

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	1	0	0	0	0	Important chapter to set the scene, rich , well-informed and relevant discussion, but with some significant shortcomings as noted below in detailed comments. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted
2	1	0	0	0	0	It is too long and esoteric for the purpose at hand; the task is not to assess the current state of academic diversity and confusion, for academics, but to assess and clarify key concepts and issues, for governments and a wide readership. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted
3	1	0	0	0	0	I fear the chapter stretches the IPCC role too far, beyond "assessment" in its aim to lay out a new "interdisciplinary" conceptual integration of disaster risk and adaptation. The fact is that the two fields are different, and necessarily so; the task of assessment is to clarify these differences, and with insight show the potential opportunities to achieve better adaptation and lower risk and how these synergies are being obtained. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted ALTHOUGH NOT SO SURE THEY ARE SO DIFFERENT IN MANY ASPECTS. This is now covered in section 1.3.5 where a debate of what impedes and fosters synergy is given and approaches to linking mentioned.
4	1	0	0	0	0	The organization of the chapter needs to be tightened, to identify and systematically lay out the big ideas and key messages once only, and clearly, and avoid the current excessive repetition. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted
5	1	0	0	0	0	The chapter would benefit from more direct plain language, with less abstract/ and academic lists of words and more concrete words - I longed to see some more words like "country" or "flood", or "slum" etc. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted, although this chapter is principally an introduction and must be more general than what follows.
6	1	0	0	0	0	The chapter has an unhelpfully undisciplined approach to definitions. The authors should not venture their own definitions without a strong case to do so. Considerable effort and consultation went into the UNISDR 2009 definitions for disaster risk and they should be given weight accordingly. They should also be correctly quoted (some are not). Definitions are always related to context and purpose (witness the different IPCC and UNFCCC definitions of climate change); and they cannot be perfect; their role is to enhance clarity and ease of communication. By all means, speak of many the ifs and buts, but please help the reader to see what the more authoritative and widely used definitions are. The UNISDR 2009 definitions are available in the 5 UN languages and in Korean and Japanese at http://www.unisdr.org/eng/terminology/terminology-2009-eng.html (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	The SOD involved a significant rewrite of the definitions (1.1.1-1.1.2); areas where they differ from referenced definitions are clarified. In some cases, we moved away from previous definitions, and these reasons are explained, or in some cases, multiple definitions are offered. We advise readers of this and the bases for the definitions given and also where contradictions with other definitions of the same concept exist. Also the SOD includes a glossary for a point of reference. The use of established glossary definitions has evolved deliberately due to the dynamic nature of the topic and the concepts that typify it.
7	1	0	0	0	0	More attention is needed to outline the actors involved and what they do. They are largely invisible in the draft. The expressions "disaster risk management community" and "climate change adaptation community" are used without definition, and wrongly convey the idea of distinctive homogeneous groups. The differences should not be simplistically exaggerated. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	This issue is dealt with in general at section 1.3.1, p.21 line 7-20. It ought to be dealt with at a more specific level in the individual chapters as well.
8	1	0	0	0	0	At an early point, the chapter should provide some brief account of what risk reduction and risk management actually comprises. This would help the reader understand what the later conceptualisations, abstractions and qualifications refer to. In particular, it should be made clear that the words "adaptation" and "disaster risk reduction" are abstract concepts and policy objectives, but do not have concrete expression by themselves; this occurs through such practical things as legislation, budgets, public awareness programmes, warning systems, dykes, building codes etc. It should also refer at an early stage to the Hyogo Framework (HFA) and its experience-based framework of priorities for action to reduce risks. The HFA provides a good practical framework to communicate what risk reduction comprises. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted and done in 1.1.1 and 1.1.2; see next comment for more detail on the distinction between DRR and DRM.

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9	1	0	0	0	0	The authors have chosen to emphasize "risk management" over "risk reduction". This may be okay in the context of this IPCC report but they should explain upfront the difference and the rationale for the choice. They should also be clear on the longstanding views of governments on the importance of disaster risk reduction as represented in numerous General Assembly resolutions and in the UN-originated and endorsed Hyogo Framework for Action (HFA), and the growing use of the HFA as the framework and vehicle for national disaster risk reduction and management. To some extent, risk management is a rich country practice, while risk reduction is a poor country concern. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Point well taken and new text takes account of both definition and position. The central social issue is DRR. The central intervention issue is the role of DRM. DRR is more than DRM as DRR can be achieved through good development practice without any formal mention of DRM as such as some societies have achieved over time. DRM is a particular approach to DRR where the idea of DRR IS MADE EXPLICIT, IS RECOGNIZED TO BE NECESSARY AND IS PROMOTED AND PURSUED DELIBERATELY. Clearly in this assesemnt emphasis is on DRM because it is in the title and management is a central concern. But it is the objective of DRR and adaptation which guide our deliberations on this.
10	1	0	0	0	0	The chapter struggles in its own conceptual formulation between the "top down" climate driven view of the problem and the "bottom up" view of social construction of risk and socially-based decison-making. The latter view is considered in some detail in several places but generally the former view prevails. The issue should be brought out into the open right at the start, assembled in one place, as a fundamental duality that the report must recognise throughout. It is especially important for the SREX as the broad public view is solidly founded in the "top down" perspective with little understanding of the other view. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted and the distinction is discussed throughout the chapter.
11	1	0	0	0	0	FOCUS: The Chapter has improved quite substantially from the ZOD and now reads well. There are however still several sections where the text is quite verbose and the chapter is going well beyond its task to providing the general background, key concepts, and key definitions needed for the SREX. For example, we don't think it is crucial to get all the historical background on how the climate change adaptation and the disaster risk management communities evolved over the past. It would seem much more important to actually provide the assessment of where they are right now and what the currently used definitions are. (Stocker, Thomas, IPCC WGI TSU)	Noted
12	1	0	0	0	0	CONCEPTS/DEFINITIONS: Chapter 1 (along with Chapter 2) needs to provide SREX-key concepts and definitions for Disaster, Risk, Exposure, Vulnerability, Coping, Resilience etc. which will then be used consistently by all the other Chapters throughout the SREX. Currently, a lot if information is given about certain definitions evolved over time, but the definition to be used in SREX is not specifically highlighted. (Stocker, Thomas, IPCC WGI TSU)	Noted, see 1.1.2, glossary, and comment #6.
13	1	0	0	0	0	UNCERTAINTY: The assessment of uncertainty to specific findings and the use of the IPCC uncertainty language needs to be consistent throughout the text. We thus propose that Chapter 1 add a Box on IPCC treatment of uncertainties, closely following the IPCC Guidance Note which is currently being revised for AR5. Also, within Chapter 1, the results of any formal uncertainty assessment should be highlighted by putting the words "likely" etc. in italics. Only use these words in relation to the formal treatment of uncertainty! (Stocker, Thomas, IPCC WGI TSU)	The use of uncertainty language is now restricted to a few cases. The CLA's, in conjunction with other chapters, have decided not to include an uncertainty box. The TSU has decided that any such box would appear with the SPM or in an appendix to the entire report.
14	1	0	0	0	0	REFERENCES: References are very often incomplete, missing, and formatted inconsistently (Stocker, Thomas, IPCC WGI TSU)	Noted
15	1	0	0	0	0	This chapter objective is well described "to lay out key notions" but the chapter is not systematically laying out all the important key notions. Such notions as risk, hazard, exposure, vulnerability, coping capacity, preparedness, emergency response, recovery, prevention, mitigation, social capacity, IWRM, resilience, stationarity/nonstationarity and many others should be clearly defined and explained with varieties of uses of terms. Especially important is the explanation of different usage of words in the report where the same words may be used in different way. For example, definition of risk has a wide spectrum. (Takeuchi, Kuniyoshi, ICHARM)	Noted, see 1.1.2, glossary, and comment #6.
16	1	0	0	0	0	"I recommend using the terms "frequency and magnitude of extreme events" throughout the entire chapter instead of "frequency and intensity". This is, because intensity is often related to the impact or severity of the event, while magnitude simply describes the dimension of the event itself." (Jentsch, Anke, University of Koblenz-Landau)	Intensity has been used where it is appropriate after discussions with Chapter 3 CLA's.

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17	1	0	0	0	0	The chapter is well structured and clear in its message to the CC, CCA and DRM communities. It is not so clear that the message will be of interest to the development community as it is too easily laid aside for lack of specifically calling out development policies and practices promoted by national and international agencies and bodies of the both the public and private sectors that contribute to CC and the creation and amplification vulnerability. (Bender, Stephen Bender, Organization of American States (retired))	Noted and increased salience given to the development link; see also comment 10 and later chapters.
18	1	0	0	0	0	CCA and DRM are presented as communities, apart from the development community. One layer deeper, and DRM is seen to encompass CCA as it does other climate hazards and (for that matter) all natural hazard risks. Another layer deeper and development is the context for the creation of vulnerability as well as the process for its reduction. And another layer deeper, all development deeper and all development has risk including to natural hazards; CCA and DRM are defined tools to address risk should development choose to do so. (Bender, Stephen Bender, Organization of American States (retired))	See previous comment.
19	1	0	0	0	0	This chapter 1 is very well structured and clear to read, dealing with complex, often fuzzy and overlapping concepts with authority and informed organisation. (McCall, Michael, Universidad Nacional Autonoma de Mexico)	Noted
20	1	0	0	0	0	I would like to congratulate the authors for the nice work in improving Chapter 1 of the report. The revised chapter 1 has provided a clear picture on the distinct motivations, concerns and objectives between two community approaches by Disaster Risk Management and Climate Change Adaptation (and sub-communities within them) on dealing with climate-related extremes and risk management. It provides a consensual baseline on the framework on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Noted
21	1	0	0	0	0	Long statements with repetition of the meaning throughout the chapter (Saad-Hussein, Amal, National Research Centre)	Noted
22	1	0	0	0	0	If we consider extreme events, I think we should consider extreme potentialities and extreme mind challenges for the best expectations to get benefit of what expected. Maybe this could be added in a paragraph. (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	We do not understand the meaning of the comment.
23	1	0	0	0	0	Chapter 1 provides a good introduction to the topic, however the definitions used vary from being inclusive of ecosystems (e.g. page 11, lines 43-46; page 10 lines 49-51) to not including them (e.g. page 2, lines 43-45, much of section 1.1.3; Page 13 lines 17-22). Since ecosystems are mentioned throughout the remainder of the SREX report, need to insure initial definitions in Chapter 1 are inclusive. (Chambers, Lynda, Australian Bureau of Meteorology)	The role of ecosystems is now discussed explicitly, see in particular pages 7 and 19-20. the suggestion to include impacts on ecosystems or physical systems as part of disaster has been rejected in favor of a more select solution. We have decided to use "disaster" to refer to human impacts and effects. This means where ecosystems are changed or damaged or transformed this is highly relevant. Disaster may occur when this affects humans due to impacts on their access to environmental services and natural resources not the impact per se, which will be dealt with in chapter 4 but is not a defining fact of disaster here.
24	1	0	0	0	0	Chapter 1 overall would benefit from efforts to reduce redundancy, focus on the important concepts that need to be conveyed to policy-makers, and generally tighten up the organization and language. In some cases, I found the chapter to get too much into the subtleties of definitions and historical usage of words, and question how valuable those discussions are for the intended readership. (Staudt, Amanda, National Wildlife Federation)	Noted
25	1	0	0	0	0	Chapter 1: Climate Change: New Dimensions in Disaster Risk, Exposure, Vulnerability, and Resilience Chapter 2 Determinants of Risk: Exposure and Vulnerability According to Chapter 1's title, the aim of the Chapter is to determine or measure disaster risk exposure, vulnerability and resilience scopes; in other words, to discuss the dimension or extent of disaster risk, exposure, vulnerability and resilience that may be most relevant or functional for climate change adaptation; and chapter 2 aims to comprehend risk causes based on exposure and vulnerability Then, the idea is to improve the relationship between disaster risks and climate change adaptation: Basically, the necessary and important free flow, between these two chapters; still need a great degree of intense work. of intense work. (Mata, Luis Jose , IMF)	Effort has been made to strengthen the connection between Chapters 1 and 2 in the drafting of the SOD.

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26	1	0	0	0	0	After reading Chapter 1, I am still left with the unanswered question: Is the IPCC notation flawed and must it be changed? Is the IPCC going down the wrong path in AR5? These are very important questions not answered here. (Prather, Michael, UC Irvine)	Noted; this is not for chapter 1 to answer.
27	1	0	0	0	0	Structure/Clarity/Messaging. As introductory chapter this chapter has the important function of laying out the structure of the report and initially introducing terms and concepts. In this context, I found the second half of the chapter (p. 38 onwards) considerably more accessible than the first half in terms of structure, use of definitions and messaging. While covering some important ground the first half of the chapter, makes it difficult to capture and distinguish many of the key definitions and issues introduced here. I recommend substantially shortening the first section. In general the chapter would benefit from an initial and more substantial discussion of the evolution of disaster risk management and adaptation to climate change in terms of institutional setting, funding frame-works, reactive vs. preventive approaches, and relationship to development. Key terms (hazard, extreme event, vulnerability, etc.), their evolution and different use could then be discussed within this setting. In this context I humbly recommend the consideration of the discussion paper Sperling F. and Szekely (2005). Disaster Risk Management in a Changing Climate, which was authored on behalf of the Vulnerability and Adaptation Resource Group (VARG), a former knowledge network of bi- and multilateral development organizations, in collaboration with UN-ISDR. It was first presented at the World Conference on Disaster Reduction (WCDR) in Kobe, Japan, and then subsequently at UNFCCC meetings with addendum of the outcomes of WCDR. Hope you find this useful. (Sperling, Frank, WWF)	Noted and citation now included (although the reference has been left out of the SOD and will be included in the next draft). Furthermore, the first half of the chapter has been thoroughly re-written and made more accessible and less abstract.
28	1	0	0	0	0	Definition of terms and concepts. Key terms to consider include, inter alia, hazard, extreme events, exposure, vulnerability, disaster, risk management, adaptation. While these terms are all covered to some extent in the chapter, I found there is considerable imbalance in terms of depth and comprehensiveness of definitions provided. For example, substantial space is devoted to discussing extreme impacts, while there is little in-depth discussion of the term hazard, which, at least in my opinion, deserves a much more prominent place in the chapter. There is no initial discussion of single vs. multihazard environments. Furthermore, the discussion of hazards disaster risk management does not consider the broader scope of disasters, i.e. hydrometeorological and geological hazards and consequently disasters. In addition, I recommend discussing the term mitigation in its different scope and uses in the disaster risk management and adaptation context. Suggested literature: See use of terms by OCHA, GFDRR, World Bank, UNDP, UN-ISDR, UNEP; see Sperling and Szekely 2005 for a broad discussion. (Sperling, Frank, WWF)	Noted and added. See 1.1.2, glossary, and comment #6.
29	1	0	0	0	0	The chapter is well written and informative. The chapter sets out a framework for learning, identifying similarities and differences and establishing how gaps can be addressed to bring about a strong link between DRM and climate change adaptation. Probably what is not clear is that for the disaster community hazards such as floods, drought etc have been known to be natural events but under the GHG driven climate change extreme events certain sections of society (countries) are being held partly responsible for changes in the patterns of these hazards and on the basis of this there are various ongoing negotiations on financing adaptation at the international level. There is limited if any reflection on this in the chapter i.e. how this influences adaptation especially at the international level as opposed to DRM . Generally I felt that the chapter tends to be thin on reflections on the interface between DRM and adaptation at the international scale e.g. on issues of insurance for example. (Dube, Pauline, University of Botswana)	The idea is taken up on in other chapters especially chapter 7.
30	1	0	0	0	0	I found this chapter quite difficult to read and follow - which may in part reflect my physical sciences background. It feels somewhat different in style from what I would generally expect from an IPCC assessment - in parts reading more like a discussion of open issues rather than an assessment. It may be a reflection of some of the language used, but sometimes it is hard to know whether the views being expressed are widely accepted by the community or are a more personal interpretation by the authors. (Goodess, Clare, Climatic Research Unit)	Noted
31	1	0	0	0	0	The chapter title refers to resilience but this is not mentioned until page 31 and is not discussed in much detail. (Goodess, Clare, Climatic Research Unit)	Resilience is discussed more fully and earlier in the SOD (p. 10 and 11).

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32	1	0	0	0	0	A detailed definition of 'disaster' is not provided from the outset, but sort of gradually emerges at various stages of the discussion. But the issue of 'who' should/does define events as disasters is never really discussed. Presumably there are some quite precise/specific definitions used for databases such as the EMDAT catalogue - but in general I think the assessment report uses a rather broader definition. (Goodness, Clare, Climatic Research Unit)	Noted and clarified in 1.1.2 and 1.2.
33	1	0	0	0	0	The chapter talks a lot about insurance but never refers to any of their publications on the topic. Although it is not peer-reviewed literature, it would at least help to explain how the insurance industry would propose to assess and quantify risks, actually their core business capability. - see Economics of Climate Adaptation framework at http://media.swissre.com/documents/rethinking_shaping_climate_resilient_development_en.pdf (Spiegel, Andreas, Swiss Re)	****Noted and we will provide this references in line 12 on p. 18. This chapter cites general literature on insurance. Gray literature particular to specific regions and problems would best be cited in other chapters.
34	1	0	0	0	0	It is interesting that in Chapters 1, 3, and 9 the impacts of frosts (in agriculture and health, in particular) are not considered. Is there any particular reason? (Cavazos, Tereza, CICESE)	Impossible to cover all the impacts in chapter 1. Frost is mentioned on p.19.
35	1	0	0	0	0	This is probably the best and clearest discussion of the disaster risk management concepts I have ever seen in print. The text establishes the very clear (and correct) meaning of the vocabulary that hazard and disaster researchers struggle with. I especially appreciate the contrasting and comparing of the perspectives of disaster risk management scholarship with the climate change adaptation scholarship. (Tiefenbacher, John, Texas State University)	Noted
36	1	0	0	0	0	The format for referencing changes throughout the chapter. There are some typos which I have not identified here. (Gaillard, JC, The University of Auckland)	Noted
37	1	0	0	0	0	Strong argument of the context of vulnerability and social processes is commendable. The argument to reduce the focus on sectoral approach is an excellent advocacy. The contextual aspects however should not be limited to local issues especially as global warming and drivers of risks are not limited to communities. It will also be beneficial if there is an analysis of the extent and influence of developing countries in CC policy formulation and how well their "voice" are registered and acted upon. (Jegillos, Sanny, UNDP)	Noted; more detail in chapters 6 and 7.
38	1	0	0	0	0	I do not want my comments to be misconstrued as critical of the excellent work in this chapter. But my immediate response on reading this Chapter 1 is that it seems strangely one-sided on a clear debate in the literature and in intellectual meetings between the DRR research 'community' and the more 'impacts driven' climate change analysts. The main emphasis of DRR literature, as I have seen over the years, is on social vulnerability as a guide to hazardous events; whereas the 'impacts' literature tends to focus on identifying the perception and immediate impacts of physical events such as storms. Hence, I find this Chapter 1 strangely focusing mainly on the 'impacts' side of the debate, rather than explaining the counter-positioning of the two sides (at least as I and others have seen them). On this basis, it seems strange to see the Chapter give such early and prominent support to Probabilistic Risk Analysis as an elegant and powerful framework (eg p3, line 9; p16, line 31) as this approach is considered by many DRR and hazards theorists to be lacking in the analysis on social context of vulnerability and instead seeks to explain impacts of climate change on physical events, and the perception of these events. I am not suggesting that Probabilistic Risk Analysis should not be used or discussed, but that it seems strange for a special report looking at DRR and extreme events should have a first chapter that seems to emphasize just one side of an apparent and very obvious divide between researchers and development interventionists. (Forsyth, Tim, London School of Economics and Political Science)	Noted; more careful consideration of all of these points in section 1.1 and 1.3, which have been rewritten with a view toward re-balancing the discussion accordingly. The introduction of section 1.3, p. 21 lines 1-20, with a discussion of risk governance, is an important element of this re-balancing.
39	1	0	0	0	0	General Comments: Probabilistic approach to extreme events and extreme impacts would be an interesting subject. Statistics of Extreme has been the backbone of many research in the areas. Thought it was listed in the 'contents', no information could be found in Chapter 1. (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	Had been changed in the text before the FOD was submitted and table of contents in the FOD did not reflect the update.
40	1	0	0	0	0	General Comments: It was listed in the 'contents', but no information could be found in Chapter 1. (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	Had been changed in the text before the FOD was submitted and table of contents in the FOD did not reflect the update.
41	1	0	0	0	0	General Comments: this section is not well rewritten, and it would be good to be rephrased. (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	Noted

