	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
894	67708	22	44	22	44	22	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
895	67709	22	44	23	44	23	Delete full stop after 'et'. (Peter Burt, University of Greenwich)	Change has been made.
896	67710	22	44	23	44	23	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
897	69679	22	44	26	44	31	Given increasing evidence of the potential benefits of conservation agriculture especially in sub Saharan Africa, we suggest authors do some more on the subject. For example, conservation agriculture systems have potential to lower the costs of tillage and weed control with subsequent increase in net returns. Where herbicides have been used in Malawi costs were lower in conservation agriculture systems than normal farmer production practices by between 20% (Ngwira, et al. 2012, Field Crops Research) and 63% (Ito, et al., 2007, Crop Protection). Subsequently, because of increased yields, 60% increase in net returns and 100% returns to labour have been realized. Other examples of literature to refer to include Thierfelder and Wall, 2012, SoI Use and Management, Thierfelder et al., 2013, Field Crops Research; Thierfelder et al., 2013 & 2013; International Journal of Agricultural Sustainability). (NETHERLANDS)	Unfortunately there is insufficient space and time to refer to all of these publications in this chapter. However, some additional text has been added.
898	74516	22	44	26	44	31	These excellent observations should be listed with 'high confidence' and stressed in the executive summary. (UNITED STATES OF AMERICA)	This comment has been incorporated and a corresponding message placed in the Executive Summary.
899	67711	22	44	27	44	28	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
900	67712	22	44	27	44	28	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
901	67713	22	44	34	44	34	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
902	67714	22	44	37	44	38	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
903	67715	22	44	37	44	38	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
904	67716	22	44	40	44	41	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
905	67717	22	44	43	44	43	Insert space after 'Weiss'. (Peter Burt, University of Greenwich)	Change has been made.
906	67718	22	44	43	44	43	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
907	67719	22	44	44	44	45	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
908	67720	22	44	45	44	45	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
909	67721	22	44	46	44	46	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
910	74517	22	45	1	45	10	It could be mentioned here that it is often cheaper and easier to integrate climate change considerations into infrastructure initially than to try to retrofit infrastructure later, which is the big reason we worry about infrastructure with long life spans (UNITED STATES OF AMERICA)	This point has been added to the text.
911	67722	22	45	2	45	2	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
912	67723	22	45	7	45	7	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
913	78439	22	45	12	45	13	If the second half of this sentence is not repeating the first half, then to what is the "10- to 27-fold" referring? (Dáithí Stone, University of Cape Town)	The first part of the sentence refers to magnitude of the risks, while the second part refers to cost.
914	78440	22	45	14	45	15	But to complete the example, how does that compare against the costs of not adapting? (Dáithí Stone, University of Cape Town)	The text to which this comment refers has been deleted in the necessary process of shortening the section.
915	67724	22	45	19	45	19	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
916	70429	22	45	20	0	0	'Toteng (2011)' appears twice (Wame Lucretia Hambira, University of Botswana )	Unclear to what this refers - perhaps the figure? There is no Toteng in page 45 line 20

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
917	67726	22	45	22	45	23	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
918	67725	22	45	22	45	24	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
919	67727	22	45	26	45	26	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
920	67728	22	45	27	45	28	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
921	78321	22	45	31	46	4	Good to add a section on 'maladaptation'. In this section, the term 'erosive coping' is also very relevant. Erosive coping refers to measures that people adopt when they are faced with a climate stressor (e.g. drought) which helps to survive in the short-term (e.g. sell livestock to buy food), but which undermines longer-term livelihood security (e.g. no milk for household consumption, no bullocks for ploughing, etc.). Reference for the concept of 'erosive coping': Van der Geest, K. & T. Dietz (2004). A literature survey about risk and vulnerability in drylands, with a focus on the Sahel. In: Dietz, T., R. Rueben & J. Verhagen (eds). The Impact of Climate Change on Drylands. Kluwer, Dordrecht. pp.117-146 (file name: vdgeest_dietz_2004.pdf). A recent empirical example: Opondo, D. (under review). Erosive coping after the 2011 floods in Kenya. Int. J Global Warming. (Kees van der Geest, United Nations University)	This concept has been added to the text.
922	74518	22	45	33	46	4	This is very relevant to the evidence base of the measures proposed. We really need to focus on building an evidence base concerning adaptive options to ensure the options are appropriate for both current and future climates (UNITED STATES OF AMERICA)	This point has been added to the text.
923	83354	22	45	35	45	35	The glossary entry for "maladaptation" could be cross-referenced here. (Katharine Mach, IPCC WGII TSU)	Cross-reference has been added.
924	67729	22	45	38	45	38	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
925	67730	22	45	43	45	43	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
926	67731	22	45	49	45	49	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
927	69680	22	46	1	46	4	Hydro-dependency is not necessarily a problem of Africa. The continent needs more reservoirs to be able to produce sufficient energy, and also boost up food crops production. Adaptation to climate change in some parts of Africa may mean increase rainwater storage to buffer against dry spells. The question then is at what scale should this storage facilities be constructed - should we go for large or small distributed ones? A major problem to Africa now is the issue of land grabbing. In addition more citations are required in this section to support the authors generalisation. (NETHERLANDS)	Balancing text along these lines has been added to the section, and additional citations provided.
928	67732	22	46	3	46	3	Citations required. (Peter Burt, University of Greenwich)	Citations have been added.
929	67733	22	46	3	46	3	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
930	83355	22	46	7	0	0	Section 22.4.6. In the final draft of the chapter, this section should be shortened by more than 50%. (Katharine Mach, IPCC WGII TSU)	While the need to shorten this section is appreciated, a number of reviewer comments felt that this was a very important section, and in fact requested more attention to this. The section has been shortened, taking into account all reviewer comments.



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
931	78320	22	46	7	47	49	Very relevant section (barriers and limits to adaptation). The conceptual difference between barriers and limits could receive more attention. Perhaps check Chapter 16 or a recent Nature Climate Change article by some of that chapters' authors: Dow et al (2013). Limits to adaptation. Nature Climate Change, Vol. 3: 305-307. For some African case studies (Kenya and The Gambia) on residual impacts of climate change, see Warner, K., K. van der Geest, S. Kreft, S. Huq, K. Kusters & A. de Sherbinin (2012). Evidence from the frontlines of climate change: Loss and damage to communities despite coping and adaptation. Loss and Damage in Vulnerable Countries Initiative. Policy Report. Report No. 9. Bonn: United Nations University Institute for Environment and Human Security (UNU-EHS). The African case studies discussed in this report and a similar case study for Burkina Faso will be part of a special issue on Loss and Damage of the International Journal of Global Warming. References: Yaffa, S. (under review). Coping measures not enough to avoid loss and damage from drought in the North Bank Region of The Gambia. Int. J Global Warming (file name: IJGW_LD_Gambia.pdf); Opondo, D. (under review). Erosive coping after the 2011 floods in Kenya (file name: IJGW_LD_Kenya.pdf). Int. J Global Warming; Traore, S., T. Owiyo & Y. Sokona (under review). Dirty drought causing loss and damage in Northern Burkina Faso (file name: IJGW_LD_Burkina.pdf). Int. J Global Warming. And a synthesising paper for these and other case studies: Warner, K. & K. van der Geest (under review). Loss and damage from climate change: Local-level evidence from nine vulnerable countries. Int. J Global Warming (file name: IJGW_LD_synthesis.pdf). (Kees van der Geest, United Nations University)	The conceptual difference between barriers and limits is covered in Chapter 16. Some text on residual damage has been inserted into the text.
932	74519	22	46	9	47	49	It is wonderful that this section was put in, since it is the key link between the physical changes that occur and the actual choices people make. We often assume that people are 100% rational and will do the thing that maximizes the benefits to them, but forget that there are a larger number of other variables that need to be included, include cultural barriers, age, gender, education level, and if these are not accounted for the adaptive actions may not be appropriate or sustainable. Please consider flushing this section out a bit more, perhaps with some examples, and also highlighting the key findings more in the Executive Summary (UNITED STATES OF AMERICA)	Thank you. It was unfortunately not possible to flesh out the section any more, given very tight space constraints and the need to shorten the entire chapter. The key findings have been further highlighted in the Executive Summary.
933	80157	22	46	9	47	49	This section needs rethinking and reorganization. In some ways, it seems to include everything but the kitchen sink. Yet, in re-reading it, the focus is clearly on troubles largely generated by, or within Africa itself. While this is appropriate, it is also incomplete. Africa has been bedeviled by bad advice and poorly conceived assistance from donor and technical assistance agencies (recent critiques by Abhijit Banerjee and Esther Duflo's Poor Economics and D. Moyo's Dead Aid, as well as earlier ones by G. Hancock's The Lords of Poverty emphasize this point). As Robert Chambers and others have pointed out, normal development professionalism has often served as an obstacle as well (A. Peter Castro, Maxwell School, Syracuse University)	This section is structured in 3 parts: (i) barriers acting at local level; (ii) policy level barriers; (iii) limits to adaptation. This structuring has been clarified. While there is currently little evidence of bad adaptation advice from development professionals - or academics, or private sector people, for that matter - given the relative novelty of the growing focus on adaptation, the point about bad advice to Africa is nonetheless appreciated. There is unfortunately not sufficient space, given the need to reduce the length of the chapter by a third, to a discussion of how past bad development advice may provide a barrier to adaptation. This is however covered to some extent by the text on maladaptation - see section 22.4.5.8.
934	83356	22	46	10	46	10	Would "constrain" be a term preferable to "block"? (Katharine Mach, IPCC WGII TSU)	Change has been made.
935	67734	22	46	11	46	11	'high confidence' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
936	83357	22	46	11	46	11	"high confidence" as a calibrated term should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
937	67735	22	46	15	46	15	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
938	67736	22	46	19	46	19	Insert space after 'Ludi' (Peter Burt, University of Greenwich)	Change has been made.
939	67737	22	46	19	46	19	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
940	67738	22	46	21	46	22	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
941	67739	22	46	21	46	22	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
942	67740	22	46	24	46	24	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
943	67741	22	46	25	46	25	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
944	67742	22	46	25	46	26	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
945	67743	22	46	29	46	29	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
946	77393	22	46	34	46	38	"May be the word 'lack' is very strong; could we use 'limited or inadequate!?' (UNITED REPUBLIC OF TANZANIA)	This suggestion has been incorporated for some of the clauses in the sentence.
947	67744	22	46	35	46	35	Delete comma after 'resources'. (Peter Burt, University of Greenwich)	Change has been made.
948	67745	22	46	36	46	38	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
949	67746	22	46	36	46	38	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
950	57862	22	46	40	0	0	The dynamical downscaling with RCMs have an ability to reproduce orographic precipitation over complex mountainous regions in Japan. The following article supports this result. Ishizaki, Y., T. Nakaegawa and I. Takayabu 2012: Validation of precipitation over Japan during 1985-2004 simulated by three regional climate models and two multi-model ensemble means. Climate Dynamics, doi:10.1007/s00382-012-1304-5 (Toshiyuki Nakaegawa, Meteorological Research Institute)	This comment does not appear to be relevant to the Africa chapter.
951	70524	22	46	40	46	40	replace 'is' with 'are' (Caroline Bain, Met Office)	Change has been made.
952	74520	22	46	40	46	41	The sentence "Only a portion of small-scale farmers across Africa is able to adapt to perceived climatic changes" is not very informative. "Only a portion" is not very precise. What is "PERCEIVED climatic changes"? I would suggest deleting the sentence. (UNITED STATES OF AMERICA)	The sentence is the headline statement for the following list of constraints, and is intended to convey the assessment, drawn from the literature cited, that few small scale farmers are in a position to adapt to what they perceive to be climate changes. These may of course be natural variability, in some cases. The wording has been changed to convey this idea more clearly.