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42	1	0	0	0	0	See above comment re need to be more explicit about the drivers and root causes of vulnerability and risk-generating and unsustainable practices and the harsh reality of 'real' winners and losers in disasters and the impacts of climate change (at levels from global to local scales) e.g., Naomi Klein's "Shock Doctrine" (2007) . The upshot of this is that systemic change is necessary and bringing about such transformation is profoundly challenging. More on this re ch 8. (Glavovic, Bruce, Massey University)	Noted. The SOD has been drafted with the need to emphasize the social roots of vulnerability throughout.
43	1	0	0	0	0	Further, as a general comment, the chapter seems to be resting on the DRM framework as a baseline, adding adaptation a bit loosely for comparison. The chapter could increase coherence by treating the two frameworks more symmetrically. Further, the chapter doesn't say explicitly how it relates the two frameworks into an integral approach. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	See comment #3 and revisions in section 1.3.5.
44	1	0	0	0	0	The adoption of the term Risk Management is supported. The goal is to manage the risk posed by the interaction of hazards, vulnerabilities and capacities. All measures/capacities which affect the management of risk should be included - policy development, risk assessment, risk reduction measures, response and recovery - as they all help to manage the risk. Through chapter 1, chapter 2 and chapter 9 (those that i have reviewed) the recognition of preparedness, response and recovery as integral to risk management often falls away with the focus on hazard assessment and vulnerability reduction as expressed through more of a "risk reduction" rather than "risk management" model. The focus should be on "risk management". (Abrahamsj, Jonathan, World Health Organization)	Point taken and in other chapters more consideration is given to reponse and preparedness. Here it is mentioned and put up front as a consideration, of lesser import to this report but important in itself. Also, see comment #9 for more on DRR and DRM.
45	1	0	0	0	0	While a quantitative definition of disaster risk is offered, much of the discussion is then focussed on describe risk as social construct, relating hazards, vulnerabilities (and to some extent capacities). I suggest therefore that more than one definition or description of risk should be offered. In the disaster risk management, risk is often connoted as loss. However, climate risk is not always negative as there is the potential for positive benefits, for example in relation to rainfall in arid areas. How might this be addressed? (Abrahamsj, Jonathan, World Health Organization)	The chapter notes potential benefits, for instance Box 1-1 and p.19, line 45.
46	1	0	0	0	0	It is a major assumption that the term disaster should dominate the discussion in Chapter 1. The authors acknowledge that there is a distinction between extreme event and extreme impact. Therefore, if the focus is on the risk from "climate events" then for the context of this report, I would suggest the term "climate-related risks" rather than disaster risks. These climate events could be managed without significant impact on communities, they may result in an emergency, they may result in a disaster in which case the term implies that that local or national capacity is overwhelmed. In so doing, it is suggested to decouple climate risk from extreme events from disaster. (Abrahamsj, Jonathan, World Health Organization)	In emphasizing disaster, we are following the Plenary Approved Outline for the report and chapter.
47	1	0	0	0	0	Different definitions have been used to define disaster/emergency management. In my experience, they are not focused only on response or on preparedness and response. Rather, these models include prevention, preparedness, response and recovery. (Abrahamsj, Jonathan, World Health Organization)	True; the chapter now explicitly includes definitions sufficiently broad to take these factors into account.
48	1	0	0	0	0	The chapter focuses on defining capacity in terms of coping and adaptation capacity. The more fundamental issue of "what is the capacity needed to manage climate-related risks)" should be given prominence. The draft refers to the absence of capacity as one of the factors of vulnerability - this may be the case for objects at risk, but the capacity of systems to manage risks is difficult to express in terms of vulnerability. By doing so, the overall issue of capacity is often overlooked and the issue of capacity assessment as the basis for plannin the development of capacity for risk management needs to be addressed. (Abrahamsj, Jonathan, World Health Organization)	Good point and considered now, see p. 10.
49	1	0	0	0	0	In the disaster risk management community risk is often connoted as loss. However, climate risk is not always negative as there is the potential for positive benefits. A broader definition of risk could be offered. (Abrahamsj, Jonathan, World Health Organization)	Benefits considered; see comment #45
50	1	0	0	0	0	Given the focus on risk management, it is proposed that the authors review the guidelines on emergency risk management provided Emergency Management Australia which addresses the risks with a risk management lens. It is proposed that the emergency risk management model is one of the methodologies described in the chapter and illustrated as one of the figures. (Abrahamsj, Jonathan, World Health Organization)	Noted; we believe many of these concepts are now embedded in the chapter.

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51	1	0	0	0	0	It would be useful to actually outline the capacities needed to manage risk, including policy, landse planning, legislation, assessments, early warning, education, training, response and recovery planning, exercises, response coordination mechanisms, technical disciplines, and recovery etc. (Abrahamsj, Jonathan, World Health Organization)	Summarised in this chapter and discussed more fully in others
52	1	0	0	0	0	I am missing a general introduction in a chapter 1, which gives an overview over the different main kinds of extreme events in the different regions of the world, their relevance in terms of loss, deaths and other parameters, and of recent trends (see MunichRe publications, for example) and their reasons. (Ulbrich, Uwe, Freie Universitaet Berlin)	See more detail in chapters 3 and 4
53	1	0	0	0	0	Well written and structured. My only comments are on the set of definitions proposed. They should be consistent (i.e. 100% matching) with the same provided within the other chapters of the report not to confuse the reader (e.g. both the definition of adaptation reported by the IPCC TAR and the IPCC AR4 are used and they are similar, but not identical). When (as is usually the case) there are many definitions for the same concept it would be useful to have a clear statement in the chapter like: "the concept of (say) adaptation used in this report is: "...def...". It could be also the case that different fields use different definitions for the same concept. In this case it would be also useful to have a clear statement in the chapter like: "the concept of (say) adaptation used in chpt x of this report is: "...def A..." because, in chpt y is: "...def.b..." etc.". Perhaps this could be boring, but I think necessary in a chapter dealing with main concepts. Alternatively this could be a concluding sort of glossary at the end of the chapter. (Bosello, Francesco, Fondazione Eni Enrico Mattei, Milan)	Noted, see 1.1.2 and glossary.
54	1	0	0	0	0	The chapter 1 and 2 should be merged to constitute a unique reference framework for fundamental concepts as vulnerability, exposure, resilience, extremes etc. to which the other chapters should refer to. It allow to avoid repetitions and slight differences that can lead to misunderstandings. (BOVO, STEFANO, ARPA Piemonte)	Cant do even if pertinent as a suggestion; see comment #25.
55	1	0	0	0	0	General comment on the chapter (Bhadwal, Suruchi, The Energy and Resources Institute)	not relevant
56	1	0	0	0	0	Chapter well conceptualised to understand the differences between DRM and CCA. But as we flow from one section to the other and discuss the concepts, terminologies there are grey areas and fuzzy areas which cloud the mind and still keep the concepts unclear (Bhadwal, Suruchi, The Energy and Resources Institute)	Noted
57	1	0	0	0	0	Specific comments (Bhadwal, Suruchi, The Energy and Resources Institute)	not relevant
58	1	0	0	0	0	Much of the chapter (and the paper) deals with definitions - that is to be expected when academics are involved. But it may not be important to policy makers. If there is ever a shorter version for "real people" you may want to shorten this and put it in an appendix. (Longstaff, Pat, Syracuse University)	This is the role of the SPM.
59	1	0	0	0	0	Too much text on coping versus adaptation, no text on disaster risk management versus adaptation (Hellmuth, Molly, International Research Institute for Climate and Society)	Noted; see 1.1 and 1.3 for more on DRM and CCA and revisions to 1.4.
60	1	0	0	0	0	The broader agenda of DRM beyond hydrometeorological disasters is relevant to this chapter (Hellmuth, Molly, International Research Institute for Climate and Society)	Noted; we use hydrometeorological disasters as an outstanding example. The revised chapter does not grant them disproportionate status and the word does not appear.
61	1	0	0	0	0	The risk approach in the chapter is focused on people, cultivated areas, settlements and human resources which are exploited. (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23.
62	1	0	0	0	0	There is another intelligence in the risk when it is also referred to nature in unexploited areas. There are two reasons for that: (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23.
63	1	0	0	0	0	-the impacted natural areas may have an environmental role affecting managed areas (ie: river debit, aquifer recharge, wildlife population). (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23.
64	1	0	0	0	0	-the impacted natural areas may have an actual value for conservation (ie. natural reserves or pnatural parks, important areas for menaced species, valuable landscapes) (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23.
65	1	0	0	0	0	In my opinion mention should be made to environmental effects on (presently) unexploited areas. (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
66	1	0	0	0	0	Vulnerability and resilience may have different meanings for different natural communities. In rivers the periodic flood represents an in-built regulatory mechanism and cannot be disregarded as a "risk". The transport of materials, the shaping of channel morphology, the succession y plant and animal communities along the banks are flood-dependent. The same holds for strong winds, intense precipitations, unusually high (and low) temperatures and wildfires in forests, wave action on coasts, strong winds in dune areas, and others.. (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23.
67	1	0	0	0	0	A different type of risk, related to climatic change and extreme climate events, has to do with population pulses of existing aggressive organisms, or the introduction of species non native to the area. (GARCIA NOVO, FRANCISCO, UNIVERSITY OF SEVILLE)	Noted; see comment #23; chapter 4 takes up on this.
68	1	1	1	1	2	The title is pretentious and does not represent the contents. What is new to one person may be decades old to others. Better to have something like "The conceptual basis for extreme events, disaster risk and adaptation to climate change" (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted, but cannot change the title at will.
69	1	1	1	40	0	It is not clear what is the purpose of this chapter despite a whole section on "Purpose and Scope". To understand this one has to have a clear sense of the audience for this SREX. My impression is that, at the moment, it is written by climate change scientists for the benefit of climate change policy-makers. It would seem to me that it also should involve and be directed at emergency planning/disaster management communities. My own experience is that these communities have different language (although sometimes using the same word - for example mitigation) and insufficient dialogue. Thus, one purpose of this first chapter might be to introduce these communities to each other. This chapter also must introduce terms used in the rest of the SREX which at the initial stages of writing is absolutely essential. This it does not do in a totally systematic manner. There needs, for example, to be a clearer discussion of risk assessment as opposed to risk management. (Stone, John M.R., Carleton University)	Noted; see comments #3, #6, and #9, as well as glossary.
70	1	1	23	1	25	There are quite a few paragraphs across the chapter focusing on the social processes that increase risk. You might consider having a section here and reducing redundancy elsewhere. (IPCC WGII TSU)	Noted
71	1	1	28	0	0	The section title should not include "Management". I suggest "Extreme events, extreme impacts and disasters in relation to climate change and adaptation" (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted, but cannot change the title at will.
72	1	1	38	0	0	This section should go further beyond the passive step of risk analysis and have an entry on the important subsequent process of risk management action, i.e. to consider the costs and benefits of acting or not acting on the information generated. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Risk management action is best discussed in the chapters on local, national, and international aspects where specific approaches are relevant.
73	1	1	38	0	0	The section needs an explicit sub-section on disaster risk reduction, both because of its importance to risk, and because it is in the policy context for much of what will be done under the adaptation rubric. This should describe the relevant instruments, most particularly the HFA, and its origins in the 1994 Yokohama Strategy and Plan of Action for a Safer World, and the assessment of its progress that led to the HFA. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Considered and increased attention given, see comment #9 and definitions in 1.1.2.
74	1	1	0	50	0	Chapter is too wordy and not succinct. Cut half of it. It also makes the same arguments over and over again -- editing can remove this redundancy. (Wuebbles, Donald, University of Illinois)	Noted
75	1	1	0	50	0	General comments: The chapter deals with past experiences and future challenges, but what about today's situation? Are we adapted to today's climate? (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Considered and included in 1.3.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
76.1	1	1	0	83	0	<p>Commentaire about the writings about risk and riskmanagement Dear Colleagues Thank you for giving me the possibility to review your report. First I thought to read the whole report. Because of time constraints and after reading chapter 1 and 2 I got to the following conclusions: To do a real good review job it is necessary to get answers to the following questions: 1. Which are the targets of this report 2. Who are the target persons who should read the report? 3. Which activities do you expect based on that report? 4. Which network should be the one who should take responsibility to be active? 5. How is the quality management of informations organized? 6. How do I figure out that the informations represent the world wide state of the art. I got to the impression that this 800 pages contain a lot of redundant informations. The informations are more dealing on a conceptual level than on a level which is relevant for actions on a national and regional level. As a scientist as well as a manager who is aware on the need of adaptation as well as mitigation it is absolutely necessary evry time to ask the following questions and to find answers on a global, continental, regional, national and local level. • What can happen? • What should be prevented? • How can we prevent it? • What will it cost? • What opportunities arise from the change? • What is the residual risk with which we must live? Only to know that for example in different cultures hazards do not have the same weight for livelihood does not help a lot. We have to know with which kind of risk we have to live and what we can do against it. Only if there are proposals politicians are forced to decide which scenarios they would like to avoid by mitigation as well as by adaptation. My arguments support the idea of a learning process trying to answer the questions. Doing it we will figure out that we know a lot but not enough to be enough precise for decision making for the next centuries..</p> <p>Riskmanagement means to deal with uncertainty and to decide, based on informations which unfortunately include a lot of uncertainty. The target to use a high quality riskmanagement means to get less insecure in decision making. With all the informations which are in your draft report it will be very difficult to explain the politicians what is necessary to do with the climate change problem. You have to show them a certain numbers of scenarios on a national level, its consequences to adapt as well as to mitigate climate change. You have to show the politicians what is the return of investment based on a riskanalysis as well as on a masterplan with a variety of alternatives how to reduce the different risk as well as to chances the alternatives include. From a methodological point of view riskmanagement – risk based decision making is independent on the kind of risk as well as on the geography. The only thing what is necessary is to define the system which we are looking at. as well as on the risks we are looking at. Talking about risk we have to know as good as possible the vulnerability of the different subsystems as well as the most important scenarios and their probability of occurrence. Knowing that only policy makers in combination with the society are able to “change the world” and the gap between knowledge and acting in a real world is getting bigger I suppose to think about if it would not be very important to show a possible way how to do risk based management to adapt and mitigate the negative effects of climate change in a sustainable way. I recommend you urgently to involve more experts in developing methods to improve the risk based decision making. Riskmanagement means to deal with uncertainty and to use the informations which are available to find solutions. Take a look to www.riskplan.admin.ch. I am ready to discuss if you like. am convinced that your report which means a lot of work would improve if you show also possible solutions how to manage risks - the right measures and its costs included. It will improve the quality of discussions about climate change and its effects tremendously.. (Greminger, Peter, Federal Office for Environment)</p>	Noted and points well taken and incorporated to some extent in Chapter 1, but these are best handled in the relevant chapters.
76.2	1	1	0	83	0	<p>This section is far too long; about a page should cover the material clearly and concisely. (IPCC WGII TSU)</p>	ES has been shortened
77	1	2	1	2	6	<p>It is noted that subchapter 1.4.3 related to adaptive and maladaptive risk management and insurance is not well reflected in the executive summary. In this context it is suggested to reflect each subchapter in general in the executive summary in order to help that the executive summary reflects the balance of the whole chapter. (Radunsky, Klaus, Umweltbundesamt GmbH)</p>	That section is shortened in the main text.
78	1	2	18	3	46	<p>It is also suggested to include references to subchapters in the executive summary in order to help the reader to go into more detail. (Radunsky, Klaus, Umweltbundesamt GmbH)</p>	Done, and will continue to develop in subsequent drafts
79	1	2	18	3	46	<p>Executive summary is a copy / paste exercise of sentences of the following sections, which makes it unbalanced and unfocused. (Casty, Carlo, PartnerRe)</p>	Substantial rewrite to make ES cohesive.
80	1	2	18	3	46		

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
81	1	2	18	0	0	Consider restructuring your Executive Summary so that each paragraph presents a key summary statement, additional explanation, and reference to relevant chapter sections. This would provide a clearer presentation of the key points. To the extent possible, consider opportunities to present specific key findings, as well as the degree of certainty your author team has in those findings, per the new uncertainty guidance that will be available at IAM3 (IPCC WGII TSU)	Done, except there are few opportunities for formal uncertainty analysis in Chapter 1.
82	1	2	20	39	51	Chapter one offers in my opinion a good comparison between the conceptual frameworks that supports disaster risk reduction and climate change adaptation... just a few specific comments I could offer to this document. (Linavo, Aleiandro, Research Center on Disaster Risk Reduction CIGIR)	noted
83	1	2	20	0	0	I find the summary to start a bit awkward with challenges, when it should rather set the stage for the whole report and would almost move line 33 ff to the front: "This chapter lays out the conceptual premises.." (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	Changed
84	1	2	23	2	23	Page 2, line 23: The word "instruments" seems to be a bit confused. Do you mean something about "legal documents" here? It is better replace the word "instruments" with the other specifically clearer word. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	removed
85	1	2	25	2	32	The executive summary gives a good overview of the S&T needs for adaptation but an impression of no interest in adaptation in the developed world. Adaptation in the developed world is important technically, economically and socially and will lead to capabilities needed for adaptation in the developing world. The text that follows in the chapter gives balanced attention to the developed world. (Wright, Richard, American Society of Civil Engineers)	Both the ES and main text have made an effort for greater balance.
86	1	2	37	2	39	I am not sure if non stationarity is something that had been introduced on risk management world by climate change... I think that risk management was already dealing with "non-stationarity" and that can be shown in the exponential increasing of the impact of disasters during the last decades, particularly due to the non stationary state of urban vulnerability... In my opinion, since 60s, when we talk about disaster reduction, past experience have been showing that are no longer reliable predictors of disasters, particularly in terms of frequency and impact... (Linayo, Alejandro, Research Center on Disaster Risk Reduction CIGIR)	Entire chapter gives consideration to non-stationary social conditions and noted in 3rd paragraph of ES.
87	1	2	37	2	41	Observe that risk management often did not take human intervention into nature into account. In other words, e.g. changing flood patterns might well be attributed to riverbed modifications/raising of dams/settling in flood prone areas. Examples comprise the latest devastating floods in Pakistan. In the case of the forest fires in Russia in August 2010 the drought certainly played the role of a driver, but the extension and the length of the forest/peat fires were due to drainage of the peat soils and abandonment of appropriate forest fire monitoring systems. Etc. A good observation of past extreme patterns and maladaptation might well serve as a good start for climate (change) adaptation. (Schmidt-Thome, Philipp, Geological Survey of Finland)	see 1.2 for more detail
88	1	2	37	2	41	It should be added that -- apart from climate change -- many other (global and local changes) have also added non-stationarity to risk. (Bouwer, Laurens, Institute for Environmental Studies)	See comment #86, and 1.1-1.3 for more detail
89	1	2	37	2	41	It should be acknowledged in the text that long term variations are present in addition to climate change, limiting the concept of stationarity and of past experience as a predictor for the future, even under present day greenhouse gas forcing conditions. (In fact, it is a benefit of the climate change discussion that the concept of stationarity is challenged, both in terms of the natural system and in terms of the response of the human systems) (Ulbrich, Uwe, Freie Universitaet Berlin)	See comment #86, and 1.1-1.3 for more detail
90	1	2	37	2	41	This is a strange definition for non-stationarity and is unnecessarily technical for the basic idea that "things are changing" and that approaches must adjust. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	definition removed
91	1	2	37	3	3	More clarity of point required. Less emphasis on climate change equalling extreme events therefore risk management must adapt. Risk will surely be apparent in all climate scenarios and the executive summary should make this aware. More balanced approach. (Ammann, Walter J., Global Risk Forum GRF Davos)	See comment #86, and 1.1-1.3 for more detail
92	1	2	39	2	39	The following wording is suggested for the sake of clarity: it applies both to hazards and to response of human systems to hazards. (Radunsky, Klaus, Umweltbundesamt GmbH)	changed and no longer applicable; also see comment #86.
93	1	2	39	2	39	"to same"? (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	removed.
94	1	2	40	0	40	Should read as "and other characteristics of climate related extreme events" (Dube, Pauline, University of Botswana)	removed.

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95	1	2	41	2	41	"a shifting distribution of the latter". What is "the latter" represented here? Please clarify. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	removed.
96	1	2	41	2	45	The executive summary is essentially well written for this expert review draft, however some details need to be put forward: for example, in the term "extreme impacts" is being introduced for the first time and in page 2, line 46 the term "physical extremes" is also introduced for the first time, both without any previous descriptions. This is creating a sort of problem in understanding the meaning of disaster in page 2, line 45 as "disasters occurs when extreme impacts cause a severe disruption of the normal, routine functioning of the affected society" and "however, depending on the context, physical extremes may or may not bring along extreme impacts and disasters". (Mata, Luis Jose , IMF)	We have tried to clarify terminology in the ES, full definitions are in 1.1.2 and the glossary.
97	1	2	41	0	0	Please substitute term 'magnitude' with 'severity'. (Casty, Carlo, PartnerRe)	We have tried to clarify terminology in the ES, full definitions are in 1.1.2 and the glossary. We got conflicting comments on this point, and attempted to reflect the literature.
98	1	2	43	2	43	Is this a scientific document? In this case I am not sure if could be more elegant to speak about a "non-bijective relation" between extreme impacts and extreme events than to refer to a "one-to-one relationship".. (Linayo, Alejandro, Research Center on Disaster Risk Reduction CIGIR)	Now changed and clarified
99	1	2	43	2	46	The definition of disaster should be expanded to include ecosystem impacts. I would argue that we can also have environmental disasters that do not necessarily disrupt the "normal, routine function of the affected society", but that would be devastating for ecosystems and have long-term social and economic impacts that might not be immediately apparent. (Staudt, Amanda, National Wildlife Federation)	Noted; see comment #23.
100	1	2	43	2	47	The explanation here for why extreme events do not bear a one-to-one relationship with extreme impacts could be clearer. The second sentence does not really explain why this is the case, instead introducing disasters, a third term. Do you also mean to say that extreme impacts can result from non-extreme events in a statistical sense? (IPCC WGII TSU)	Now changed and clarified
101	1	2	49	2	50	Difficult to grasp...it speaks about a concatenation and reactions to "lesser physical events" and "moderate events superimposed onto a gradual trend" I do not understand (León, Alejandro, Universidad de Chile)	Now changed and clarified
102	1	2	49	0	0	Odd expression "physical, ecological and social *reactions*!". This misses the importance of pre-existing human construction of risk and muddles up human agency with natural processes. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Wording removed.
103	1	2	50	2	51	The author suggests that disasters occur only in spots where "pre-existing social processes and events" favour it. In reality, disasters can occur anywhere, even in the most stable and wealthy societies. I suggest reformulation.. (Cheval. Sorin. National Meteorological Administration)	Now changed and clarified
104	1	2	50	0	0	States "disasters are predicated...." is this a typo? (León, Alejandro, Universidad de Chile)	No.
105	1	2	0	3	0	We believe the Executive Summary of Chapter 1 should summarize and establish the findings with regard to concepts and definitions in an easy accessible way, as well as emphasising key needs for adaptation and risk reduction assessments. One fundamental finding is the need for weather and climate information, and we would suggest mentioning of this in the Executive Summary. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	ES entirely rewritten. Pointing to the need for greater information is best done in the relevant chapters.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
106	1	2	0	4	0	We have a general comment regarding a too general understanding and treatment of poverty as a static factor, rather than as a complex set of processes, institutions and human needs. At the same time, there is too much focus on the poor only in developing countries. Regarding the issue of risk and risk communication, the text places most of the emphasis on communication, but there is a very important relation between individual people real vulnerabilities and the perception of risk. For example, hungry children may lead parents to give a secondary role to more imminent disaster risk. Thus differential levels of vulnerability will lead to differential levels of understanding of risk, a factor that can affect suitable communication strategies. Last, a note on "development" and disaster risks. The text treats development as a key factor in climate change adaptation. But often this reads as if development were to be something different from adaptation. Of course this is a long discussion yet there are many reasons to argue that on the ground and specially at the level of people and communities there is always a development-adaptation continuum, specially poor and vulnerable people have been adapting for a long time, including adaptation to disasters. Another issue that is worth raising is matters regarding scientific uncertainty and risk perception from the perspective of ethics and prudence. If climate change risks are perceived from their ethical perspectives, there is enough scientific certainty in order to move to protect people. Laws and morals consider dangerous driving a risk penalised by law and by morality. We do not need to know exactly and with scientific certainty whose kids may be killed and when in order to protect them from possible fast driving in a residential neighbourhood. Climate change impacts and disaster risk should be treated equally. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	We now discuss issues related to culture, values, and ethics in section 1.3.2. The extensive discussion related to Hurricane Katrina in 1.4.3.1 makes clear that poverty and other such risk factors are not restricted to developing countries, and exist in a web of conditionailities whcih enhance risk.
107	1	3	1	3	1	There is a repeating in there two paragraphs. Please merge them into one paragraph. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Significant revisions make this no longer relevant
108	1	3	1	3	30	I suggest reorganizing these paragraphs to consolidate similar ideas and improve the flow; I have arrows all over my version of where I think material could be moved to. (IPCC WGII TSU)	Significant revisions make this no longer relevant
109	1	3	5	3	5	It is better replace the word "instruments" with the other specifically clearer word. See comment 1. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Text removed.
110	1	3	5	3	7	This is a pretentious academic statement. It should be posed in a more thoughtful way. Anyway, what are "multi-scale principles? Actually, I can image that in odd cases a poorly conceived policy may turn out very well, serendipitously! (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text removed.
111	1	3	6	3	6	What are multi-scale principles? (IPCC WGII TSU)	Text removed.
112	1	3	9	3	0	"Probabilistic risk analysis offers a powerful and elegant framework for addressing non-stationarity": I find this statement a bit misleading, as for a solid probabilistic analysis, stationarity is highly desirable, and non-stationarity is a in fact a big challenge for probabilistic assessments. Also, this statement seems to contradict page 2, line 38 that suggests that the past may not be a good predictor for today's risk management decisions anymore. This is better explained in the main text, and outlined as a key challenge when integrating DRM and CA, and should be adapted a little bit here in the summary. (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	Main text and ES now reinforce this comment.
113	1	3	9	3	13	Probabilistic risk analysis and its discussion. It is important mention the uncertainties associated with such assessments (Bhadwal, Suruchi, The Energy and Resources Institute)	Main text and ES now reinforce this comment.
114	1	3	9	0	0	Suggest that probabilistic risk analysis is a "powerful" and "elegant" framework, but then the authors expand in its limitations, without letting the reader know why it satisfies those two conditions. For a practitioner it would be helpful to know beforehand what is it about. (León, Alejandro, Universidad de Chile)	See section 1.3 and text in ES substantially changed.
115	1	3	11	3	19	In some sense though the cognitive barriers of estimating probabilities of impacts from climate change is mitigated byt the perceived inevitability of cliate change. Most audiences no longer treat the impacts of climate change (even those related to disaster events) as probabilistic in nature. Thus the current psychology in responding to climate risks seems fundamentally different from that for other types of disaster risks. Whereas there may be a a 60% chance that a sizable earthquake will strike a certain region in the next 30 years, major climate change impacts in the next 30 years seem inevitable to people even if particular events (like large floods) associated with those climate change impacts are also still probablistic in nature. This difference in risk perception has important implications for people's readiness to act. (O'Donnell, Ian, Asian Development Bank)	We have seen no evidence in the literature that the claims in this comment are correct and no citations are given.

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116	1	3	11	0	0	Please substitute term 'training' with 'resources'. (Casty, Carlo, PartnerRe)	Text removed.
117	1	3	12	3	12	The following wording is suggested for the sake of clarity: fundamental problems of estimating probabilities for both, events and their consequences. (Radunsky, Klaus, Umweltbundesamt GmbH)	Text removed; see comment #86.
118	1	3	16	0	0	...'low probability / high severity' events (Casty, Carlo, PartnerRe)	see response to comments 16 and 97.
119	1	3	17	3	19	The reference to cognitive barriers is very good. In order to give a hint on how to tackle with this issue on behalf of the scientific community it should be mentioned that "exchanging and integrating knowledge and information can best be achieved by applying transdisciplinary approaches (see Hirsch-Hadorn 2006, Wiesmann et al. 2008). Hirsch Hadorn G, Bradley D, Pohl C, Rist S, Wiesmann U. 2006. Implications of Transdisciplinarity for Sustainability Research. Ecological Economics 60 (1) 119 - 128. Wiesmann U, Biber-Klemm S, Grossenbacher-Mansuy W, Hirsch Hadorn G, Hoffmann-Riem H, Joye D, Pohl C, Zemp E. 2008. Enhancing transdisciplinary research: a synthesis in fifteen propositions, in: Hirsch Hadorn, G, Hoffmann-Riem, H, Biber-Klemm, S, Grossenbacher-Mansuy, W, Joye, D, Pohl, C, Wiesmann, U, and Zemp, E (eds). Handbook of Transdisciplinary Research. Berlin, Springer Netherland, p.431-439. (Rist, Stephan, Centre for Development and Environment (CDE))	See 1.3.2; alluded to but not included in ES.
120	1	3	21	3	23	In addition to social risk factors, include also environmental and economic risk factors. (Sperling, Frank, WWF)	Now included.
121	1	3	23	3	23	The complexity addressed here is equally strong due to changes in vulnerability patterns. Climate change plays a role in the multi-casual problem solving of extreme events. (Schmidt-Thome, Philipp, Geological Survey of Finland)	Noted and incorporated, see comment #86.
122	1	3	24	0	0	We propose adding the following text that we find very useful on page 21, and which we believe is relevant in the summary: "The only way of understanding disaster risk is to understand the ongoing social processes associated with every day life that lead to its existence and, on the other hand, the only way to be able to enact risk management principles is by framing and bedding these in a thorough understanding of the ongoing social demands of the population, particularly the poor who must deal with risk at all levels on a daily basis". (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Ideas, but not exact wording incorporated in both ES and main text.
123	1	3	25	3	26	This statement is generally true of developing countries; it is also true of the poor in developed countries - for example in the case of New Orleans and Katrina. (Stone, John M R, Carleton University)	Text removed but point taken.
124	1	3	25	3	26	I do not fully agree the argument that "most of the human losses (in absolute terms) and economic losses (in relative terms) due to extreme events are borne by developing countries". As a matter of fact, developed countries can also face the human losses and huge economic losses due to climate extreme events. For instance, more than 40,000 Europeans died as a result of the 2003 heat wave in France (Robine et al. 2008). Reference: Robine, Jean-Marie; Siu Lan K. Cheung, Sophie Le Roy, Herman Van Oyen, Clare Griffiths, Jean-Pierre Michel, François Richard Herrmann (2008). "Death toll exceeded 46,000 in Europe during the summer of 2003". Comptes Rendus Biologies 331 (2): 171-178. doi:10.1016/j.crv.2007.12.001. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Text removed.
125	1	3	25	0	0	Confusion for the reader here as to what is being insinuated. Is it being implied that the climate will change disastrously for the worse in the developing world more than the developed or is it that poverty is hindering the ability to cope? Is it therefore also assumed that this state of poverty will last indefinitely? (Ammann, Walter J., Global Risk Forum GRF Davos)	Text removed.
126	1	3	25	0	0	Delete the information in brackets (Casty, Carlo, PartnerRe)	Text removed.
127	1	3	26	3	26	"...expected to amplify this trend". This only partly correct, as vulnerability patterns play an, at least, equally important role. (Schmidt-Thome, Philipp, Geological Survey of Finland)	Text removed.
128	1	3	26	0	0	... is expected... should be avoided if not substantiated by reference (Goessling-Reisemann, Stefan, University of Bremen)	Text removed.
129	1	3	28	3	28	It is suggested to substitute "enormously" by "significantly" as the magnitude and nature of extreme events and hazards also may have a significant impact. (Radunsky, Klaus, Umweltbundesamt GmbH)	Text removed.
130	1	3	28	3	30	There are other social determinants as well that influence risk and a broader term can be applied rather than being very "poverty" centric (Bhadwal, Suruchi, The Energy and Resources Institute)	Text removed but point taken.
131	1	3	32	3	32	Here a reference to the need to adapt to the current climate could be introduced. (Schmidt-Thome, Philipp, Geological Survey of Finland)	Text removed but point taken.
132	1	3	32	3	32	The role of development in exacerbating risks also needs to be placed in context (Bhadwal, Suruchi, The Energy and Resources Institute)	See first paragraph on p. 4.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
133	1	3	32	3	38	I was a bit confused by this paragraph on coping and adapting, and am wondering whether it adds a lot of value here in the summary (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	Text removed.
134	1	3	32	3	38	A muddle of ideas, not well expressed, not clear. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text removed.
135	1	3	33	3	33	coping and adapting In the disaster→coping and adapting. In the disaster (morisugi, Hisayoshi, Nihon University)	Text removed.
136	1	3	33	3	33	"." following "adapting" is missing. (Rock, Joachim, Johann Heinrich von Thuenen-Institute)	Text removed.
137	1	3	33	0	0	Full stop missing (Casty, Carlo, PartnerRe)	Text removed.
138	1	3	34	3	37	words like "ex-post" and "ex-ante should be substituted. (Mata, Luis Jose , IMF)	Text removed.
139	1	3	35	3	38	the meaning is not clear. (morisugi, Hisayoshi, Nihon University)	Text removed.
140	1	3	36	3	36	Insights from authors required here to talk whether the association between coping and adaptation stands to be close. There is a lot of literature that also stands to separate the two. (Bhadwal, Suruchi, The Energy and Resources Institute)	See section 1.4
141	1	3	36	3	37	What is meant by "more development orientated"? Looking at the example of the tsunami in South Asia might be helpful. This was truly a disaster and the risks were not well managed. More importantly, when the affected communities were rebuilt they were designed for the next tsunami whereas they could just as easily have been designed for sea-level rise and more frequent storms projected by climate change. Somewhere in this chapter there should be a discussion of the nexus between development and responding to the threat of climate change. (Stone, John M R, Carleton University)	Text removed but development/adaptation link addressed throughout chapter.
142	1	3	37	3	38	While adaptation emphasizes approaches that are ex ante to specific future events, in fact most adaptation is in some sense ex post in relation to the broader trend of climate change. In general people are adapting to conditions that are already changing. (O'Donnell, Ian, Asian Development Bank)	Point incorporated in multiple locations in p.3.
143	1	3	39	0	0	On page 25, l. 6-39, there is a list of topics that will demand new or modified approaches and responses from the disaster risk management community, and we suggest a summary of these be included in the Executive Summary. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Although these specific topics are no longer listed as such, the concluding bullets of the ES do summarize the key changes in approaches which could make DRM more effective. Specific details will appear in the individual chapters.
144	1	3	40	3	46	This paragraph has important ideas, which would be much clearer if put in plainer language. The judgement on sectoral approaches would be better put in a positive form referring to current sector-integrating approaches such as leadership by key control ministries and to whole-of-government decision methods. Am happy to see reference to concrete task "land use planning". (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text clarified.
145	1	3	40	3	46	Change the way the text has been oriented mis to just management, lack of land to just land use planning etc. Also sectoralised veivs and actions of "many" governments - very subjective statement, define many and has political connotations. (Bhadwal, Suruchi, The Energy and Resources Institute)	Changes incorporated into first paragraph on p.4.
146	1	3	44	0	46	There's a bigger picture here beyond theory and practice motivated out of necessity - it is extremely economically inefficient to not connect these efforts- the world can't afford to have DRM, CCA and development efforts unaligned in policy and practice. (Hellmuth, Molly, International Research Institute for Climate and Society)	Point taken, although without a specific reference given we cannot prove the point.
147	1	4	4	4	4	"long-term trend in the norms or averages" please consider "long-term trend in the statistical properties" (van Oldenborgh, Geert Jan, KNMI)	Noted
148	1	4	4	4	5	Understated definition - is not just about norms and averages (Bhadwal, Suruchi, The Energy and Resources Institute)	Noted
149	1	4	4	4	9	These look like author definitions. Many readers would see them as incomplete or otherwise unsatisfactory. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	see comment #6.
150	1	4	4	4	9	The authors have started crafting some concepts for this chapter, might be usefull to express this aim in the paragraph. (Carla , Encinas, Intercooperation)	Noted
151	1	4	4	4	9	There should either be a table of definitions or refer the reader to the glossary (or both). (IPCC WGII TSU)	see comment #6.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
152	1	4	15	4	15	it may be more accurate to say ... of observed climate... OR ... climate observed at the time ..., because it can be assumed that climate has never been "stationary" nor "stable" (Jeggle, Terry, University of Pittsburgh)	Now generalized to "historical climate"
153	1	4	15	0	0	Has the climate ever been stationary and stable? A geologist would tell you otherwise. (Ammann, Walter J., Global Risk Forum GRF Davos)	Now generalized to "historical climate"
154	1	4	21	4	30	You may want to explain here that a "stationary" climate does not mean a stable climate. Natural weather cycles do affect the climate too, e.g. multi- / decadal cycles of increased hurricane activities. Hence it is not possible to distinguish single extreme events induced by climate change from those induced by natural cycles. (Spiegel, Andreas, Swiss Re)	Now generalized to "historical climate"; also see p. 20 line 6.
155	1	4	21	0	0	it is not clear in this paragraph that ecosystem disasters (tree blowdown, pine beetle) count as extreme weather/climate? (Prather, Michael, UC Irvine)	See comment #23.
156	1	4	23	4	30	This statement would need a more robust scientific source than "IPCC 2007". It is not yet clear what the impacts of climate change on extreme events are, nor is it possible to state an overall increase in negative effects on extreme events (Schmidt-Thome, Philipp, Geological Survey of Finland)	First paragraph of 1.1. rewritten in conjunction with chapter 3 CLA's.
157	1	4	26	4	27	Chapter 1 on purpose and scope "introduces" ideas such as: stationary or stable climate?? (page 4, line 26), extreme physical events (extreme events) in page 4, line 27. Perhaps, to avoid any sort of misunderstanding, it would be better to use just stationary climate and extreme events. (Mata, Luis Jose , IMF)	Now generalized to "historical climate"
158	1	4	27	0	30	Also include evidence based on observed changes (Dube, Pauline, University of Botswana)	See comment #156
159	1	4	29	4	30	Current wording implies that all extreme events will increase their potential for contributing to damage and loss in society - this should be reworded as some extreme events (extreme cold, for example) are likely to decrease in frequency/intensity. (Trewin, Blair, Australian Bureau of Meteorology)	See comment #156
160	1	4	29	0	0	There is clear bias towards emphasizing increased damages from extreme events. There should be at least be an acknowledgement of the fact, that there might be decreasing damages resulting from climate change as well: less snow storms or cold spells in some regions for example! (Goessling-Reisemann, Stefan, University of Bremen)	See comment #156
161	1	4	29	0	0	increase OR decrease ! (Prather, Michael, UC Irvine)	See comment #156
162	1	4	32	4	34	Best to use UNISDR 2009 definitions for disaster related terms. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	see comment #6.
163	1	4	33	4	33	Should read "contributing to the occurrence of "disaster"" (Gaillard, JC, The University of Auckland)	Noted
164	1	4	33	4	34	this appears to be an overly mild definition for disaster, and rather more properly refers to the "unsettling" or disruptive consequences of an event but without the necessary longer termed implications of loss and damage associated with a "disaster". In this respect I believe there is need and value to include some additional qualification in the definition of disaster to situate it beyond only a condition of crisis. The often referred and long cited inclusion of "beyond the existing abilities to cope or respond" (or similar expression) does have merit for making that distinction. (Jeggle, Terry, University of Pittsburgh)	Noted AND DEFINITION EXPANDED ACCORDINGLY
165	1	4	36	4	38	Again, I find this definition of disaster to be too narrow. Extreme events could devastate an ecosystem causing a disaster that doesn't directly impinge on society, but a disaster nonetheless. Imagine a severe hurricane coupled with major storm surge that floods the Everglades, creating an irreversible transformation of the habitat. The economic and direct societal impacts might be minimal, but the loss of the ecosystem would surely be devastating. Likewise if there were a massive coral bleaching event caused by extremely hot summer. (Staudt Amanda National Wildlife Federation)	See comment #23.
166	1	4	36	4	38	Badly expressed. First line is weird to me. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted
167	1	4	36	4	40	Disaster could come from a small shift in the mean, as opposed to an infrequent rare event - this discussion fails to recognize that small shifts (e.g., no hard winter frosts) can be tipping points and cause large social disasters (e.g., invasive species, disease). I think this chapter is mis-structured. (Prather, Michael, UC Irvine)	Noted, see 1.2.
168	1	4	37	0	0	Spelt: resilience (Ammann, Walter J., Global Risk Forum GRF Davos)	Noted