953	74521	22	46	40	46	50	This is a very useful list of the challenges to small holders. It is accurate, and very much agrees with an Oxfam Research Report "Overcoming the Barriers: how to ensure food production under climate change in Southern Africa", October 2011, which has a similar list of areas that farmers interviewed said they needed support on - pages 48-52 of our report) at policy-practice.oxfam.org.uk/.../overcoming-the-barriers-how-to-ensure-future-food-production-under-climate-change-188929 (UNITED STATES OF AMERICA)	This relevant reference has been included in the text.
954	83358	22	46	41	46	41	"high agreement" and "robust evidence" as calibrated summary terms should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
955	67747	22	46	42	46	42	Delete comma after 'Zambia'. (Peter Burt, University of Greenwich)	Change has been made.
956	77394	22	46	47	46	50	"May be the word 'lack' is very strong; could we use 'limited or inadequate!?' (UNITED REPUBLIC OF TANZANIA)	Change has been made.
957	67748	22	46	49	46	50	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
958	74522	22	46	52	46	53	This sentence is key, and it should be highlighted promptly in the Executive Summary instead of just being buried back here where few people will read it. (UNITED STATES OF AMERICA)	This sentence has been highlighted in the Executive Summary. However, it should be noted that the chapter team is also under pressure to reduce the length of the ES, and thus some of the added text may be deleted in the final steps.
959	67749	22	46	53	46	53	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
960	67750	22	47	2	47	2	'et al' should be in italics, with a full stop after the 'l' and a comma after the full stop. (Peter Burt, University of Greenwich)	Change has been made.
961	67751	22	47	2	47	2	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
962	67752	22	47	9	47	9	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
963	74523	22	47	9	47	14	The case could be made that "Farmers with access to CLIMATE INFORMATION and CLIMATE VARIABILITY (instead of weather as indicated in the sentence) are more likely to be aware of changes and to make adjustments accordingly". In Dinku's paper, climate information (past 30 years) is provided to farmers. In Ethiopia farmers are able to respond to climate variability (drought period) by building dams but they can not make any decision based on future climate change projection. (UNITED STATES OF AMERICA)	The text has been adjusted to accommodate this point.
964	67753	22	47	11	47	11	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
965	70525	22	47	11	47	14	The Dinku et al. (2011) reference is extremely useful but I think it's a shame that you haven't mentioned their main conclusion that 'Gaps associated with [climate] service provision in Africa are mainly a result of limited capacities of the NMHSs. Only a minor investment is made in the NMHSs in Africa.' (Caroline Bain, Met Office)	This point has already been made in section 22.4.2. The Dinku et al (2011) citation has been added to that section.
966	67754	22	47	16	47	16	Delete comma after 'institutional'. (Peter Burt, University of Greenwich)	Change has been made.
967	67755	22	47	19	47	21	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
968	67756	22	47	19	47	21	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
969	67757	22	47	24	47	24	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
970	67758	22	47	28	47	29	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
971	67759	22	47	28	47	29	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
972	78319	22	47	29	47	37	A recent study in Burkina Faso shows how constraints to mobility (transhumance) reduces people's capacity to cope with droughts. Reference: Traore, S., T. Owiyo & Y. Sokona (under review). Dirty drought causing loss and damage in Northern Burkina Faso. Int. J Global Warming. The manuscript for this forthcoming article has been submitted to TSU according to the review instructions. Document name: IJGW_LD_Burkina.pdf (Kees van der Geest, United Nations University)	This citation was initially added, but had to be removed as we could not find a record of it being accepted by the literature cut-off date.
973	67760	22	47	33	47	34	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
974	67761	22	47	33	47	34	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
975	67762	22	47	40	47	40	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
976	83359	22	47	45	47	45	"high agreement" and "robust evidence" as calibrated summary terms should be italicized. (Katharine Mach, IPCC WGII TSU)	Change has been made.
977	70430	22	48	1	0	0	case study of the Okavango delta vulnerability study could also be captured in this section. See Hambira, Wame L. (2011). Screening for Climate change vulnerability in Botswana's tourism sector in the bid to explore suitable adaptation measures and policy implications: A case study of the Okavango Delta. International Journal of Tourism Policy. Vol. 4, No. 1, pp. 51-65. (Wame Lucretia Hambira, University of Botswana )	Section containing case studies has been removed due to space constraints
978	83360	22	48	1	0	0	Section 22.5. As much as possible, this section should be shortened in the final draft of the chapter. (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints
979	77395	22	48	6	48	6	I propose the following changes 'critical stage at Kilimanjaro' to 'critical stage in Kilimanjaro'" (UNITED REPUBLIC OF TANZANIA)	Section containing case studies has been removed due to space constraints
980	83361	22	48	6	48	6	It would be preferable to indicate more specifically what is meant by "critical stage." (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints
981	67763	22	48	12	48	13	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
982	83362	22	48	13	48	13	It would be preferable to indicate more specifically what is meant by "dangerous" here. (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints
983	83363	22	48	17	48	17	The timeframe for the decrease in precipitation should be specified within the 1st sentence of this paragraph. (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints
984	67764	22	48	19	48	25	This is good introductory material. I suggest moving it up to the start of the paragraph (line 16). (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
985	83364	22	48	25	48	26	It may be preferable to use a more conditional framing to describe the disappearance of glaciers--"if all of its glaciers disappear"? (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints
986	67765	22	48	31	48	31	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
987	56850	22	48	43	48	43	What is the evidence for claiming that elephants migrate into the forest due to warming? This sounds rather speculative. (Tor A. Benjaminsen, Norwegian University of Life Sciences)	Section containing case studies has been removed due to space constraints
988	67766	22	48	43	48	43	Insert space before first '('. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
989	67767	22	48	43	48	43	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
990	67768	22	48	43	48	43	Delete second '('. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
991	78441	22	48	44	48	45	How confident are we that warming has been a main cause? (Dáithí Stone, University of Cape Town)	Section containing case studies has been removed due to space constraints