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
169	1	4	39	4	39	does "social outcomes" implicitly include economic or environmental losses ? It may be better to make these consequences explicit. (Jeggle, Terry, University of Pittsburgh)	ECONOMIC YES, ENVIRONMENTAL IF THEY HAVE DIRECT SOCIAL IMPACTS DUE TO LOST RESOURCES AND SERVICE; see comment #23
170	1	4	42	4	46	well and succinctly stated. A clear expression of a central issue often prone to much confusion or ambiguity. (Jeggle, Terry, University of Pittsburgh)	OK
171	1	4	42	4	47	This part has to appear earlier in the section. (Casty, Carlo, PartnerRe)	Restructured.
172	1	4	42	4	47	The first line needs to clarify what "risk" it is talking about. Emergency/disaster management primarily responds to events as they unfold, and the immediate risks involved. Need to distinguish here between this type of risk and the embedded latent risk in society associated with such things as poor building, inadequate land use management etc. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted AND DEFINITION EXPANDED ACCORDINGLY
173	1	4	45	0	0	The term "resistance" is used without a definition - I recommend the one used by the Resilience Alliance (Longstaff, Pat, Syracuse University)	Definition now given
174	1	4	46	4	54	Region, zones and nation should be put in order because it is not clear after reading line 46 and line 54 of this page (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Text removed.
175	1	4	47	0	0	Need to take the next step in the line of concept evolution, by writing on about disaster risk and its generation and reduction. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted to extent possible with word restrictions
176	1	4	49	4	54	Para should also include information about non-linearity and abrupt events and how these that affect make things more complex (Bhadwal, Suruchi, The Energy and Resources Institute)	such effects are discussed on p.19 line 34- page 20, line 2, although not specifically using this nomenclature.
177	1	4	49	4	54	I suggest adding a discussion of fat tails. (IPCC WGII TSU)	We have considered and rejected the suggestion of a specific discussion of fat tails because it is already covered by the more general framework in 1.3.
178	1	4	49	5	54	Emphasis needs to be made that it is not only learning, but even management approaches to disasters would require change in direction and perspective. Shift would be required to management approaches that are able to integrate new information and are able to adapt to changing risk scenarios. (Kumar, Ritesh, Wetlands International - South Asia)	Noted and added; see detail in 1.3 and 1.4
179	1	4	50	0	0	"characteristics of extreme events changing" - I am sorry, but this obscure use of the language is repeated several times here and is meaningless - just what is meant by 'characteristic' - advise dropping this jargon. (Prather, Michael, UC Irvine)	Noted but we disagree with the comment that the terminology is obscure.
180	1	4	52	4	53	A reference to Box 3.2 of Chapter 3 should be made here. (Stocker, Thomas, IPCC WGI TSU)	Text removed.
181	1	4	52	4	53	It is well-known that "Small changes in the mean climate state may be associated with large changes in climate extremes". Likewise, changes in extremes can also affect the mean climate state. For example, austral winter extreme rainfall in southwest Western Australia has significantly changed with a downward trend since around 1965, and thereby further contributing to the dry trend in mean winter rainfall since then (Li et al. 2005). Reference: Li, Y., W. Cai, and E. P. Campbell, 2005: Statistical modeling of extreme rainfall in southwest Western Australia. Journal of Climate, 18, 852-863. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Text removed. Issue addressed p.17, line 14-19.
182	1	4	52	4	53	Sentence needs more care. At the very least, it should refer to "large changes in the frequency of the most extreme conditions." (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text removed.
183	1	4	0	5	0	1.1.1. This intro section is a little bit choppy in style and has very few references, namely IPCC 2007 and Patt 2010. Key references should be added for major concepts such as disaster, disaster risk management, learning from experience, etc. (Leichenko, Robin, Rutgers University)	Now restructured, major concepts introduced in 1.1.2
184	1	5	2	2	15	Challenge of dealing with non-linearity and abrupt events needs mention. Need to talk about uncertainties (Bhadwal, Suruchi, The Energy and Resources Institute)	See comment #176
185	1	5	2	5	15	The statement made in these two paragraphs is very strong. It should be balanced through comparisons with other major social, economic and technological changes over the last decades. For example, modern transportations have for sure brought more widespread, deep and beforehand unknown changes in the contemporary world that climate change alone in the upcoming decades. (Gaillard, JC, The University of Auckland)	Text removed, attention paid to this point throughout chapter.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
186	1	5	2	5	2	Sentence for clarification. How do you define "more" certain projection (Bhadwal, Suruchi, The Energy and Resources Institute)	Text removed.
187	1	5	2	5	6	Projections also are needed to other relevant drivers besides climate. (IPCC WGII TSU)	Text removed, attention paid to this point throughout chapter.
188	1	5	2	0	0	Be clearer about what "these ongoing changes" refers to. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text removed.
189	1	5	4	5	5	Which experiences with changing characteristics of extremes? Please mention examples and quote references. (Schmidt-Thome, Philipp, Geological Survey of Finland)	Text removed, see section 1.3 and 1.4.
190	1	5	4	5	5	Is this referring to experience gained "as a result of recent climate change"? If so the sentence is probably hard to justify yet. If not, then the reference should be to all past experience - there is constant learning from the major events. India's disaster policies have advanced principally in the aftermath of big events for example. Concern about climate change and sea level rise is certainly providing much greater attention and information on risk processes in recent times and should be welcomed. But in addition we should not neglect the experience from events in "pre climate change" times, such as the Sahel drought years, the American dustbowl period, and the enormous floods in China last century. In particular, past multi-year or decadal scale changes provide excellent surrogates for studying how societies do or can respond to climate change. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	phrase deleted.
191	1	5	4	0	0	ibid (Prather, Michael, UC Irvine)	Noted
192	1	5	8	5	15	Here the uncertainty concerning changes in extreme events should be better highlighted. Impacts of climate change are possible, both on the negative and the positive side. Please also insert appropriate references to support statements. (Schmidt-Thome, Philipp, Geological Survey of Finland)	Noted; See comment #156
193	1	5	8	5	15	a concise and well-balanced statement of otherwise often confused or ill-informed circumstances. (Jeggle, Terry, University of Pittsburgh)	Noted
194	1	5	8	5	15	Regarding the issue of uncertainty it should be mentioned also that this implies to reflect on the inherent epistemological limitations of sciences and that for this reason it is important to be aware that the higher uncertainty is the more important it becomes to take into account values e.g. precautionary principle, avoidance of irreversible situations, include and consider knowledge of non-academic communities ('stakeholders') etc. which means to move from 'normal' to 'post-normal sciences' (Ravetz, 2004) complemented with the above mentioned transdisciplinary approaches. Ravetz J. 2004. The post-normal science of precaution. Futures 36 (3) 347-357. (Rist, Stephan, Centre for Development and Environment (CDE))	Very interesting and relevant, but beyond the scope of this chapter.
195	1	5	8	5	15	Difficult to understand the message in these lines: How the "path of development" alter existing "vulnerability pattern" and "risk scenarios" (??). What is the meaning of "unpredictable and more complex risk scenarios (??), New physical threats (??). Historical risk factors (Mata, Luis Jose, IMF)	Noted and clarified.
196	1	5	8	5	9	Am concerned with this general comment that suggests uncertainty relating to extremes will increase. A similar comment is repeated on page 25 and is likewise problematic. From a purely scientific perspective, there is no general evidence within AR4 or from Chapter 3 of SREX supporting this comment. Such a statement is not true for many extremes, where uncertainty is decreasing as process understanding and regional modelling improves, eg, heatwaves. The key message coming from chapter 3 is that uncertainty relating to extreme observations and projections is highly variable, depending on the type of extreme, the region, and the season. It would therefore be more accurate to refer to "variable levels of uncertainty" or something similar. Note that Chapter 2 speak simply of 'conditions of uncertainty' which is a far better than the usage here of 'greater uncertainty'. (Stocker, Thomas, IPCC WGI TSU)	Noted; See comment #156
197	1	5	8	0	0	ibid (Prather, Michael, UC Irvine)	unclear
198	1	5	9	0	0	In addition to modifying the path of development, development is the expression of "human-participation" in not only CC but the creation and amplification of vulnerability. Human participation IS development. Stating that DRM and CCA have to be integrated into development is not the same thing as saying they are constructs made to address the problem of risk but on behalf of and through different consortiums in society representing different interest. (Bender, Stephen Bender, Organization of American States (retired))	See comments 3 and #9.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
199	1	5	10	5	12	This is an example in which I would suggest cross-references to other chapters, giving more information on the suggested changes. (Ulbrich, Uwe, Freie Universitaet Berlin)	Text removed, see section 1.2, Chapters 2 and 3.
200	1	5	10	0	0	What is the meaning of "vulnerability patterns"? (Goessling-Reisemann, Stefan, University of Bremen)	Text removed, but the meaning was how they change over time and space and in different social contexts.
201	1	5	11	5	11	What is the difference between a climate extreme and a weather extreme? (IPCC WGII TSU)	this is to be dealt with in Chapter 3.
202	1	5	11	5	12	Again, not only challenges, maybe also alleviation of risks. Also: avoid using terms like "very likely" if not justified by probabilistical analysis and refer to the IPCC recommendations on communicating uncertainty (see e.g. the IAC review) (Goessling-Reisemann, Stefan, University of Bremen)	Noted; See comment #156
203	1	5	12	0	0	I would avoid the expression 'very likely' here since Chapter 3 is quite careful about what is said about new patterns and uses such likelihood language in very specific ways. (Goodess, Clare, Climatic Research Unit)	Noted; See comment #156
204	1	5	13	5	15	The formulation is confusing: there is no evidence that new threats in certain areas are in connection with decreasing of risk factors in others, I suggest reformulation. (Cheval, Sorin, National Meteorological Administration)	Text removed, see section 1.2, Chapters 2 and 3.
205	1	5	13	5	15	"The emergence of new physical threats may affect areas with no previous experience of these, whilst other areas may experience a decrease in historical risk factors." Why such "a decrease" only? This may be rephrased as: a decrease or an increase in historical risk factors. (Mokssit, Abdalah, Direction de la Météorologie Nationale (DMN))	Text removed, see section 1.2, Chapters 2 and 3.
206	1	5	20	5	25	the author speaks of a/the gap, but then proceeds to correctly cite the several relevant conditions and circumstances. Therefore the use of the singular and generic) implied "gap" is misleading. It would be better to speak in the plural and preferably to find a more explicit word than a mere "gap". Similar comment applies to the use of (a singular) "approach" in line 22.(and line 25, too) (Jeggle, Terry, University of Pittsburgh)	Text removed.
207	1	5	20	5	25	Consolidate with previous discussion of this. (IPCC WGII TSU)	Noted
208	1	5	20	0	0	I miss a discussin of how to improve the coordination/integration of CCA and DRR. It is said that: 'A principle goal of the present report relates to bridging the gap between the disaster risk management and climate change communities as regards conceptions, objectives and approaches to managing risk, including development of a concerted multi- and interdisciplinary approach useful to both.' But the report leaves little discussion of how practically to move forward on bridging this gap and benefitting from both sides. (Villholth, Karen G., GEUS, Geological Survey of Denmark and Greenland)	See comment #3, revisions in section 1.3.5, and later chapters.
209	1	5	20	0	0	Try to be more precise and more positive than "goal ... relates to bridging the gap ... communities ... as regards to ..." I suggest something like "... goal is to capitalise on the potential synergies between disaster risk management and climate change adaptation. There are many similarities in concepts, objectives and approaches that offer great promise for improved outcomes in both fields, and experience is growing in many countries on how to implement cooperative inter-sectoral and multi and interdisciplinary approaches to do so." (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Accepted and rephrased according to recommendation and suggestion
210	1	5	22	5	22	Complement: "... A concerted multi-inter and transdisciplinary approach... (Rist, Stephan, Centre for Development and Environment (CDE))	See revisions in section 1.3.5.
211	1	5	22	0	0	this sentence makes no sense - great trouble after serveral re-reads (Prather, Michael, UC Irvine)	See revisions in section 1.3.5.
212	1	5	23	0	0	Elaboration of difference between 'new risk' vs risk modifier will be very helpful. (Simonovic, Slobodan, University of Western Ontario)	See revisions in section 1.3.5.
213	1	5	27	5	28	"disaster preparedness and response" would be a more logical expression (Jeggle, Terry, University of Pittsburgh)	See revisions in section 1.3.5.
214	1	5	27	5	34	Reference should be made to the changes captured in the experiences with the Yokohama Strategy and the Hyogo Framework, and in the work and transformation of the IDNR into the ISDR (ie. From a technocratic view to a social-political view). (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Incorporated, see in particular 1.3.3.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
215	1	5	27	0	0	This is incorrect. Disaster/emergency management continues to be denominated by response and preparedness matters, and I sincerely hope it continues to remain so, as this is its mandate and responsibility! But I know what you mean - better to say "The issue of disasters has been dominated in the past by emergency management concerns." (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Incorporated, see in particular 1.3.3.
216	1	5	28	5	30	The author claims that in the recent period disaster management make significant progress in tackling the development "development based risk reduction". However, in Ch. 4, pag. 112, lines 41-42 it is stated that very few nations in the world "made a legal connection between disaster risk reduction and national development planning frameworks." These sentences should be harmonized (Cheval, Sorin, National Meteorological Administration)	Good point and now elucidated better
217	1	5	29	5	29	what is "risk prevision" ? Is it a made-up word to express a feasible concept ? Might there be a better expression for clarity's sake ? (Jeggle, Terry, University of Pittsburgh)	Text removed.
218	1	5	31	5	32	... changes "to disaster concepts and disaster risk management practice" over time may be a more apt and consistent expression. Especially considering the earlier definition of drm (Jeggle, Terry, University of Pittsburgh)	Noted
219	1	5	36	5	41	Reference here should be made to the developments within the disaster risk reduction policy field on the integration climate change and disaster risk reduction, particularly the report on the outcome of the second Global Platform of Disaster Risk Reduction, 2009, the associated Global Risk Assessment 2009, and the UNISDR Policy Briefs 01 (2008) and 02 (2009 on Climate Change and Disaster Risk Reduction, and the report of the ISDR Scientific and Technical Committee, 2009. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Done and incorporated from the beginning , see references in 1.1.1.
220	1	5	36	5	41	The point in the concluding sentence of the paragraph was made in Sperling and Szekely, 2005. Disaster Risk Management in a Changing Climate. This discussion paper was written on behalf of the Vulnerability and Adaptation Group (VARG), then a network of bi- and multilateral development agencies, in collaboration with UNISDR and presented at the World Conference on Disaster Reduction (WCDR) in Kobe. It discusses the evolution of concepts in disaster risk mgmt and adaptation, institutional and policy settings and implications for building comprehensive risk management approaches in the broader development context. (Sperling, Frank, WWF)	Incorporated as reference.
221	1	5	36	5	41	Repeats earlier discussion. (IPCC WGII TSU)	Noted
222	1	5	37	0	0	You really need to define WX/CX here for the general reader, perhaps a box would be really useful. (Prather, Michael, UC Irvine)	should be handled in Chapter 3 and glossary
223	1	5	39	0	0	this sentence makes no sense - how can "this" require complementarity? that is not something we can do (like merging and synthesis). (Prather, Michael, UC Irvine)	Text changed.
224	1	5	43	5	54	"to bridge" ... what exactly ? The language, the concepts, the respective or mutual understanding of ...? An object (or noun ?) is needed to transform the colloquial ambiguity into a more precise statement of need. A similar vagueness continues by equating the use of "an interdisciplinary approach" with being such "a robust bridge" in line 54. (Jeggle, Terry, University of Pittsburgh)	Text changed.
225	1	5	43	0	0	The "bridging" idea is too limited; better to talk of "better link" or "more effectively integrate" (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Done
226	1	5	43	0	0	drop "on the ground" it is too colloquial - as is the whole style of this chapter. (Prather, Michael, UC Irvine)	Noted
227	1	5	47	5	47	I would suggest to add as a relevant reference the "European Union Directive 2007/70/EC on the assessment and management of flood risks" which recommends to take into consideration long term developments, including climate change in the flood risk management practices. (Ranzi, Roberto, University of Brescia)	This reference will be added in subsequent drafts.
228	1	5	48	0	0	"Missing is knowledge about the effects of extreme events on ecosystem services as a function of geographical region. For example, a drought event in central Europe may not reduce productivity of biomass substantially (Kreyling et al. 2008), although it may be an extreme event according to extreme value statistics. Reference: Kreyling C, Wenigmann M, Beierkuhnlein C, Jentsch A (2008): Effects of extreme weather events on plant productivity and tissue die-back are modified by community composition. Ecosystems 11: 752-763." (Jentsch, Anke, University of Koblenz-Landau)	See more details in chapter 1.2 and 4.
229	1	5	49	5	52	Please add Sperling and Szekely 2005 as reference (Sperling, Frank, WWF)	Done