992	67769	22	48	46	48	46	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
993	67770	22	48	46	48	46	Delete '('. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
994	67771	22	48	50	48	50	'per' should be in italics. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
995	69681	22	48	52	48	54	Figures quoted are different from the official figures available from Tanzania Electricity Supply Company (TANESCO). Hale 21MW not 17MW, Pangani Falls 68MW not 66MW, also the total electricity production from Pangani is estimated at 17% (not 20%) of the electricity. This is likely to go down because of increase use of natural gas, geothermal etc in Tanzania. Nevertheless, nearly all of the hydropower stations operate below capacity mainly because of low water levels in Nyumba ya Mungu reservoir, which is attributed to upstream water use, see Komakech et al., 2011, Agricultural Water Management journal 98 (11) 1740– 1751. (NETHERLANDS)	Section containing case studies has been removed due to space constraints
996	67772	22	49	1	49	1	Reference required. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
997	69682	22	49	1	49	9	The majority of the water users in the Pangani basins are the smallholder farmers, who have constructed over 3000 irrigation canals. They are the ones likely to experience significant impact of climate change in the basin see Komakech et al., 2011, Agricultural Water Management journal 98 (11) 1740– 1751.. (NETHERLANDS)	Section containing case studies has been removed due to space constraints
998	74524	22	49	1	49	13	It might be helpful if the authors added a summary paragraph highlighting the complex interactions between climate and non-climate drivers. These seems like a great case study to really bring home the point around the complexity of attributing changes to climate change in a complex system, but still demonstrating that climate change is in fact a driver (UNITED STATES OF AMERICA)	Section containing case studies has been removed due to space constraints
999	77396	22	49	4	49	4	" I propose the use of 'Maasai' instead of 'Masai'" (UNITED REPUBLIC OF TANZANIA)	Section containing case studies has been removed due to space constraints
1000	67773	22	49	7	49	7	Delete comma after 'beans' (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1001	67774	22	49	13	49	13	Delete '('. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1002	67775	22	49	25	49	25	Delete comma after 'Louis' (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1003	67776	22	49	28	49	28	Delete colon after 'Dakar'. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1004	67777	22	49	40	49	40	Delete comma after 'chnages'. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1005	70526	22	50	2	50	2	... resulting in flooding were recorded' - citation needed. (Caroline Bain, Met Office)	Section containing case studies has been removed due to space constraints
1006	78442	22	50	4	0	0	"Much heavier" or just "heavier"? (Dáithí Stone, University of Cape Town)	Section containing case studies has been removed due to space constraints
1007	67778	22	50	5	50	5	Delete comma after 'houses'. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1008	67779	22	50	8	50	8	Delete comma after 'diseases' (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1009	67780	22	50	9	50	9	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1010	83365	22	50	19	50	24	Citations should be provided in support of the statements in this paragraph. (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints
1011	67781	22	50	24	50	24	Change 'depends' to 'depend'. (Peter Burt, University of Greenwich)	Section containing case studies has been removed due to space constraints
1012	83366	22	50	27	0	0	Section 22.5.3. Since this section was not included in the current draft, it should not be included in the final draft, as it has not undergone review. (Katharine Mach, IPCC WGII TSU)	Section containing case studies has been removed due to space constraints

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1013	60391	22	50	27	50	31	I would omit this section - see previous comments. (Emma Archer van Garderen, CSIR)	Section containing case studies has been removed due to space constraints
1014	69683	22	50	27	50	31	Add section on migration or delete. However, strong case on migration is needed to support some of the statements discussed in the chapter (NETHERLANDS)	Section containing case studies has been removed due to space constraints
1015	83367	22	50	32	0	0	Section 22.6. In the final draft, this section should be shortened as much as possible. (Katharine Mach, IPCC WGII TSU)	section 22.6.1 has been shortened as much as possible.
1016	83368	22	50	36	50	37	This statement could be more clearly supported by relevant citations. Additionally, wording of the statement could be revised to avoid interpretation of a prescriptive formulation. (Katharine Mach, IPCC WGII TSU)	Wording has been adjusted. The entire section is the supporting text for this statement, which is a headline summary.
1017	74525	22	50	36	50	54	It could be mentioned that in some cases deforestation is actual an adaptive measures (thus often maladaptive) to climate change, and so we need to both integrate mitigation and adaptation, but also ensure that at the least, one is not harming the other. (UNITED STATES OF AMERICA)	The meaning of this comment is unfortunately not clear from the wording, and thus has not been addressed.
1018	83369	22	50	41	50	43	The formulation of this statement is somewhat prescriptive and could be revised. (Katharine Mach, IPCC WGII TSU)	Wording has been adjusted.
1019	67782	22	50	43	50	43	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
1020	67783	22	50	44	50	44	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1021	67784	22	51	3	51	3	Change 'cooperatives' to 'co-operatives'. (Peter Burt, University of Greenwich)	Text to which this comment refers has been deleted.
1022	67785	22	51	10	51	10	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1023	83370	22	51	12	51	12	Wording of this statement using "need" could be interpreted as prescriptive, and the chapter team should consider rewording it. (Katharine Mach, IPCC WGII TSU)	Text has been re-worded to avoid being prescriptive.
1024	67786	22	51	15	51	15	Delet space before 'Nasi' (Peter Burt, University of Greenwich)	Change has been made.
1025	67787	22	51	15	51	16	References should be in chronological order (and alphabetical order in the years). (Peter Burt, University of Greenwich)	Change has been made.
1026	67788	22	51	17	51	17	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1027	67789	22	51	26	51	26	Delete comma after 'Africa' (Peter Burt, University of Greenwich)	Change has been made.
1028	67790	22	51	30	51	30	Delet comma after 'livelihoods'. (Peter Burt, University of Greenwich)	Change has been made.
1029	74526	22	51	33	51	43	Could reference remarkable progress on wind energy made by Cape Verde, a major African and global, success story on wind energy. (UNITED STATES OF AMERICA)	This reference has been added.
1030	67791	22	51	34	51	34	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1031	67792	22	51	35	51	35	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1032	67793	22	51	39	51	39	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1033	67794	22	51	42	51	42	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Change has been made.
1034	63761	22	52	7	0	0	"pledged" should be replaced by "committed" given the wording in UNFCCC decisions. Reference: Copenhagen Accord: para 8, lines 6+11 (Page 7) (GERMANY)	done
1035	69684	22	52	8	52	9	US\$ 100 per annum or US\$ 100 billion/million per annum? (NETHERLANDS)	billion added. Thank you.
1036	69685	22	52	8	52	9	US\$ 100 per annum or US\$ 100 billion/million per annum? (NETHERLANDS)	billion added. Thank you.
1037	67795	22	52	9	52	9	'per annum' should be in italics. (Peter Burt, University of Greenwich)	done
1038	70527	22	52	9	52	9	Should the figure be US\$100 billion per annum? (Caroline Bain, Met Office)	Yes, done.
1039	63762	22	52	29	52	30	"general consensus" among whom? Questionable whether developed country parties agree to this statement. (GERMANY)	Sentence rephrased. 'Consensus' removed
1040	63763	22	52	33	52	35	It is recommended to add "It requires also a regulatory framework, which guarantees e.g. property rights." Reference: IPCC AR5 WGIII Draft 2 Ch. 16 p.:27; line 30-33 (GERMANY)	Done
1041	67796	22	52	38	52	38	Comma missing after author surname in reference. (Peter Burt, University of Greenwich)	Sentence and reference deleted



#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1042	63764	22	52	39	52	40	We cannot support the causal relationship being created in this sentence: we do not have an indication for a particularly "high degree of fund mismanagement with regard to climate finance and adaptation funds..." . From our point of view, it is neither better nor worse than development finance. Complexity, uncertainty and novelty are aspects which are not alien to current development finance. Therefore we suggest to replace this sentence with: "The risk of fund mismanagement with regard to climate finance and adaptation funds needs to be borne in mind. The level of complexity, uncertainty, and novelty that surrounds many climate finance issues would, inter alia, require a longer-term....." (GERMANY)	Sentence has been replaced according to valuable suggestion.
1043	67797	22	52	43	52	43	I am not happy about citing references as 'forthcoming'. What happens if they are not published (and worse, if flaws in the data/methodology arise during review)? (Peter Burt, University of Greenwich)	reference completed. --> (Pauw, 2013)
1044	81295	22	52	47	0	0	Section 22.7 needs to be written in paragraphs. Other research gaps besides adaptation should be added. (Monalisa Chatterjee, IPCC WGII TSU)	additional text and a table on research gaps has been added
1045	70528	22	52	47	53	36	Section 22.7: In the first paragraph it is mentioned that money is spent on foreign-led research so it is important to include 'science capacity needs to be built to carry out climate research in African institutions' in your bullet points (Caroline Bain, Met Office)	added in the revised section
1046	70529	22	52	47	53	36	Climate monitoring' should be included in the bullet point list (Caroline Bain, Met Office)	added in the revised section
1047	69686	22	52	49	53	35	One of the biggest problem Africa faces is of course the low level of quality research output from African researchers. African governments don't make significant investment in research, innovation, science and technology and education related to climate change, mitigation and adaptation. The authors have highlighted this briefly in page 52-53 but this gap has not been adequately reflected in the policy or technical summary level. African led climate research on climate change and its impact would provide relevance to the diversities of climate change adaptation strategies being proposed. Strengthening African research capacity is therefore key and should be prioritised (NETHERLANDS)	low quality data issues have been added
1048	74527	22	52	49	53	35	The list of research gaps on page 53 (section 22.7) is, unfortunately, another laundry list. No doubt everyone thinks their research is the most important but.... is there a way of ordering it differently? Some research gaps are very broad, others very specific, so some may be subsets of the first; or by us suggesting some are more pressing than others (difficult)....the other issue is that these are identified as research issues/gaps, it would be more useful I think to see them presented as research questions if/where possible to sharpen up the focus e.g. "monitoring adaptation" is listed but that's so broad. (UNITED STATES OF AMERICA)	Section has been revised
1049	71418	22	52	50	52	54	This is a long sentence in which the second half is not adequately connected to the first half. Rephrasing is suggested. (CANADA)	Section has been revised
1050	83371	22	53	2	53	2	It does not seem that "data and research gaps" is a complete descriptor for all items in this list, and the wording here could be considered. (Katharine Mach, IPCC WGII TSU)	Section has been revised
1051	67798	22	53	11	53	11	'et al.' should be in italics. (Peter Burt, University of Greenwich)	Copy editor will ensure consistency
1052	67799	22	53	19	53	19	Split infinitive: move 'further' to after 'develop'. (Peter Burt, University of Greenwich)	Section has been revised
1053	67800	22	53	22	53	22	Split infinitive: move 'effectively' to after 'combine'. (Peter Burt, University of Greenwich)	Section has been revised
1054	81272	22	53	40	0	0	FAQ 22-1 Authors should consider clarifying types of migration: rural – urban, across countries, across region, and highlight communities that are more prone to migrating, and ways in which migration change the exposure of a migrant to climate related impacts? (Monalisa Chatterjee, IPCC WGII TSU)	FAQ 22.1 has been deleted
1055	74528	22	53	40	53	49	Also note that climate change and environmental factors are only part of more complex web of causes of migration in Africa. They shouldn't be seen as primary, as social factors may be primary draws. See Zommers, Z and Macdonald, D. (2012) " Protected Areas as Frontiers for Human Migration" in Conservation Biology, 26 (3), 547 - 556. (UNITED STATES OF AMERICA)	FAQ 22.1 has been deleted
1056	76894	22	53	51	0	0	FAQ22.2: the answer to this FAQ is very general and not specific to Africa at all. It fits better in chapter 7. Suggest deleting this FAQ from chapter 22. (Food and Agriculture Organization of the United Nations (FAO))	The FAQ is very appropriate to the African context.
1057	76893	22	53	52	0	0	this definition of food security is not consistent with chapter 7. needs to cross reference chapter 7. (Food and Agriculture Organization of the United Nations (FAO))	It has been changed to make it consistent with Chapter 7.