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
230	1	5	49	0	51	Missing discussion on incentives, or lack thereof. (Hellmuth, Molly, International Research Institute for Climate and Society)	See revisions in section 1.3.5.
231	1	5	54	0	0	The idea of fostering a robust bridge between DRR and CCA seems simplistic, given the literature on the social construction of science. In light of how much time the chapter devotes to problematizing the various concepts used within each set of literature, it would seem to make sense to also spend a bit more time discussing why the fields haven't been connected and deeper barriers to such connection. Again, there is a literature on how science 'works', why various fields don't communicate with each other, and how they might (see Barnes, T. 2009. "Not only but Also." Professional Geographer 61.3: 292-300 for an example from Geography. Given that development of these linkages is the broad, overarching goal of this report, the seems like an important issue to mention. (Leichenko, Robin, Rutgers University)	Now considered and mentioned in 1.3.5.
232	1	5	0	6	0	1.1.2. A related reason for the lack of communication between CCA and DRR stems from the social production of science. The section should mention ideas of the social construction of scientific knowledge. From this perspective CCA and DRR represent different discourses with different audiences and different goals (Leichenko and O'Brien 2008 - Environmental Change and Globalization: Double Exposures, Oxford U.P, pp. 13-15) has a concise discussion of discourses and citations to literature on the social production of scientific knowledge. Just as 'disaster risk' is socially constructed, so is the scientific of understanding these risks. (Leichenko, Robin, Rutgers University)	Now considered and mentioned in 1.3.5.
233	1	6	1	6	5	Repeats earlier discussion. (IPCC WGII TSU)	Noted
234	1	6	1	0	0	The "gap" between the two practices may be overstated, and too influenced by an academic conceptual view. Actually, the situation is changing rapidly, as countries get down to the task of preparing for climate change and wake up to thir burden of socially constructed disaster risk. In some countries the problems of climate change and disaster risk reduction are being merged in one ministry or dealt with under one legislation, while leaving the emergency management elsewhere in government. In some small countries, like the Cook Islands, the problems are dealt with naturally under inter-departmental cooperation mechanisms. The SREX report should aim to document these important moves. (In some countries, the probem is not the lack of a "bridge" but the lack of any ministry concerned with disaster risk reduction to bridge to.) (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See revisions in section 1.3.5.
235	1	6	3	0	0	"establish" is an odd choice of verbs and torques the sentences to be obscure. (Prather, Michael, UC Irvine)	Noted
236	1	6	4	6	5	"well-established and evolving disaster risk management theory" Any reference from the scientific literature ? (Mokssit, Abdalah, Direction de la Météorologie Nationale (DMN))	Text removed.
237	1	6	8	0	0	Section 1.1.3: A section explaining the key concepts applied in this report (in particular: risk, vulnerability, and resilience), including alternative uses of the same term, is clearly needed to avoid confusion and misunderstanding. Section 1.1.3 and Figure 1.1 attempt to do this but seem to stop half way. The discussion of the history of the key terms is useful but a clear working definition for each of the concepts is also needed. This is particularly important for "vulnerability" because this report, being largely based on work from the disaster management community, uses this term in a rather different way than the definition in the glossary of the IPCC Fourth Assessment Report. (Fuessel, Hans-Martin, European Environment Agency)	See comment #6.
238	1	6	8	0	0	After 5 pages of key concepts and definitions, we have a new section on key concepts and definitions? Some rationalising to be done I think. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Restructured; See comment #6.
239	1	6	10	6	18	while we agree that the historical context can be useful information for understanding distinct concepts, it still seems necessary to come up here in Chapter 1 with a list of the key concepts, defintions etc. that will be used throughout this Special Report. Otherwise we see the danger that each Chapter Team uses their own defintions etc. making the cross-Chapter comparison very difficult. (Stocker, Thomas, IPCC WGI TSU)	See comment #6.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
240	1	6	10	14	30	It seems to me that In diferent points of the documents is suggested that either disaster risk and climate change adaptation framework are theoretical constructions that have been already finished... This is something that could be reviewd and probably rewrited being a little bit more humbled... It is important to say thay at least about disaster risk reduction conceptual framework, that during last years we have been living in a permanent debate and in frecuent modification of basic concepts... If even a basic definition as "disaster" have suffered 3 or 4 mayor changes in the last 30 years... What could be said about social vulnerability, Resilience, etc?? ... Probably It is important to fix that there is a non-stationarity situation affecting also both conceptals frameworks... (Linayo, Alejandro, Research Center on Disaster Risk Reduction CIGIR)	Noted; see sections 1.3.3 and 1.3.5.
241	1	6	16	0	0	"basic notions" - that an odd dscription of what is here. (Prather, Michael, UC Irvine)	Text removed.
242	1	6	17	6	18	Isn't some sort of rigidity necessary in order to make an assessment? (Goodess, Clare, Climatic Research Unit)	Constructive flexibility. This point is now better explained at the beginning of 1.1.2.
243	1	6	17	0	18	flowery prose not helpful (Prather, Michael, UC Irvine)	Noted
244	1	6	20	0	0	Figure 1.1 is separating risk management from adaptation that is not the message from the text? (Simonovic, Slobodan, University of Western Ontario)	Noted, but do not agree that these are separate.
245	1	6	20	0	0	Figure 1-1 is confusing since vulnerability really includes exposure and adaptive capacity, but here it appears as a separate issue (Goessling-Reisemann, Stefan, University of Bremen)	Noted but not in agreement that exposure is part of vulnerability
246	1	6	24	6	34	This risk definition is different from equation (1). Risk used in this report should be clearly defined here. Risk has various definitions. It would not be used in a unique way in this whole report. (Takeuchi, Kuniyoshi, ICHARM)	See comment #6.
247	1	6	24	6	35	In addition to commentary on physicalist v comprehensive approaches to risk discussed subsequently, it needs to be noted that perception of risks is inherently subjective, as discussed in the large literature on the sociology of risk. There is no such thing as a 'right answer' as to the magnitude of a given risk (probability x consequences) as the consequences are differently assessed by different poeple, including among experts. See literature by Paul Slovic. (Rickards, Lauren Amy, University of Melbourne)	See more complete discussion in 1.3.
248	1	6	24	0	0	I suggest there be a simple explanation of the terms hazard, exposure, vulnerability, and risk, with definitions. With these basic ideas in place, the section can more easily go into the very important issue of social construction (not conditioning) of risk, loss and damage. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See comment #6.
249	1	6	24	0	0	Somewhere here, there should be a good description and comparison of the top down climate driven view and the bottom up social construction of (and response to) risk view (see my point on this in generic comments on the chapter.) (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Done to extent the words allocated allow
250	1	6	26	6	34	In line with your explanations here, Risk in an insurance context is seen as a function of the hazard (probability of occurrence at a certain location) affecting exposed assets (exposed values in a specific location - values can be defined as financial, social, ecological or similar) and their vulnerabilities (vulnerability of each asset group in terms of damage degree depending on hazard magnitude/severity, e.g. wind speed of hurricane). Hence it is a combination of physical and socio-/economic characteristics. You may want to consider this in your explanations here. (Spiegel, Andreas, Swiss Re)	See more complete discussion in 1.3.
251	1	6	26	6	34	Reference is made to the term extreme in previous section. Hence , it would be useful to relate the term extreme to a probabilistic definition in this section. (Kumar, Ritesh, Wetlands International - South Asia)	Done
252	1	6	26	6	34	The discussion of the definition of risk is too brief here. Needs to be expanded to clarify the different meanings and how it is used in this report. (Leichenko, Robin, Rutgers University)	See more complete discussion in 1.3.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
253	1	6	26	34	0	In defining the term risk, it is recommended to separate the notional definition of risk from how to quantify risk. Risk, as a notion, can be defined as the potential loss relating to a system due to an adverse event occurrence (Ayyub 2003). An accepted practice for quantifying risk requires a probabilistic, analytical framework that accounts for threats or hazards, vulnerabilities, consequences, severities, and their valuations to produce loss exceedance curves with probability bounds to account for epistemic uncertainty (Ayyub 2003, Ayyub and Klir 2006). Based on my experiences, this definition and quantification approach was used for natural and human-caused hazards, and was based on work on flood, hurricane, nuclear, consumer-product, safety-device, medical-device, etc. risk analysis and management and standard development. Expert opinion elicitation is commonly necessary to supplement any available empirical data (Ayyub 2001). Ayyub, B.M., and Klir, G.J., Uncertainty Analysis in Engineering and the Sciences, Chapman & Hall/CRC Press, 2006. Ayyub, B.M., Risk Analysis in Engineering and Economics, Chapman & Hall/CRC Press, 2003. Ayyub, B. M., Elicitation of Expert Opinions for Uncertainty and Risks, CRC Press, FL, 2001. (Ayyub, Bilal, University of Maryland)	Both qualitative and quantitative definitions now considered. See more complete discussion in 1.3.
254	1	6	30	6	31	I would better explain the meaning of 'convolution' here. 'Product'? 'Weighted sum'. For a wide literature the (disaster) risk is the product of hazard, vulnerability and exposure (see Chapter 2). Defining it as the 'convolution' of hazard and vulnerability could be a bit confusing (Ranzi, Roberto, University of Brescia)	Text removed
255	1	6	32	6	34	the defference of risk between here and common in others is not clear. (morisugi, Hisayoshi, Nihon University)	Noted
256	1	6	32	0	0	do you mean "risk ALONE..." (Prather, Michael, UC Irvine)	Text removed
257	1	6	39	6	42	Vulnerability to my knowledge includes exposure, since it is always exposure specific, cf. "Adaptation, adaptive capacity and vulnerability" (Barry Smit , Johanna Wandel; Global Environmental Change 16 (2006) 282–292) (Goessling-Reisemann, Stefan, University of Bremen)	Taken into account but maintaining vulnerability separate if related to exposure
258	1	6	39	0	0	are not magnitude and intensity the same ? In the effort to cut unnecessary words.... (Prather, Michael, UC Irvine)	Intensity has been used where it is appropriate after discussions with Chapter 3 CLA's.
259	1	6	44	6	47	Exposure is the extent of experiencing a physical event, not just referring to the location of the system. (Goessling-Reisemann, Stefan, University of Bremen)	Noted and included.
260	1	6	44	0	0	The concept of exposure is in fact defined by the IPCC TAR. Perhaps the definition could be reported: "The nature and degree to which a system is exposed to significant climatic variation" (IPCC TAR (2001)) (Bosello, Francesco. Fondazione Eni Enrico Mattei. Milan Universitv \)	No longer relevant.
261	1	6	46	6	46	although a nuanced distinction, it may be preferable to refer to "forecasted" rather than "predicted" as the later suggests an excessive and unrealizeavble degree of precision as to time and place. (Jeggle, Terry, University of Pittsburgh)	Text removed
262	1	6	50	6	50	this statement needs to say, "...announces possible future loss and damage.", precisely because it is latent. (Jeggle, Terry, University of Pittsburgh)	Noted and included.
263	1	6	54	6	54	the second occurrence of "social" in this line should more accurately be revised as societal ... action or inaction. That is actions taken or not within a society, as they may be economic, political, etc. if not precisely "social". (Jeggle, Terry, University of Pittsburgh)	Done
264	1	6	0	0	0	Fig 1-1 is not the risk defined by this report. Better to show a figure of the definition this report uses. (Takeuchi, Kuniyoshi, ICHARM)	Noted
265	1	6	0	0	0	Figure 1.1. is very useful. (Jeggle, Terry, University of Pittsburgh)	Noted
266	1	7	1	7	5	What about the role of socio-political drivers in creating disaster risk to the society ? (Kumar, Ritesh, Wetlands International - South Asia)	Done
267	1	7	1	0	0	With "example" I was hoping to find a clear, definitive example, but found only more vagaries here - this is not an example. (Prather, Michael, UC Irvine)	Noted
268	1	7	5	7	5	" ... and decisions taken within a society ..." (which is not the same as "social decision-making". (An authoritative declaration, instruction or diktat, need not be a "social decision) (Jeggle, Terry, University of Pittsburgh)	Changed accordingly
269	1	7	12	7	13	Weichselgartner (2001) provides a description of the vulnerability concept, the various definitions, conceptualizations, and fields of use. Full reference: Weichselgartner, J., 2001: Disaster mitigation: the concept of vulnerability revisited. Disaster Prevention and Management, 10(2), 85-94. (Weichselgartner, Juergen, GKSS Research Center)	Noted and included in revised definitions.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
270	1	7	12	7	15	Natural Systems are also vulnerable to anthropogenic climate change and hence it can be considered to include natural systems in this definition. (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	This aspect is now clarified and an option provided; see comment #23.
271	1	7	12	7	21	Vulnerability in an insurance context is defined as relationship between hazard magnitude / severity and induced damage of an exposed asset, e.g. a function between wind speed and property damage of residential buildings. (Spiegel, Andreas, Swiss Re)	Noted and included
272	1	7	12	7	21	The "origins" of vulnerability should be checked, at least as it is presently stated. What is essentially being referred to here, in terms of developmental contexts, I believe is the dimensions of social (or socio-economic) vulnerability. Otherwise "vulnerability" had been a long established criteria in the engineering profession as to the vulnerability of failure or loss of structural components of physical construction. It certainly was used in this manner within the then Disaster Mitigation Branch of UN-DHA, and phrased as such in the DHA Glossary of Disaster Management Terms, ca. 1994. While this is indeed referred to in lines 20-21, I believe it is inaccurate to suggest that such a usage was not also pertinent and related to "developmental" considerations. What is significant from this present paragraph is that the prior physical expression and determination of (physical/structural) vulnerability was broadened out into a much wider remit of social relevance and application in the context of national development issues particularly during the mid-to later 1980s, and popularized by Anderson and Woodrow's Rising from the Ashes, and also referred to in Randolph Kent's Anatomy of Emergency Response (1986 ?) (Jeggle, Terry, University of Pittsburgh)	Noted and taken into consideration
273	1	7	12	7	34	It would help to define 'sensitivity' to climate change impacts as it can otherwise easily be conflated with 'vulnerability' to climate change impacts (Rickards, Lauren Amy, University of Melbourne)	Noted and included
274	1	7	21	0	0	Give reference for the usage "structural vulnerability". We use the term for distinguishing vulnerability against climate change events from general weak spots of the system (regardless of the origin of disturbance) (Goessling-Reisemann, Stefan, University of Bremen)	Text removed
275	1	7	23	7	23	Is the "disaster risk community" distinct from the disaster risk management community? Given the prior definition of drm, I would expect that the drm community would inherently include any "disaster risk" actor. (Jeggle, Terry, University of Pittsburgh)	Noted
276	1	7	23	7	26	"The fundamental importance ..."; it is suggested to add a recent study on this issue; full citation: Tapsell, S., S. McCarthy, H. Faulkner, and M. Alexander, 2010: Social vulnerability to natural hazards. CapHaz-Net WP4 Report. Flood Hazard Research Centre, Middlesex University. (Accessed 01.09.10: http://caphaz-net.org/outcomes-results) (Weichselgartner, Juergen, GKSS Research Center)	Reference will be added in subsequent drafts.
277	1	7	24	7	24	It may be better to say, "Moving beyond ..." rather than "moving away from ...", both to suggest an expanding rather than contradicting perception, but also so as not to totally obviate the still quite legitimate considerations also of physical/structural vulnerabilities, as for example in the construction techniques employed or not in buildings constructed within seismically active locations. This does not gainsay the consideration of socially constructed risk, but I believe it a biased view to suggest that there do not also continue to be contributing physical / structural elements of vulnerability. (Jeggle, Terry, University of Pittsburgh)	Noted
278	1	7	28	7	24	Reference to the IPCC 2007 definition of vulnerability as representative of CCA's use of the concept is too narrow. There is a tremendous vulnerability literature from the CCA side (as discussed later in the report). References to other definitions of vulnerability should also be included (and not just via noting that some authors have criticized the IPCC definition) (Leichenko, Robin, Rutgers University)	Noted and discussed; more detail in chapter 2