1058	67801	22	53	52	53	52	Delete comma after 'utilization'. (Peter Burt, University of Greenwich)	Done

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1059	70530	22	54	8	54	9	The final sentence should be rephrased or removed as there was no firm indication in section 22.3.5. that gastro-intestinal diseases would increase under climate change, and the evidence for malaria suggested some increases and some decreases depending on location. (Caroline Bain, Met Office)	It has been reworded to say 'disease burden'.
1060	74529	22	54	11	54	11	See Ted Miguel's at University of California Berkley and study in PNAS (2009) "Warming increases the risk of civil war in Africa" by Marshall B. Burkea,, Edward Miguelc, Shanker Satyanathd, John A. Dykemae , and David B. Lobell (UNITED STATES OF AMERICA)	Reference already contained in text on Violent Coflict (Burke at al 2009b)
1061	78443	22	54	17	0	0	Is "conflict" the right world here? I think you mean to say that there will be increased issues that could potentially be the seeds of conflict, rather than that there will be increased conflict per se. (Dáithí Stone, University of Cape Town)	Sentence rephrased
1062	67802	22	54	44	54	44	Why bold text? (Peter Burt, University of Greenwich)	sorted out
1063	77372	22	58	34	58	35	"there is nothing much to do here since these are references- you can see that even the authors of this paper has found difficulties in using one name only" (UNITED REPUBLIC OF TANZANIA)	reference not in the Chapter anymore
1064	67803	22	60	30	60	30	Why bold text? (Peter Burt, University of Greenwich)	sorted out
1065	67804	22	66	20	66	20	Why bold text? (Peter Burt, University of Greenwich)	sorted out
1066	70801	22	66	27	0	0	Spelling error - 'vance Guard' should read 'Advance Guard' (Kirsty Galloway McLean, United Nations University - Institute of Advanced Studies)	sorted out
1067	77373	22	75	39	75	39	"there is nothing much to do here since these are references- you can see that even the authors of this paper has found difficulties in using one name only" (UNITED REPUBLIC OF TANZANIA)	reference revised
1068	67805	22	76	47	77	15	References out of alphabetical order (in Scottish surnames 'Mac' and 'Mc' are treated the same, therefore this block should appear before the MacDonald references). (Peter Burt, University of Greenwich)	OK.
1069	78424	22	95	0	0	0	Table 22-1, Tanganyika: I do not see how the 0.9C matches the 1.3C warming. My understanding is that the attribution of biomass reduction still requires some qualification (unlike, say, the vertical warming profile). (Dáithí Stone, University of Cape Town)	Most authors agree that there is climate warming in Lake Tanganyika and reduced phytoplankton biomass, the qualification is whether this has transcended to reduced fish production (Sarvala et al., 2007; Verburg et al., 2007; Langanberg et al., 2008)
1070	78425	22	95	0	0	0	Table 22-1, Kariba: My reading is that there is still much lack of clarity on whether the ecological changes are responding to climatic drivers or other drivers. Chapter 18 cites additional discussion. (Dáithí Stone, University of Cape Town)	There is no contestation on whether climatic factors are driving lake warming, changing phytoplankton seasonality and dominance, reduced phytoplankton biomass and primary productivity. A different author concedes that climate may be playing a role in Kapenta fish production but emphasise overfishing as main cause of fish declines
1071	78426	22	95	0	0	0	Table 22-1, Victoria: Upper levels equals below 250m? (Dáithí Stone, University of Cape Town)	This should be corrected and read as 'above 250m' and not 'below 250m'
1072	78427	22	95	0	0	0	Table 22-1: Chilwa: But is this normal or not? (Dáithí Stone, University of Cape Town)	This is not normal as reduced rainfall and lake water levels in past two decades has exceeded expected variability (Njaya et al., 2011)
1073	81296	22	95	0	0	0	Table 22-2 Authors may wish to add similar information from other cities of Africa in this table. (Monalisa Chatterjee, IPCC WGII TSU)	table deleted
1074	81445	22	95	0	0	0	Table 22-1: Source reference for Lake Kivu is missing. Sources may be presented in a separate column to increase readability of the table. (Yuka Estrada, IPCC WGII TSU)	Sources: Halbwachs et al., 2002; Odada et al., 2006 have been added
1075	83372	22	95	0	0	0	Table 22-1. The "?" provided within the 1st entry should be clarified. (Katharine Mach, IPCC WGII TSU)	table deleted
1076	70531	22	95	1	95	1	Table 22-1: second row, second col: Provide citation for quantity to replace the (?). Evidence must be shown to quote this figure (Caroline Bain, Met Office)	table deleted
1077	70532	22	95	1	95	1	Table 22-1: There is inconsistent use of brackets in the table for citations - suggest the authors review (Caroline Bain, Met Office)	table deleted
1078	70533	22	95	1	95	1	Table 22-1: Final row: Should add to box on lake Chilwa 'Reacts strongly to variations in rainfall.' As you are not really showing this is a climate change impact but is a climate variability feature. (Caroline Bain, Met Office)	The climate variability and change impacts have been specified
1079	70534	22	95	2	95	2	Table 22-2: Caption citation should read Cartwright (Caroline Bain, Met Office)	OK.
1080	70535	22	95	2	95	2	Table 22-2: What do the percentages refer to after the text in column 1? Should be clarified in label (Caroline Bain, Met Office)	The table 22.2 will be corrected

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1081	81297	22	96	0	0	0	Table 22-4 A ES finding on gender based on this table and discussion in chapter would be very useful. (Monalisa Chatterjee, IPCC WGII TSU)	Gender has been integrated into the ES, as well as additional points on equity-related matters.
1082	83373	22	96	0	0	0	Table 22-4. The acronym HRBA should be specified. (Katharine Mach, IPCC WGII TSU)	Acronym has been specified.