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
279	1	7	28	7	34	The reference to coping should be contextualized in its wider political context in which the relation between adaptation and mitigation is considered. A hint should be made what is correctly mentioned in page 18 under the key word of "influences of culture and ideology" (lines 42-46). This means to mention that besides of dealing with coping and adaptation it must be taken into account how these concepts are related to mitigation of green house gas emissions; the position that mitigation plays in the overall strategy to deal with climate change is a mainly political definition, based on preferences regarding to role of firms, corporations etc. ('the market') and the role of states ('regulation, rights versus incentive based approaches etc.). In short I suggest to add a sentence that could look like that: "Although we share the basic definition of vulnerability as the capacity of systems to cope with adverse effects of climate change, we are also aware that the type of negative effects that have to be coped with are depending on the ideological definitions that are expressed in specific relationships between mitigation and adaptation, which directly reflects ideological preferences marked by (neo)-liberal or more state interventionist positions. As scientific information about the effects of climate change show, it makes a huge difference for coping strategies, whether mitigation is oriented towards 1 or two degrees Celsius of average temperature increase of the atmosphere; this means the definition of the targets for mitigation widely sets the stage for what have to be faced in terms of adaption to and coping with the negative effects of climate change". (Rist, Stephan, Centre for Development and Environment (CDE))	We read the PAO as emphasizing adaptation per se, and that discussion of mitigation and its specific relation to adaptation is beyond the scope of this report.
280	1	7	28	7	34	It may be worth noting in this paragraph that the disaster risk community's concept of vulnerability is focused on impacts to humans, whereas the IPCC concept is broader and would cover, for example, damage to non-human ecosystems. (Trewin, Blair, Australian Bureau of Meteorology)	Noted; see comment #23
281	1	7	28	7	34	Might be useful to add that this definition has also helped or been used to cover/study impact of climate change on natural systems such as coral reefs. See IPCC 2007 chapter 6 (Carla, Encinas, Intercooperation)	Noted; see comment #23
282	1	7	28	7	34	The IPCC AR4 definition of vulnerability is different from the one used in this report. It comes from natural hazards research that defines vulnerability as the residual after everything else has been taken into consideration, but this conceptualization does not apply to most sectors. It is important to have a clear discussion of the difference in definitions and the reasons for it, coordinated with Chapter 2 and the glossary team. (IPCC WGII TSU)	Incorporated.
283	1	7	31	7	48	Some clarification needed. It is difficult to understand why there is a remark about two authors (the text cite "some authors") that criticized a definition and afterwards the text states that there is tension about it. Which is the reason of this tension? Is the opinion of two authors the cause of this tension? Where is this tension? In these two authors? In the special report authors? In the climate change community or in the disaster reduction community perhaps? In this regard, please, check "Adaptation" and "Adaptive capacity" (Appendix I: Glossary, pg 869, WG II, AR4) definitions; both take into account the social aspects so Vulnerability also takes into account social aspects. If "Impacts" definition (Appendix I: Glossary, pg 876, WG II, AR4) is also checked it says "the effects of climate change on natural and human systems". There is no exclusion of any effect (nor physical nor social). Therefore I only see the need of using the distinction as a way to emphasize if exposure or sensitivity is the main contributor to the problem. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Text has been changed.
284	1	7	32	7	33	It occurs to me that the IPCC definition of vulnerability is not physicalist at all, since it focuses expressively on the susceptibility of systems, not on the physical events itself (Goessling-Reisemann, Stefan, University of Bremen)	Noted; text has been changed.
285	1	7	32	0	0	Avoid "some authors" if you know them exactly. Use as little "weasel words" and weak statements as possible. (Goessling-Reisemann, Stefan, University of Bremen)	Noted and text removed.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
286	1	7	36	7	48	Dense paragraph. Consider revising for further clarity on key points. The current introduction of extreme impacts as a concept, without much further definition of what 'extreme' means, complicates rather than resolves the discussion on when the exposure to a particular hazard or extreme event turns into disasters and how probabilistic characterization of a event aids this discussion. Consider focusing more on the interplay of hazard/extreme event, exposure and vulnerability and then discussing the implications of low probability/high impact events vs. higher probability/but lower impact events in triggering a disaster if environmental, social or economic conditions are conducive. (Sperling, Frank, WWF)	Noted
287	1	7	38	7	39	Does this not omit also "physical" elements of risk too, such as quality of construction, or ill-considered (or tolerated) siting for that matter which are inherently physical in nature, even if the processes of decision or action takes place as a part of social processes. I think you are biasing the reasoning not to also include the legitimacy of physical elements of risk. There is a valid distinction to be made between physical "causes" and physical attributes or consequences. I appreciate that you are emphasizing the former, but the latter is perhaps unwittingly disenfranchised by banishment or omission. (Jeggle, Terry, University of Pittsburgh)	Considered and resolved, see also section 1.2.
288	1	7	38	7	39	Political economic, social, cultural, and psychological elements are held to be important factors for risk, without it is explained how or why. (Asphjell, Torgim, Climate and Pollution Agency (Norway))	Some examples now given, see also 1.3.
289	1	7	42	7	43	This point about the dominance of non-extreme loss events is fundamentally important and should be emphasised and introduced in an earlier section when the basic issues of extremes and disasters are introduced. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Done, see 1.1.2.1
290	1	7	42	0	43	This may be important, but the language is still confusing. (Prather, Michael, UC Irvine)	Noted
291	1	7	44	7	44	Section 1.2.x? (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Noted
292	1	7	46	0	0	Use "UNISDR" for the organisation, not "ISDR". (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Done
293	1	7	47	0	0	If the idea of "extensive risk" is used here it would need explanation (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Definition now given
294	1	7	48	7	48	reference to ISDR, 2009 is missing. It was UNISDR, 2009 (Ranzi, Roberto, University of Brescia)	Noted
295	1	7	51	8	27	and elsewhere: The 'positive face' of coping is not brought out in this chapter. Meaning that local communities feel some satisfaction when they cope with adversity, they have some autonomy, they do not feel overwhelmingly dependent on outside 'charity' assistance (govt or NGOs), they have pride that they are coping, they are 'empowered'. Of course this is more the case with higher frequency, lower severity hazard occurrences for which people have built up coping mechanisms and adaptation strategies over long time.. (McCall, Michael, Universidad Nacional Autonoma de Mexico)	See more detailed discussion in 1.4
296	1	8	1	0	8	There is need to reflect briefly on the use of resilience in ecology given the role of ecosystems in livelihoods and also so as to be in line with discussions in e.g. pages 11, 12 and 13 on ecosystems (Dube, Pauline, University of Botswana)	Noted and see more in sections 1.3 and 1.4
297	1	8	2	8	3	Commonly, resilience literature refers to ecology and Holling, who has been very influential. I have not really ever seen a reference to child psychology, and less so also to engineering. (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	Noted but there are many important reference in engineering and child psychology
298	1	8	2	0	0	Resilience in an insurance context is defined as ability to cope with hazard intensities and associated damage levels. The more a system can cope with intense hazards by minimizing its impact pre-emptively the higher is its resiliency. Hence we see adaptation as a risk minimization effort that leads to increased resilience. Risk minimization is composed of pre-emptive social, physical/ technological and policy and (emergency-)planning related adaptation measures. (Spiegel, Andreas, Swiss Re)	Noted
299	1	8	2	0	0	With "resilience", and the preceding terms on pages 6-7, it would be best to start with current authoritative definitions, e.g. from UNISDR or UNFCCC, as the starting point of the discussion. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See comment 6.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
300	1	8	5	8	5	Having checked the definition of resilience from various authors in the psychology field (Grotberg (1995), Institute on Child Resilience and Family (1994), Osborn (1996), Rutter (1992), Suárez Ojeda (1995), Infante (1997), Luthar (2000) and E. Chávez y E. Yturralde (2006)) and in the ecology field (Pimm (1984), Keeley (1986) and Fox and Fox (1986)) I could not see in the definition the easiness of recovery as part of the definition for resilience (it has been done in this chapter "... to recover with greater facility than others.") and they mainly focused on the recover capacity. Please, clarify this aspect. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	no longer relevant.
301.1	1	8	5	0	0	"Insufficient coverage of resilience in the natural sciences. I add some paragraphy, that may be of use for further elaborating resilience in this chapter. From Jentsch & Mueller-Mahn (submitted) and White and Jentsch 2001. The notion of 'resilience' has already had a remarkable career, from physics ("resistance to shocks") and engineering ("bouncing back") to ecology ("amount of disturbance an ecosystem can absorb") and finally to the study of social-ecological systems ("capacity to sustain shocks and adapt to changes while keeping functions intact"). On its long march through the disciplines it has gradually changed its meaning, but it kept, at least implicitly, a remainder of its original connotation of robustness and functional stability in the face of extreme events. However, from a social science perspective this implicit meaning of continuity cannot easily be matched with the question how societies should incorporate change and adapt to the challenges presented by climate change and the increasing frequency of extreme events. In ecology, resilient behaviour of ecosystems is generally based on two underlying mechanisms of ecosystem response to disturbance (White and Jentsch 2001): complementarity in resistance and apparent redundancy in functional contributions. First, ecosystem response to disturbance is, in part, a result of complementarity in niches and species traits (i.e. the presence of a wide range of different traits enabling efficient use of resources). After a particular disturbance, some species with concordant life cycles increase or invade, while others with discordant life cycles decrease or retreat. Overall, the sum of complementary species (or opposing strategies) ensures ongoing ecosystem dynamics and performance of vital functions. Thus, ecosystem response is, in part, a result of niche complementarity. Second, when dominant species are primarily the ones affected by disturbances, other species may increase after a disturbance, even if their functional traits are similar rather than complementary to the previously dominant species. Both niche complementarity and trait redundancy can be mechanisms that contribute to resilience and overall ecosystem stability. Examples of ecological resilience include functional stability of productivity, nutrient retention, carbon sequestration, air and water purification, slope stability and the avoidance of degrading processes such as erosion or desertification. The continuity of species composition and abundance patterns, and thus of biodiversity, reflects the functional continuity of an ecosystem in the face of disturbance impacts. It would be worthwhile comparing the relevance of redundancy and complementarity in social-ecological systems. In sociology, the concept of social resilience refers to the ability of societies to cope with or absorb severe external shocks as a result of social, political and environmental change without losing their functionality (Adger 2000) or their capacity to allocate resources efficiently in order to cope with adverse environmental conditions or extreme events (Perrings 2006). The debate about the applicability and usefulness of the concept of resilience in the study of social questions, however, is highly controversial. The debate focuses on three critical points. First, from a social science perspective, there remains a fundamental scepticism in transferring the notion of resilience to social processes. Resilience thinking in contexts like, for example, development planning appears to be intellectually close to social engineering (Cannon and Müller-Mahn 2010). Second, a system theory approach can not easily be matched with social theories that focus on agency, decision making, perceptions and values (Adger 2000). Third, human individuals cannot be exchanged as readily as other organisms in order to contribute to overall diversity and stability in larger communities facing shocks. Nevertheless, when studying ecological and social effects of extreme weather events, resilience concepts offer an interesting common focus for an integration of natural and social science perspectives in the scope of social-ecological systems and environmental management (Klein et al. 2004; Adger et al. 2005; Eakin and Luers 2006; Walker et al 2006; Liu et al. 2007; Müller-Mahn 2007; Müller et al. 2010). In the social sciences, concepts of local agency and social change in the context of global influences and current processes of globalisation prevail. Generally, local communities have three options for reactions to economic, cultural or political global influences and to meteorological, geological or ecological extreme events: (1) appropriation, which basically makes the	The discussion of resilience has been substantially rewritten, particularly in 1.1, addressing these concerns.
301.2	1	8	5	0	0		

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
301.3	1	8	5	0	0	external impact part of the local community and everyday life, (2) hybridisation, which leads to the creation of new forms as a mixture of external and local elements, and (3) resistance, which means that local communities try to defend themselves against external influences by strengthening some of their own cultural or economic characteristics (Probst and Spittler 2004). None of these three options of reaction shows the capacity to absorb shocks without change. The first two forms of reaction obviously involve change, whereas the last one, resistance, involves avoidance of change. Accordingly, a socio-ecological concept of resilience has to be critically assessed in the context of resistance, development and change. However, would activation of functionally similar actors (redundancy) with reduced sensitivity to shocks (complementary) on the cost of others be an appropriate strategy in a diverse community, if human beings instead of other organisms are involved? At least in ecology, a long lasting debate has come to the conclusion that diversity of communities indeed is related to stability in the face of environmental fluctuations (review in Beierkuhnlein and Jentsch 2005). Climate change will contribute to alterations in extreme event regimes. Moreover, disturbances can remove the inertia represented by existing ecosystems, thus resulting in a relatively sudden response (or adjustment) to previous climate changes. Thus, in ecosystems, successional pathways are continuously altered in composition and velocity when exposed to varying environmental conditions. Reference: Jentsch A, Müller-Mahn D (submitted to Conservation Biology): Resilience of ecosystems and societies facing extreme meteorological events. White PS, Jentsch A (2001): The search for generality in studies of disturbance and ecosystem dynamics. Progress in Botany 63: 399-449." (Jentsch, Anke, University of Koblenz-Landau)	
302	1	8	8	0	0	section 1.4.3.2 seems to be the incorrect reference (Goessling-Reisemann, Stefan, University of Bremen)	Text removed
303	1	8	10	8	18	Replace "the term" by "the resilience". This paragraph need a polish to make it better presented. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Noted
304	1	8	10	8	27	Important concepts and distinctions to include. Lines 10-18 are particularly important given the current popularity and lack of rigor in the popular use or expression of these terms - especially in sustainable development contexts. Although presently unstated, lines 20-27 are important too to elucidate that capacity development is not strictly speaking simply a synonym for "training", as it is sometimes prone to be considered in a casual or popular usage in sustainable development commentary. (Jeggle, Terry, University of Pittsburgh)	Noted
305	1	8	13	8	15	If only using resilience as an analytical category, the mentioned experts might be right. But if one seeks for design recommendation for adaptation, resilience bear some significant advantages over "vulnerability" and "lack of capacities". At the least, it can be used positively and then might serve as a guiding principle, something the other terms cannot. We are currently researching this approach, but cannot deliver (english) literature to the point. Even when taking resilience as "only" an analytical tool, the ecosystem theory literature has a lot to offer to answer to these critics. Take for example the parametric definition of resilience by resistance, latitude, precariousness and panarchy, which would be a perfect framework to analyse vulnerability (not only climate change vulnerability), cf Walker, B., C. S. Holling, S. R. Carpenter, and A. Kinzig. (2004): Resilience, adaptability and trans-formability in social-ecological systems. Ecology and Society 9(2): 5. [online] URL: http://www.ecologyandsociety.org/vol9/iss2/art5/ (Goessling-Reisemann, Stefan, University of Bremen)	definition of resilience has been revised and the discussion broadened to include these points, p.12, line 14-24.
306	1	8	16	8	16	Walker (2004) stresses this unbalanced perspective and extends this definition: "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks—in other words, stay in the same basin of attraction". alker, B., Holling, C.S., Carpenter, S.R., Kinzig, A., 2004. Resilience, adaptability and transformability in social-ecological systems. Ecology and Society 9 (2) art. 5 [online], URL: http://www.ecologyandsociety.org/vol9/iss2/art5 . (Guenther, Edeltraud, Technische Universität Dresden)	see comment 284.
307	1	8	16	8	18	You might point out the undesirability of returning to the original state in some circumstances. (IPCC WGII TSU)	Done

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
308	1	8	17	8	18	This seems to be a misinterpretation of the term resilience: it is highly dynamic and the focus is on preserving the system functions, not the structure. This can, but does not have to, include a major restructuring of the system. Refer to Hollings work on the adaptive cycle and panarchy for more details. (Goessling-Reisemann, Stefan, University of Bremen)	Noted; concepts of resilience described in this comment are in chapters 2 and 8, and are presaged in this paragraph.
309	1	8	17	0	0	have been criticised by whom? (Goessling-Reisemann, Stefan, University of Bremen)	Text Removed.
310	1	8	20	0	27	The term "capacity" here could be more clearly related to the term "capability" . The definition given of capacity corresponds to the more well developed capabilities approach by Amartya Sen. Sen is quoted for earlier work on famines in line 48 in that same page. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Done
311	1	8	22	8	22	add technological (Bhadwal, Suruchi, The Energy and Resources Institute)	Noted
312	1	8	26	8	27	Capacity is too broad a term to be productive in preparing for climate change. Without direction, capacity building is blind. It has to be accompanied by strong and visionary design goals. Resilience, although very broad and abstract, could be one of them. Others are conceivable. Nevertheless, the subsection is incomplete without discussing the directions of change! (Goessling-Reisemann, Stefan, University of Bremen)	Point now included.
313	1	8	30	0	30	It might be worthwhile to also indicate that the need for intervention occurs where there are social elements exposed to a physical event (Dube, Pauline, University of Botswana)	Noted
314	1	8	32	0	35	The social factors of risk is mentioned, but the mechanisms that would increase analytical leverage for comparing and bridging of the two perspectives are not properly illuminated to lift the analysis. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Noted
315	1	8	32	0	42	Give examples to clarify what is meant by "routine/daily occurrences/ normal" For e.g. Is poverty normal? (Dube, Pauline, University of Botswana)	Point taken and resolved
316	1	8	33	0	0	Why are "exceptional events" necessarily physical? What about indirect effects of climate change, which affect some regions otherwise less affected by climate change? What about this type of adaptation? The report would greatly gain in weight if such issues would be approached in parallel with the physical changes demanding adaptation. (Goessling-Reisemann, Stefan, University of Bremen)	We attempted to distinguish between physical events and their full stream of consequences, which depends on the extended social context. We appreciate that the term "event" is used in many ways, but we needed to establish a consistent standard for this report.
317	1	8	34	8	35	Question 2 is only relevant to the extent that it is couched in terms of (ought to be considered) "by whom ?". (Jeggle, Terry, University of Pittsburgh)	Noted
318	1	8	38	8	38	replace "or quotidien" with "life" (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Done
319	1	8	38	8	53	It could be important to highlight the notion of naturally fragile environment going toward increased "fragilisation" due to prevailing condition of the environment which will be more subject to disaster development in the context of a changing climate resulting on negative impacts, adding to additional aspect of Exceptionality, extremity, and the everyday or quotidien. (Ben Mohamed, Abdelkrim, University of Niamey)	Noted
320	1	8	40	0	0	Extreme can be seen as extreme hazards (severity, magnitude), extreme assets (spacial distribution, e.g. concentration, extreme vulnerabilities. In combination they constitute an extreme risk (damage potential) (Spiegel, Andreas, Swiss Re)	Noted
321	1	8	40	0	0	Either here or earlier on, mention should be made of the "Act of God" and "punishment" notions of disasters. Such fatalistic beliefs are often entrenched by religious or cultural beliefs, and partly reflect ignorance of the risk process and of the ability of individuals and communities to reduce risk and manage loss events. They may be an impediment to adaptation in some circumstances. I believe there is some literature on the subject. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See section 1.3
322	1	8	42	8	42	Especially if they happen to be social scientists ! I am not so sure how many engineers, or natural scientists would necessarily agree or subscribe to the certainty of this statement. (Jeggle, Terry, University of Pittsburgh)	Noted
323	1	8	44	0	50	Clarify what is meant by scale i.e. is it spatial scale or degree of impact? (Dube, Pauline, University of Botswana)	Done
324	1	8	45	7	45	reference to ISDR, 2009 is missing. It was UNISDR, 2009. Please check throughout the report (Ranzi, Roberto, University of Brescia)	Noted and fixed.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
325	1	8	49	8	49	Interesting that the word "crisis" appears here, I believe for the first time. The reader may be justified in asking where "crisis" fits in the pantheon of disaster, risk, drm, dm/em, etc. See comment No. 2 above, which may be pertinent here, too, albeit from understanding the implied distinction between crisis and risk or disaster. (Jeggle, Terry, University of Pittsburgh)	We think the meaning is clear from the dictionary definitions of each term.
326	1	8	49	0	53	Taking the unit of the "household" as the space to understand climate change risks is limited, again, the work of Sen has demonstrated that one must go beyond that household level and look at individual capabilities. The key reasons come in our comment to page 9, line 5-29, the household hides what may happen to women or girls. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Included
327	1	8	50	8	53	While I do not dispute this statement - from the social standpoint from which it proceeds, I do wonder if it "will inevitably be understood and responded to" as stated. Again this will depend upon who (or what) is doing the imagining. I can contemplate a perspective of a national state planning body, that may well be justified in considering the circumstances from a larger national scale or macro perspective. No doubt while family or household considerations may enter into the calculations, the analysis and frames of reference could just as easily be prone to be much wider than household levels, e.g. optimal export trade considerations, or calculations regarding water use for energy generation vs. crop production. I believe this reasoning in the text may be biased. I now see that this very point is made on page 9, lines 41-44, so this causes me to question the useful inclusion of the "inevitability statement" even more. (Jeggle, Terry, University of Pittsburgh)	Noted and changed accordingly.
328	1	8	51	8	53	To suggest that climate change (presumably here referring only to adaptation) will be understood and responded to at the household scale is surely only part of the story or otherwise we will end up with a lot of independent, uneconomic, inefficient and potentially self-defeating responses. While orchestrating climate change adaptation cannot be done at the national scale the importance of the local scale cannot be underestimated. As mentioned later there will be "multi-scale" responses. (Stone, John M R, Carleton University)	Point taken and resolved
329	1	8	51	8	53	The sentence "Climate change ..., and cultural ones" is not consistent the topic of section 1.1.3.4.1. "the ones" is not clearly defined. In addition, this sentence has been used in line 1-3, page 3. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Noted
330	1	9	1	9	29	It is unclear what the relevance of Box 1.1 is. (Trewin, Blair, Australian Bureau of Meteorology)	we reworded the introduction to make the reason for including it quite clear.
331	1	9	1	9	31	eliminate the box -- it has no value whatsoever in this assessment. (Wuebbles, Donald, University of Illinois)	Noted and in disagreement, see comment 330.
332	1	9	1	9	31	This is an interesting box to illustrate that climate change is much better than wars and minor to socio-economic change. One section may better be created to illustrate such notion where war and economic development make big differences such as remarkably experienced in Japan. (Takeuchi, Kuniyoshi, ICHARM)	Noted
333	1	9	1	9	31	The story in Box 1-1 is not closely linked to the extreme and risk. It therefore can be removed from the report (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Noted and in disagreement, see comment 330.
334	1	9	1	9	31	The story told in the box is nice, but I would suggest to delete it. (Koppe, Christina, Deutscher Wetterdienst)	Noted and in disagreement, see comment 330.
335	1	9	1	9	31	Box 1 under my opinion is not really necessary. It could be deleted. The report is already very wide... (Bosello, Francesco, Fondazione Eni Enrico Mattei, Milan University \)	Noted and in disagreement, see comment 330.
336	1	9	1	9	31	Suggest deleting box. The text, while containing interesting elements, reads rather like the introduction to an unfinished essay. The key message and relevance for the chapter is not apparent. Should it be 'change is better than resisting'? 'Climate change is not a problem, Joseph can handle it'? Certainly there is a point in there that adaptation to climate change has to occur as stakeholders have to adapt to many other changing conditions that influence their livelihoods. Stakeholders have intrinsic knowledge that can be utilized. Yet there are also limits to adaptation, and knowledge systems erode and evolve. The messaging here seems incomplete and it is based on a single experience. It would be more interesting to include several representative examples, describing opportunities and challenges dealing with change. In its current form I suggest removing. (Sperling, Frank, WWF)	Noted and in disagreement, see comment 330.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
337	1	9	3	9	0	Box 1.1: What is the box supposed to tell the reader? I find this a bit trivial and then societal change is prevalent everywhere. (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	Noted and in disagreement, see comment 330.
338	1	9	3	9	29	Box 1-1: What is the purpose of including this story box? What is the crucial message coming from this box? We strongly disagree with the inclusion of such anecdotal boxes that do not produce clear key messages. (Stocker, Thomas, IPCC WGI TSU)	Noted and in disagreement, see comment 330.
339	1	9	3	9	29	This text box is interesting, but too long and not clearly tied to extreme events. Is Joseph typical of the region? (IPCC WGII TSU)	See comment 330.
340	1	9	3	9	31	Box 1-1: Readers may not be aware of the location of South Pare Mountains hence adding the country name will make it more reader friendly. (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	Noted
341	1	9	3	0	29	I was glad to see the use of Boxes here, but this initial one does not explain much except to give credit to source - I really need a bit better explanation of how this is an example of ?what? (Prather, Michael, UC Irvine)	See comment 330.
342	1	9	5	9	21	Do Joseph's story concern climate variability or climate change? This should be stressed for clarity. (Ben Mohamed, Abdelkrim, University of Niamey)	See comment 330.
343	1	9	5	0	0	Not sure if the story in Box 101 is in the adequate context (León, Alejandro, Universidad de Chile)	Noted and in disagreement, see comment 330.
344	1	9	5	0	29	We strongly suggest to add here another example and story that shows the actual lived experience of a woman. Perhaps best if it illustrates the very specific vulnerabilities of women caring for others. Gender issues have been of utmost importance for any development debate or poverty reduction strategy, they should be central in any debates about vulnerability and specially in the context of disaster risks. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Noted, and attempted, but no source available.
345	1	9	5	0	29	A lot of these boxes are completely disconnected from the text. I like this box but am left wondering at the end what does climate change mean to him? (Hellmuth, Molly, International Research Institute for Climate and Society)	See comment 330.
346	1	9	6	0	7	Add "above sea level" after '1,500' and "at an elevation of " before '600m' to improve clarity. However it is not clear what the role of box1-1 serves to demonstrate? Is it the concept of resilience through accumulated experiences or adaptive capacity? (Dube, Pauline, University of Botswana)	Noted AND YES
347	1	9	36	9	36	"this study" -- this special report (Stocker, Thomas, IPCC WGI TSU)	Removed
348	1	9	36	9	36	This is an assessment, not a study. Delete "according to one view." (IPCC WGII TSU)	Removed
349	1	9	40	0	0	Would be good to briefly give examples of such "influences", such as market or price collapse, cross border migration, rapid urban growth, etc. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted and now included.
350	1	9	41	9	44	Re. 'multi-scale' and 'integrated' approaches: The statement that DR management etc "will only be successful where understanding AND intervention" should be re-phrased. Yes it is essential to always have the "understanding" of multiscale and interaction, (to know the interrelationships between factors and actors and scales) but this is not the case also for the "interventions". If all interventions have to be constructed multiscale and fully integrated, then few if any interventions would ever come to life. Most interventions have to be focussed and directed towards specific factors and actors and at a specific scale, but their design should 'understand' their context. . (McCall, Michael, Universidad Nacional Autonoma de Mexico)	Noted
351	1	9	47	10	2	You have set a difficult goal. I have worked on similar projects with little success. You have compiled a lot of information but I do not see an integration, yet. Perhaps that is in the next phase? I am surprised that the work of ecologists who have tried this (The Resilience Alliance) was not more helpful. I have used their concepts very successfully in policy papers because their terms and concepts apply to many systems: human, technical, ecological, etc. (Longstaff, Pat, Syracuse University)	Noted
352	1	9	49	9	51	more than "assessment" alone, the issue here seems more fundamentally first the "understanding and then more inclusive assessment"... (Jeggle, Terry, University of Pittsburgh)	Changed accordingly
353	1	9	49	10	2	For an integrated, interdisciplinary and holistic understanding, as is expressed in the report, (chapter 1.1.4.) the introductory chapter should not only map the two approaches, but also more actively compare them. Chapter 1 seems slightly fragmented and is not actively comparing adaptation to risk management to a large enough extent. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Noted

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
354	1	9	49	0	54	Is it possible to offer a holistic approach when the specific focus is a probabilistic risk framework: an ethical perspective will lead to different conclusions where dangers and risks and probability is viewed differently. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	yes, and handled in section 1.3.2.2
355	1	9	50	0	0	Has a typo (León, Alejandro, Universidad de Chile)	Noted
356	1	9	53	9	53	I do not agree with the idea that such an approach would "probably" recognize the participatory methods. I think if the approach is consistent it "must" recognize the participatory AND transdisciplinary methods. The sentence could better look like that: "Such an approach must recognize the participatory and transdisciplinary methods and basic decentralization principles inherent in both climate change and adaptation and disaster risk management." (Rist, Stephan, Centre for Development and Environment (CDE))	Changed accordingly
357	1	9	54	9	54	Probably recognize? This is not a strong recommendation. (IPCC WGII TSU)	Noted
358	1	9	0	0	0	Box 1.1: Ensure that location of South Pare Mountains is given (e.g. Tanzania) (Chambers, Lynda, Australian Bureau of Meteorology)	Done
359	1	10	1	10	2	"... while transcending the tendency to divide the world up for analytical and intervention ends, which has very limited utility". I am not sure about this clause, and some may argue there is lot of utility in reducing complexity and finding commonalities. (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	Noted
360	1	10	1	10	2	The expression "... to divide the world up for analytical and intervention ends ..." is not immediately comprehensible (especially the UN and dm - specialist use of the word "intervention"). (Jeggle, Terry, University of Pittsburgh)	Noted
361	1	10	1	10	2	I agree, but there should also be recognition that the policy drivers for adaptation and disaster risk reduction are different, and the two problems should not be "forced" into the same box and thereby not well-address either policy requirement. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	dichotomy eliminated
362	1	10	1	10	2	Reference and explain more clearly. (IPCC WGII TSU)	see 361
363	1	10	1	0	2	Elaborate of these divisions (Dube, Pauline, University of Botswana)	see 361
364	1	10	8	0	0	The title of the subsection is: "Extreme events, Extreme Impacts, and Disasters", but in the subsection "disasters" are not explicitly mentioned. Thus I suggest to remove "disasters" from the title or to include an explicit mention to the word disasters. (Bosello, Francesco, Fondazione Eni Enrico Mattei, Milan University \)	Mentioned in 1.2.4
365	1	10	10	10	47	Please delete the first paragraph and significantly reduce the following paragraphs. This is far too detailed. (IPCC WGII TSU)	Length reduced.
366	1	10	10	14	30	Section needs to be made more concise to interpret the message (Bhadwal, Suruchi, The Energy and Resources Institute)	Length reduced.
367	1	10	12	10	12	Is it truly "physical versus social processes", or physical and social processes ? See statement below, page 10, lines 23-24. (Jeggle, Terry, University of Pittsburgh)	Text changed.
368	1	10	18	10	18	Chapter X? (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Reference corrected
369	1	10	18	10	18	Which are these "Chapters X"? (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Reference corrected
370	1	10	18	0	0	What is Chapter X? (Ammann, Walter J., Global Risk Forum GRF Davos)	Reference corrected
371	1	10	21	10	21	I would rather use the word " quality of life" instead of word "welfare". (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	Text changed.
372	1	10	21	0	21	there is a rather large body of literature explaining why climate change, including disaster risk is best consider a problem of "human security", which a broader term than human welfare. The latter has been traditionally been understood on economic terms, human security and in the Sen & Ogata commission and the work of GECHS, led by Karen O'Brien says otherwise. See also Gasper 2010, in O'Brien, St. Clair and Kristoffersen, Climate change, ethics, and human security , Cambridge UP. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Text changed here, but change made in other parts of the chapter.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
373	1	10	32	10	40	A point that should be made at some point in the report - perhaps here, perhaps somewhere else - is that many extremes studied in the climate literature, to allow a reasonable sample size for analysis, are not particularly extreme (e.g. the 10th and 90th percentile); for example, a single day above the 90th percentile would be unlikely to have much impact. (Trewin, Blair, Australian Bureau of Meteorology)	Noted
374	1	10	51	10	51	Instead of using "vulnerability" that could be understood from the disaster community point of view or from the climate change community point of view in a different sense, it could be replaced by "sensitivity". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Text changed.
375	1	10	54	10	54	What does "these" stand for? Please clarify. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	clarified.
376	1	10	0	0	0	General comments: The definition of extreme events has been various depending on the field of applications. It would be very confusing if it is not properly defined, especially for people with different background. The categorisation of the definition can be helpful to clarify the concept. For example, drought has been defined in [1, 2] 1) meteorological drought - purely address the degree of precipitation deficit in comparison with the long term trend, 2) agriculture drought - focus on the soil water deficits due to reduced precipitation, which may impact on agriculture, 3) Hydrological drought - focus on the impact on water supply as a result of reduced stream flow, 4) socioeconomic drought - address the impacts on water supply and demand that would have severe implication on both economic and social aspects. Authors have made comments on the definition of 'extreme events' that may cover both physical attributes and social and physical impacts and contextualised the 'impact' (line 43-46), but clearer and better categorised definition may considerably assist the assessment of extreme events. Meanwhile, it would be good to be clarified among the concepts of 'extreme', 'rareness', and 'scarcity'. For example, is a 'rare' event an 'extreme' event? [1] American Meteorological Society, 1997: Meteorological drought—Policy statement. Bull. Amer. Meteor. Soc., 78, 847–849. [2] Heim, R.R., 2002: A review of twentieth-century drought indices used in the United States. Bull. Am. Meteorol. Soc., 83, 1149–1165. (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	See chapter 3 and glossary.
377	1	11	3	0	0	Section 1.2.2: the section needs to closely coordinate with Chapter 3; there will for sure be more trusted dictionaries than the referenced online one. (Stocker, Thomas, IPCC WGI TSU)	Done on both fronts.
378	1	11	3	0	8	This is embarrassing! Why are you using the "freedictionary" definition? It is also surprisingly poor, for example, weather extremes obvious include precipitation (hail, etc) - Please keep to scientifically reputable sources unless the purpose is to show how shoddy the internet is. (Prather, Michael, UC Irvine)	Definition improved and clarified.
379	1	11	5	11	8	or, quoting Mark Twain: "Climate is what we expect, and weather is what we get". (Silva Dias, Maria Assuncao, University of Sao Paulo)	noted
380	1	11	5	11	8	The definition of climate is rather ambiguous in the present statement, mainly because of the 'prevail'. The website thefreedictionary.com is rather a public information source than scientific reference. I suggest to use more references, at least. (Cheval, Sorin, National Meteorological Administration)	Definition improved and clarified.
381	1	11	5	11	8	I am not sure whether thefreedictionary.com is the best source for this definition. Why do not use the Oxford English Dictionary for example? (Gaillard, JC, The University of Auckland)	Definition improved and clarified.
382	1	11	5	11	8	weather and climate definition needs scientific ref e.g. Book (Incecik, Salahattin/Selahattin, Istanbul Technical University)	Definition improved and clarified.
383	1	11	5	11	8	It would be more appropriate to use a WMO definition for weather and climate such as it could be found in http://www.wmo.int/pages/themes/climate/understanding_climate.php (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Definition improved and clarified.
384	1	11	5	11	8	I believe the IPCC should use a more sophisticated definition of weather and climate than the one cited here. (Casty, Carlo, PartnerRe)	Definition improved and clarified.
385	1	11	5	11	8	For the definition of weather and climate, please make a reference to a standard glossary of one of the meteorological societies (e.g., AMS) (Ulbrich, Uwe, Freie Universitaet Berlin)	Definition improved and clarified.
386	1	11	5	11	8	Use an authoritative definition, i.e. WMO, and then if necessary elaborate. (Basher, Reid, Secretariat of the High Level Taskforce on the Global Framework for Climate Services)	Definition improved and clarified.

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387	1	11	6	11	8	The definition of "climate" is really much broader now than the average meteorological conditions. Here's how the American Meteorological Society defines it in their glossary: "climate—The slowly varying aspects of the atmosphere–hydrosphere–land surface system. It is typically characterized in terms of suitable averages of the climate system over periods of a month or more, taking into consideration the variability in time of these averaged quantities. Climatic classifications include the spatial variation of these time-averaged variables. Beginning with the view of local climate as little more than the annual course of long-term averages of surface temperature and precipitation, the concept of climate has broadened and evolved in recent decades in response to the increased understanding of the underlying processes that determine climate and its variability. See also climate system, climatology, climate change, climatic classification." (http://amsglossary.allenpress.com/glossary/search?id=climate1) (Staudt, Amanda, National Wildlife Federation)	Definition improved and clarified.
388	1	11	7	11	8	Meteorological condition might also include "sun rays, clear sky, percentage of relative humidity". (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	Definition improved and clarified.
389	1	11	8	0	0	I believe there are better sources to define "weather" than the freedictionary.com website (Goessling-Reisemann, Stefan, University of Bremen)	Definition improved and clarified.
390	1	11	10	12	25	Probably could be good to mention that statistical definition of extreme events demands to refer to what could be taking as the "modern human time scale"... It is good to remaind that along the aproximatly 4,500 years of the planet, probably hundred of thousands of "extreme events" have occurred,,, in fact even in the last million years (1/4,500 of planet age.. that is nothing if we talk about geological time scale) a lot of really extreme climatic events have impacted the plannet... (Linayo, Alejandro, Research Center on Disaster Risk Reduction (CIGIR))	Text removed.
391	1	11	13	11	13	There is no such thing as frequent extremes. Please delete the term "infrequent extremes" (Ulbrich, Uwe, Freie Universitaet Berlin)	Text removed.
392	1	11	14	0	14	A new term "resistance" is introduced but not explained as is the case with other terms. It is also used in page 13 line 25. (Dube, Pauline, University of Botswana)	defined p.13, line 1.
393	1	11	15	11	15	What is "a month of temperature"? (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	clarified.
394	1	11	15	11	16	It is correctly stated that the scarcity is specific to the location, but this important attribute of extreme events is furtheron not considered in definitions. "Extreme" cannot be defined globally by percentiles, but only regionally and locally. (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Noted.
395	1	11	20	11	26	Weak paragraph. Please include a table listing all atmospheric hazards. (Casty, Carlo, PartnerRe)	See chapter 3 and 4; too extensive for inclusion in this section.
396	1	11	24	11	26	What do you mean "in the tail of distribution of such characteristics"? (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Clarified
397	1	11	28	11	29	it is physically imprecise to talk about "interactions of atmospheric temperatures, motions, and precipitations", proposed text: The full range of climate extremes reflects the interactions of dynamical and thermodynamical processes over a very wide range of space and timescales, resulting in highly variavle atmospheric temperatures, motions, and precipitation.... (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Text clarified.
398	1	11	28	11	33	Needs referencing, in particular statement on time-scales. (Sperling, Frank, WWF)	language clarified and made specific
399	1	11	29	11	29	The "eight orders of magnitude" should be detailed or better explained, not just mentioned. (Cheval, Sorin, National Meteorological Administration)	see 398
400	1	11	30	11	33	Should include some examples of extreme events in the biosphere, most notably wildfire. Major coral bleaching events could be another example. (Staudt, Amanda, National Wildlife Federation)	Can not include all possible events, but the impacts of events in the biosphere are implicit in 1.2.3.3. See also comment #23.
401	1	11	35	11	46	Perhaps at the end, or within this paragraph, it would be a possible to also introduce the 3-way grouping of weather & climate extremes used by Chapter 3. ie, Weather and climate elements, weather and climate phenomena, and impacts on the natural physical environment. (Stocker, Thomas, IPCC WGI TSU)	clarified in chapter 3