1083	61915	22	97	0	0	0	Fig.22-1: Change "Observed and simulated variations" to "Observed and simulated changes" since the figure shows changes not variations. (David Rowell, Met Office Hadley Centre)	The regional climate figure has been prepared at the WGII level to ensure coordination with WGI assessment. Analysis uses model data and methods building from WGI AR5 Figure SPM.8. See also Annex I of WGI AR5.
1084	74530	22	97	0	0	0	Figure 22-1: Africa-Annual maps should be replaced with 4 seasonal maps - Southern Africa Dec-Feb, Eastern Africa March-May and Oct-Dec, and northern Africa June-September. (UNITED STATES OF AMERICA)	The regional climate figure has been prepared at the WGII level to ensure coordination with WGI assessment. Analysis uses model data and methods building from WGI AR5 Figure SPM.8. See also Annex I of WGI AR5.
1085	81298	22	97	0	0	0	Figure 22-1 should be integrated in the physical climate section of the chapter. (Monalisa Chatterjee, IPCC WGII TSU)	It has been integrated.
1086	70537	22	97	1	97	1	Figure 22-1: It would help the reader to follow the panels referred to in the caption if labelling was used (a), (b) etc. At the moment it took me a while to match up the descriptions with the correct panel. (Caroline Bain, Met Office)	The regional climate figure has been prepared at the WGII level to ensure coordination with WGI assessment. Analysis uses model data and methods building from WGI AR5 Figure SPM.8. See also Annex I of WGI AR5.
1087	70536	22	97	1	104	1	The figures in general are poorly produced, often badly labelled with tiny writing and the captions are not descriptive enough to follow (Caroline Bain, Met Office)	Figures have been revised and will be brought up to specs before publication
1088	61916	22	98	0	0	0	Fig.22-2: Please label each panel, as it is not clear which panels show which regions. (David Rowell, Met Office Hadley Centre)	Figure has been revised
1089	74531	22	98	0	0	0	Figure 22-2: The seasons plotted should vary by region: DJF for southern Africa, MAM for eastern Africa, etc. (UNITED STATES OF AMERICA)	The plumes figure has been revised at the WGII level to ensure consistency across volume and WGI assessment .
1090	81299	22	98	0	0	0	Figure 22-2 should be integrated in the physical climate section of the chapter. (Monalisa Chatterjee, IPCC WGII TSU)	It has been integrated.
1091	83374	22	98	0	0	0	Figure 22-2. It would seem preferable to adjust the y-axis of the plots so that the plumes are fully contained within the boxes. Additionally, it would be helpful to label the plots with the acronyms for each sub-region. Within the caption itself, the quotations placed around relevant components seem a bit awkward to read and could be deleted. Finally, is the relevant range of years 1986-2006 or 1986-2005? (Katharine Mach, IPCC WGII TSU)	The plumes figure has been revised at the WGII level to ensure consistency across volume and WGI assessment .
1092	70538	22	98	1	98	1	Figure 22-2: The rows should be labelled on the left hand side according to the region e.g. 'AMU', 'Eastern + Southern COMSEA' etc. It would also be helpful to label the columns 'precip' and 'temp'. The writing in the key to the colours is very small and difficult to read - this only has to be shown once really. (Caroline Bain, Met Office)	The plumes figure has been revised at the WGII level to ensure consistency across volume and WGI assessment .
1093	85230	22	98	1	98	30	The absence of warming since 1998 is concealed (Vincent Gray, Climate Consultant)	Please check WGI report for the discussion on changes observed in the last 15 years.
1094	81300	22	99	0	0	0	Figure 22-3 should be integrated in the chapter discussion on impacts on different sectors. (Monalisa Chatterjee, IPCC WGII TSU)	figure has been updated
1095	81301	22	99	0	0	0	Figure 22-4 Not clear if the figure is really needed. Perhaps drop? (Monalisa Chatterjee, IPCC WGII TSU)	This figure has been deleted
1096	83375	22	99	0	0	0	Figure 22-3. The chapter team could consider including a supplemental table for this figure, to provide further information, for example as done in chapters 3 and 6. (Katharine Mach, IPCC WGII TSU)	Due to space constraints table has not been added but the figure has been revised.
1097	84828	22	99	0	0	0	Figure 22-3: Given that two different types of attribution are presented in the two panels, please consider specifying the difference in the y-axis of each one. (Michael Mastrandrea, IPCC WGII TSU)	revised figure
1098	70539	22	99	1	99	1	Figure 22-3: What do the stars/ squares/ circles mean? How were these qualified? I don't feel that the positions on the chart were qualified by the text in the main report. I suggest you remove this figure or explicitly state which papers were used to decide confidence levels. (Caroline Bain, Met Office)	figure revised

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1099	70540	22	99	2	99	2	Figure 22-4: This is poorly presented. It would be more useful to have the number of undernourished people on the same graph as total population so that the two increases can be compared. (Caroline Bain, Met Office)	This figure has been deleted; This has been replaced with a table
1100	81446	22	100	0	0	0	Figure 22-5: Use of colors – It is confusing that two panels are illustrating completely different sets of information but using similar colors. Suggest changing the color schemes. A) Some shades of greens are similar and cannot distinguish one from another (i.e. temperate broadleaf forest vs. tropical evergreen broadleaf forest). B) Suggest change colors for Medium, Low and very low categories so that they will be distinctively different from colors used for the vegetation types in panel A. (Yuka Estrada, IPCC WGII TSU)	The figure employs the same color scales used in the original publication. The biomes at the upper (temperate) and lower (tropical) ends of the color scale do not overlap. The vulnerability map uses the red-yellow-green scale that is prevalent in the published scientific literature on ecosystem vulnerability.
1101	83376	22	100	0	0	0	Figure 22-5. For part A of this figure, it would be helpful to clarify what is meant by "worst-case" and how it was determined. Additionally, the colors used could be clarified--does each color indicate the new biome type? (Katharine Mach, IPCC WGII TSU)	Please see the explanation of 'worst-case' in the figure legend. Also, the figure legend has been changed to indicate that the left part shows the potential future biome in projected areas of biome change.
1102	70541	22	100	1	100	1	Figure 22-5: I'm not sure how to interpret this figure - does figure (a) suggest these will be what the vegetation changes to? Or what type of vegetation is vulnerable? Also the colours are quite similar at the start and end of the colour scale. (Caroline Bain, Met Office)	The figure legend has been changed to indicate that the left part shows the potential future biome in projected areas of biome change. The color scale is the same as in the original publication and the biomes at the upper (temperate) and lower (tropical) ends do not overlap.
1103	70542	22	100	1	100	1	Figure 22-5: Figure panels need to be labelled (a) and (b) (Caroline Bain, Met Office)	The figure legend now labels the two parts "Left" and "Right," consistent with other figures in the chapter.
1104	81302	22	101	0	0	0	Figure 22-6 Not clear if the figure is really needed. It should be used more prominently in the chapter discussion. And efforts can be made to make this figure more accessible. (Monalisa Chatterjee, IPCC WGII TSU)	Figure has been removed from the Chapter
1105	70543	22	101	1	101	1	Figure 22-6: Should be explained in the caption that the 'numbers are calculated from different emissions scenarios, for more information see SEI (2009)' (Caroline Bain, Met Office)	Figure has been removed from the Chapter
1106	67906	22	102	0	0	0	Figure 22-7 It is also important for policymakers to understand risks estimated for the mid-term, or the period in between the era of climate responsibility (2030-2040) and era of climate options (2080-2100); and therefore, a figure should be included for global average warming of 3 degrees Celsius above preindustrial. Furthermore, given the diversity of regional risks and effective adaptation, the risk levels provided relate to different phenomena and adaptation choices are difficult to compare; and therefore, the figure should be revised to provide examples of the projected risks and adaptation choices considered in producing the figure and to include comparable numerical values. (JAPAN)	Figure 22-7 has been deleted and a key risk table has been added.
1107	74532	22	102	0	0	0	Figure 22-7: The text on this figure is so small as to be illegible. (UNITED STATES OF AMERICA)	Figure 22-7 has been deleted and a key risk table has been added.
1108	78428	22	102	0	0	0	The labels are small and hard to see. (Dáithí Stone, University of Cape Town)	Figure 22-7 has been deleted and a key risk table has been added.
1109	78429	22	102	0	0	0	I am not clear on the purple, yellow, and red bands. Are they the ranges in risk? Why do the blue lines not have ranges too then, as I doubt we understand present risk perfectly? (Dáithí Stone, University of Cape Town)	Figure 22-7 has been deleted and a key risk table has been added.
1110	78430	22	102	0	0	0	Is the +2/4C above present, pre-industrial, etc.? What warming does the present correspond to here? (Dáithí Stone, University of Cape Town)	Figure 22-7 has been deleted and a key risk table has been added.
1111	78431	22	102	0	0	0	Why are some categories blank? (Dáithí Stone, University of Cape Town)	those categories had not been assessed in the chapter
1112	78671	22	102	0	0	0	Figure 22-7: How is it possible that human security has a risk level below that of its drivers - poverty, water, access to food? Please check that the definition of human security used here is consistent with that provided in the glossary (which includes capacity to live in dignity, etc.) (Philippe Marbaix, Université catholique de Louvain)	Figure 22-7 has been deleted and a key risk table has been added. Please see revised section 22.6.1 for underlying discussion.

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1113	78672	22	102	0	0	0	Figure 22-7: This figure is difficult to read. Could you consider the addition of a "risk level" scale on each panel -- lines or tick marks at each level + labels somewhere along these ? Another possibility could be to have a completely different design: have all the "wedges" put vertically, with a vertical temperature scale, use colors for the risk levels, and use the horizontal dimension to show the two extremes of adaptation for each sectors - low and high adaptation. (Philippe Marbaix, Université catholique de Louvain)	Figure 22-7 has been deleted and a key risk table has been added.
1114	81303	22	102	0	0	0	Figure 22-7 Discussion in impacts sector should be the traceable account for findings provided in this figure. (Monalisa Chatterjee, IPCC WGII TSU)	Figure 22-7 has been deleted and a key risk table has been added.
1115	70544	22	102	1	102	1	Figure 22-7: This figure is extremely difficult to read and interpret. The text on the figure is too small to read. The description in the caption is inadequate: what is the difference between the coloured and the grey shading? How are risk levels decided upon? Where does this information come from - is this adapted from a report? If so you should give the citation. (Caroline Bain, Met Office)	Figure 22-7 has been deleted and a key risk table has been added.
1116	81304	22	103	0	0	0	Figure 22-8 EBA cross chapter box also has a figure perhaps referring to the cross chapter box and its figure would be most efficient. (Monalisa Chatterjee, IPCC WGII TSU)	Cross references have been added in the text, and the Figure has been deleted
1117	81447	22	103	0	0	0	Figure 22-8: It needs some revisions but this figure could complement Figure EA-1 in the cross-chapter box which is the illustrated schematic approaches of EBA. TSU can help further to develop this figure. (Yuka Estrada, IPCC WGII TSU)	This figure has been deleted.
1118	70545	22	103	1	103	1	Figure 22-8: This figure is difficult to interpret and it is not clear what it is supposed to show. What do the arrows refer to? Why are the top right hand boxes left out of the remainder of the flow diagram? It is not clear which order it should be read in. (Caroline Bain, Met Office)	This figure has been deleted.
1119	70546	22	103	2	103	2	Figure 22-9: Why are costs increasing every year? Surely infrastructure put in place in 2000-2040 will anticipate worse case scenarios? How are the costs separated from any 'Business as usual' infrastructure needs? I would suggest removing this figure or at least explaining the circumstances of the calculations in greater detail otherwise there is risk of misinterpretation or misuse. If it is kept in, the labels in the key should be explained - what is NoSLR??? What is Rahmstorf?? (Caroline Bain, Met Office)	Additional explanation has been added.
1120	83377	22	104	0	0	0	Figure 22-10. The timeframe for the migration data provided here should be specified. (Katharine Mach, IPCC WGII TSU)	I did so