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
402	1	11	35	11	46	A word "impact" in this paragraph (and rest of the text in consequence) has a negative meaning. An extreme weather can exert also a positive impact - extremely warm summer and autumn can be beneficial for some crops (wine for instance). Negative impacts are more important from point of view of adaptation and environmental management so are the subject of this paper, but at least a possibility of positive impacts should be mentioned at this moment. (Wibig, Joanna, University of Lodz)	Noted in 1.2.3.1
403	1	11	35	11	46	like flooding' appears three times (lines 39, 42 and 44) (Casty, Carlo, PartnerRe)	Text changed.
404	1	11	38	0	0	" Many ecologists studying extreme weather events and their impacts on multiple ecosystem properties and services such as productivity, diversity, nutrient cycling, water cycling, gas regulation, herbivory and phenology use the term extreme event exclusively with reference to extreme value statistics in historical weather data and thus independent of severity of impact (Jentsch et al. .2007) Jentsch A, Kreyling J, Beierkuhnlein C (2007): A new generation of climate change experiments: events not trends. Frontiers in Ecology and the Environment 6(6): 315-324." (Jentsch, Anke, University of Koblenz-Landau)	Noted and reference included.
405	1	11	48	11	50	The sentence focuses the reader on particular complex extreme events involving interactions of different parts of the climate system, but misses a remark on the context and importance. Something like "In addition to the extreme weather and climate events directly leading to hazards, there are a number of mechanisms in the climate system which indirectly produce damages." would be helpful. (Ulbrich, Uwe, Freie Universitaet Berlin)	Noted and included.
406	1	11	48	11	50	"climate" or "climate system" normally comprises all spheres, therefore climate cannot interact with the hydrosphere etc.; it is the atmosphere that interacting with the hydrosphere ... constitutes "climate" (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Noted and included.
407	1	11	48	11	50	Repeats earlier discussion. (IPCC WGII TSU)	Noted
408	1	11	48	12	19	I'm not sure how comprehensive this list is intended to be of physical extremes considered in the report - but I think it would be good to include a mention of heat waves and other high temperature extremes. (Goodess, Clare, Climatic Research Unit)	Heat waves may be added in a subsequent draft, but also see comment #395; these are just examples which we anticipate will be prominent in other chapters. The list needn't be exhaustive.
409	1	11	48	12	20	This section seems to concentrate too much on hydologically-related extreme events. (Trewin, Blair, Australian Bureau of Meteorology)	see 408
410	1	11	48	12	25	This is mixed list of physical extremes that may impact on natural and/or human systems. It may be interesting to further elaborate with regards to disasters for the environment and disaster for humans, and inter-linkages. The current list is more focused on the environment, while the rest of the chapter is rather more focused on societv. (Snerling, Frank, WWF)	See comment #403.
411	1	11	49	11	49	"with the hydrosphere, cryosphere, and other aspects of the geosphere and biosphere," could be replaced with "geosphere and biosphere"; only one biosphere-related example is provided, though. (Cheval, Sorin, National Meteorological Administration)	Text changed.
412	1	11	51	12	20	Heat waves should be included in the bulleted list. Certainly, we have seen many striking examples of heat wave disasters in recent years (Russia 2010, Europe 2003, Chicago 1995). In fact, the public health dimension of extreme events has been largely ignored so far in the chapter, but deserves more explicit attention. (Staudt, Amanda, National Wildlife Federation)	See comment #395
413	1	11	51	12	20	Wildfires should be included in the bulleted list. Unusually hot and dry conditions have been clearly linked to increase wildfire frequency and severity in the western US. Wildfires are a significant disaster in their own right, not just a secondary impact as the paragraph on lines 22-25 implies. (Staudt, Amanda, National Wildlife Federation)	See comment #395 and #23.
414	1	11	51	12	20	I don't understand the choice of examples. In how far should sea ice or coral reefs be of particular importance in the report context? How about biological effects, like the enhancement of pest? (Ulbrich, Uwe, Freie Universitaet Berlin)	See comment #395

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
415	1	11	51	12	20	The proposed list is quite exclusive: if other extremes or impacts are not considered further on in the report(why?), they should be mentioned at least: 1) High and low land surface temperatures: impacts on agriculture and viticulture, forests, citrus, crop ..; also: impacts on energy consumption, water temperatures, water distribution systems, technical infrastructure 2) Large cyclonic storms ...: impacts on forests (Schmoeckel, J., Kottmeier, Ch.: Storm damage in the Black Forest caused by the winter storm "Lothar". Part I: Airborne damage assessment NHESS, 8, 795-803) and residential structures (Heneka, P., Hofherr, T., Ruck, B., Kottmeier, Ch.: Winter storm risk of residential structures - model development and application to the German State of Baden-Württemberg. NHESS, 6, 721-733, 2007) (Kottmeier, Christoph, Karlsruhe Institute of Technology)	See comment #395
416	1	11	51	12	20	What about other extreme weather events, such as heatwaves? (IPCC WGII TSU)	See comment #395
417	1	11	52	12	22	Why are small-scale winds (eg tornadoes, downbursts) specifically excluded, whereas most of these are covered in Chapter 3? (van Oldenborgh, Geert Jan, KNMI)	See comment #395
418	1	11	52	12	22	Is large-scale fog considered an extreme event? It can have large economic impacts (van Oldenborgh, Geert Jan, KNMI)	See comment #395
419	1	12	1	0	20	The word drought could also be used e.g. for bullet 3 given that there is mention of e.g. cyclonic storms, floods etc. (Dube, Pauline, University of Botswana)	See comment #395
420	1	12	1	0	20	can a box be drawn with impacts determined by human insecurity and poverty levels as well as absence of social protection. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	this would be appropriate for a specific chapter
421	1	12	4	12	12	The cited literature on "rivers" is quite old: a lot of new work is available for, e.g., the 2002 Elbe flood (e.g. Schlüter, I., Schädler, G.:Simulation of Extreme Precipitation Events and Evaluation of their Variability for the Flood Risk Management, J. Hydrometeor., accepted, 2010; Kron, A., Nestmann, F., Schlüter, I., Schädler, G., Kottmeier, Ch., Helms, M., Mikovec, R., Ihringer, J., Musall, M., Oberle, P., Saucke, U., Danhelka, J., Krejci, J.: Operational flood management under large-scale extreme conditions, using the example of the middle Elbe NHESS, accepted, 2010.) (Kottmeier, Christoph, Karlsruhe Institute of Technology)	will be added in next draft
422	1	12	4	12	6	Volatile to be replaced by mobile; volatile might suggest transferred to the atmosphere (SERGI, SABATER, University Girona)	Text changed
423	1	12	6	10	0	Extreme flows can also arise from heavy persistent precipitation over saturated soil. (A cross reference to chapter 3.5 should be add) (BOVO, STEFANO, ARPA Piemonte)	Noted and done.
424	1	12	6	12	7	To be consistent with topics covered in chapters 3 and 4, outbursts from moraine dammed lakes should be included in this list. (Stocker, Thomas, IPCC WGI TSU)	Noted and done.
425	1	12	6	12	7	Suggest adding "or a combination of some or all of these" to the end of this sentence. (Trewin, Blair, Australian Bureau of Meteorology)	will be added in next draft
426	1	12	10	12	0	Suggestion to add: Also in the very human-modified areas and high population density territories where the rivers are partially embanked the floods impacts can often be more severe in some river crucial points. (BOVO, STEFANO, ARPA Piemonte)	Noted and done.
427	1	12	13	12	14	In some cases, water shortages will be driven by increases in evaporation combined with shortfalls in precipitation, either locally or in upstream regions. (Staudt, Amanda, National Wildlife Federation)	Noted and further discussed in Chapter 4.
428	1	12	15	12	18	Rising temperatures will also mean less seasonal snow storage in glaciated catchments, leading to an earlier peak river flow occurring in late winter/spring. (Stocker, Thomas, IPCC WGI TSU)	Included, see comment #395
429	1	12	19	12	19	Replace "are triggered" by "can be triggered" - landslides can happen for other reasons too. (Trewin, Blair, Australian Bureau of Meteorology)	Noted
430	1	12	19	12	20	Suggest - 'At the interface of the hydrosphere, cryosphere, and geosphere....'. Also the sentence needs to be rewritten because it currently suggests glacial retreat also raises ground water levels. The effect of glacial retreat is to remove lateral support from the adjacent slopes. Also note that the Dhakal & Sidle citation is missing from the reference list. (Stocker, Thomas, IPCC WGI TSU)	Noted and done.
431	1	12	19	12	20	The mountain permafrost issue should be mentioned (Hauck et al., 2010) (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Noted and done.
432	1	12	22	0	25	Once again, this SR focuses on extreme events rather than on small shifts that may pass a threshold or tipping point, such as first-year ice only in the Arctic, or lack of frost degree-days allowing pest invasions. (Prather, Michael, UC Irvine)	Addressed in 1.2.3.1, other chapters, and the glossary.
433	1	12	24	12	24	Should be Seneviratne et al. 2006. (Stocker, Thomas, IPCC WGI TSU)	Noted

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
434	1	12	25	0	0	"From White & Jentsch 2001: Interactions and feedback both suggest that the probability and characteristics of current extreme events can only be understood with reference to the history of the event regime. Interactions among different kinds of disturbances add to the complexity of approaching an understanding of extreme event impacts. The interaction of disturbances that have varying temporal rhythms and spatial extensions and are subject to varying positive or negative feedback is a major challenge. Generally, three kinds of system response to disturbances have been identified: threshold responses, scale-independent responses and continuous responses. However, data on many biotic and abiotic parameters and records of historical events and processes are often missing or are difficult to acquire. Reference: White PS, Jentsch A (2001): The search for generality in studies of disturbance and ecosystem dynamics. Progress in Botany 63: 399-449." (Jentsch, Anke, University of Koblenz-Landau)	this point is made at many places in the chapter.
435	1	12	30	12	35	Ecological impacts are better recognized here than previously. Chapter should be revised to similarly identify ecological impacts elsewhere. Note that this paragraph refers to "human, biological or physical systems", "physical, human, and ecological systems", and "human, societal, physical and ecological context". It's unclear whether a distinction is intended between these different ways of articulating basically the same thing. (Staudt, Amanda, National Wildlife Federation)	Text clarified.
436	1	12	30	12	35	Can be condensed. (IPCC WGII TSU)	Noted
437	1	12	30	13	45	Much of the discussion of extreme impacts relates directly to a discussion of what constitutes a disaster in terms of type, scope and magnitude, I do not see the benefit of a separate section here rather than discussing it directly as integral part of the subsequent disaster sections. What constitutes a disaster at the community, district, national level etc.? As noted in the earlier comment, the relative attention given to the extreme impacts in comparison to brief and incomplete discussion is not clear to me in its rationale. In its current form it complicates the accessibility and clarity of the text. (Sperling, Frank, WWF)	We disagree with the comment. We think the logic of the report and this chapter demands a separation, as does the Plenary Approved Outline.
438	1	12	30	0	0	Chapter 1.2.3: The connection to socio-technical systems should not be overlooked. The very construction of and dependency on critical infrastructure produces vulnerabilities. For example, ice loads or windfalls caused by extreme weather conditions on electric transmission network can produce extreme social impacts. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Noted and included on p 19
439	1	12	33	12	33	Instead of using "vulnerability" that could be understood from the disaster community point of view or from the climate change community point of view in a different sense, it could be replaced by "sensitivity". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Text changed.
440	1	12	34	0	0	Box 1-2 doesn't really consider the intensity of the event. (Goodess, Clare, Climatic Research Unit)	Box removed
441	1	12	35	0	0	I'm not sure that Box 1-1 really demonstrates how the context determines the impact. (Goodess, Clare, Climatic Research Unit)	Box removed
442	1	12	37	13	10	This is a very interesting case showing importance of mountain forests against disasters. It is desirable that more detail explanation of forest fire and the disaster cases before deforestation are presented. (Takeuchi, Kuniyoshi, ICHARM)	Box removed
443	1	12	39	13	10	Interesting, country specific example. Throughout the chapter I found it striking though that there are little specific examples of Africa, where droughts continue to lead to significant losses of life and vulnerabilities are compounded by environmental degradation, heavy dependency of livelihoods and economic activities on natural resources, particularly rainfed agriculture, and limited adaptive capacities. (Sperling, Frank, WWF)	Box removed
444	1	12	46	12	49	It would be useful to include one or two examples of event-total rainfalls if possible, as well as the hourly figure quoted. (Trewin, Blair, Australian Bureau of Meteorology)	Box removed
445	1	12	46	0	0	Not sure what is meant by "As the typhoon filled" (Staudt, Amanda, National Wildlife Federation)	Box removed
446	1	12	46	0	0	"filled"?? (Prather, Michael, UC Irvine)	Box removed
447	1	13	1	13	1	"quantifiable" should be quantifiable (Mokssit, Abdalah, Direction de la Météorologie Nationale (DMN))	Box removed
448	1	13	2	0	0	This raises the question as to who classifies events as a disaster. (Goodess, Clare, Climatic Research Unit)	Box removed

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449	1	13	4	13	5	This implies that classifying/defining an event as a disaster can be quite subjective and may depend on political or economic (self) interests. (Goodess, Clare, Climatic Research Unit)	Box removed
450	1	13	5	0	0	In what sense was this a compound disaster? (Goodess, Clare, Climatic Research Unit)	Box removed
451	1	13	12	13	14	The paragraph "In the climate change...(Thomalla et al., 2009)" is about the extreme events, and it should be moved to the previous subsection. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Section rewritten and no longer applicable.
452	1	13	16	13	19	Again, here is an opportunity to include impacts to ecosystems. The box immediately preceding this list makes that exact case! Also, think that illness or disease should be added to the first bullet, to more fully account for the public health dimension of disasters, in particular heat waves. (Staudt, Amanda, National Wildlife Federation)	Done.
453	1	13	16	13	22	This list of metrics sounds a bit technocratic. What about the impact on intangible means of livelihoods, such as social networks, claims, access, etc. (Gaillard, JC, The University of Auckland)	We believe these are now subsumed in list.
454	1	13	16	13	22	Does a metric exist for the coping ability in terms of help needed from outside the affected society? (Koppe, Christina, Deutscher Wetterdienst)	Done
455	1	13	16	0	0	Confusing discussion of extreme impacts and extreme events (physical vs social) and disasters. It will be useful to clarify what is climate change affecting? (Simonovic, Slobodan, University of Western Ontario)	Sections restructured, we believe it is now substantially clearer.
456	1	13	16	0	22	Impacts on ecosystems is left out although Box1-2 links destruction of ecosystem to loss of livelihoods - Othres have pointed out that losses such as these which go un-noticed are a hidden source of poverty. (Dube, Pauline, University of Botswana)	Now included.
457	1	13	22	0	0	The 'Impact on standing crops/food security' may also be included in the matrices to quantify extreme impacts as this is an important matter related to basic human needs (Iqbal, Muhammad Mohsin, Global Change Impact Studies Centre (GCISC))	Done.
458	1	13	22	0	23	what about changes in disease vectors (never mentioned once here!), ecosystem collapse? (Prather, Michael, UC Irvine)	Done.
459	1	13	24	13	24	Delete the sentence "Both human...weather". (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Section rewritten and no longer applicable.
460	1	13	24	0	31	can it be mentioned human systems are also composed by social protection mechanism such as social welfare, income protection, ILO global social floor campaigns, and also by power relations that are very relevant in determining risk for some groups or individuals. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	discussed in 1.3.4
461	1	13	25	13	25	The use of the terms resistance and resilience in that context is unclear. (Gaillard, JC, The University of Auckland)	Sections restructured, we believe it is now substantially clearer.
462	1	13	26	13	29	This is a bit confusing. Maybe it is better to refer just to 1 example (Koppe, Christina, Deutscher Wetterdienst)	Sections restructured, we believe it is now substantially clearer.
463	1	13	26	0	0	Please consider rephrasing sentence, in particular 'Trees, like indigenous people styles, have evolved (or grow) to withstand...', as one is referring to natural and the other to societal processes, which should be discussed distinctly... (Sperling, Frank, WWF)	Sections restructured, we believe it is now substantially clearer.
464	1	13	28	0	0	I don't understand what is being said here about trees in the context of cost-benefit analysis. (Goodess, Clare, Climatic Research Unit)	Sections restructured, we believe it is now substantially clearer.
465	1	13	33	13	40	Local and indigenous knowledge and practice is not only about building. This paragraph should also mention knowledge of past events, of safety actions, support systems, etc. (Gaillard, JC, The University of Auckland)	Now extended beyond building standards.
466	1	13	36	0	38	This sentence is not understandable, try a rewrite - but I am not sure what you mean. (Prather, Michael, UC Irvine)	Sections restructured, we believe it is now substantially clearer.
467	1	13	37	0	0	Define what is meant here by climate conditioning. (Goodess, Clare, Climatic Research Unit)	Phrase removed.
468	1	13	37	0	0	Please replace term 'climate conditioning' with 'climatic conditions', 'climate characteristics' (Sperling, Frank, WWF)	Phrase removed.
469	1	13	39	0	39	What does "indigenous vernacular" mean? (Dube, Pauline, University of Botswana)	Phrase removed.
470	1	13	42	13	42	... or adopt more stringent conservation or retention measures such as the use of water harvesting techniques, percolation tanks, check dams, etc. (Jeggle, Terry, University of Pittsburgh)	Included.
471	1	13	42	13	45	Ditto. Adaptation is not only about physical adaptation. (Gaillard, JC, The University of Auckland)	Noted.

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472	1	13	42	13	45	Passive cooling and air conditioning are not the only strategies against heat. Building styles (e.g. thick white walls) and urban design (e.g. very narrow streets) that avoid that the heat enters the houses are or have been widespread in many hot regions like for example the Mediterranean and North Africa. (Koppe, Christina, <i>Deutscher Wetterdienst</i>)	Now included.
473	1	13	45	13	45	Add "or in California in July 2006 (Gershunov et al. 2009)". The reference is: Gershunov, A., D. R. Cayan, and S. F. Iacobellis, 2009: The great 2006 heat wave over California and Nevada: Signal of an increasing trend. <i>J. Climate</i> , 22, 6181-6203. DOI: 10.1175/2009JCLI2465.1 (Cavazos, Tereza, CICESE)	Done
474	1	13	45	13	45	Since the heat wave in Paris in 2003 was a short-period event, it would be good to at least mention the month of occurrence. (Cavazos, Tereza, CICESE)	Done.
475	1	13	48	14	30	The distinction between disasters and extreme events is rather ambiguous, more stress should be given. The extreme impacts are very little tackled as well. (Cheval, Sorin, National Meteorological Administration)	Now clarified throughout Chapter 1, especially 1.2.4.
476	1	14	2	14	4	Just cite key issues; no need to quote. (IPCC WGII TSU)	Noted
477	1	14	6	14	7	This statement, repeated literally from chapter 1, p2, lines 51-52, is missing a reference. (Ulbrich, Uwe, Freie Universitaet Berlin)	Reference now included.
478	1	14	9	14	10	There needs to be some explanation for why this is important to include. (IPCC WGII TSU)	Noted and Done.
479	1	14	12	14	14	Event reflect a physical phenomena; a chain of events reflect various physical phenomena so it is not clear why event does not capture the full range of characteristics of impacts an disasters. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	We believe this is now clarified.
480	1	14	12	14	21	Event' can also be misleadingly discrete - a particular challenge for extremes defined by their longevity and difficult to distinguish from background variability, namely drought (Rickards, Lauren Amy, University of Melbourne)	We believe this is now clarified.
481	1	14	12	14	21	The paragraph needs rephrasing. The mentioned 'teleconnection' is not a well established physical process. And the European flood example with precipitation 'far apart' is weak (e.g. compared to the scale of Monsoon). (Casty, Carlo, PartnerRe)	We disagree, and now have included another example.
482	1	14	12	14	21	Given recent events it may be better to use this paragraph to discuss the July-August 2010 block responsible for the Russian heatwave, and arguably the Pakistan floods, although there may not be citeable publications available as yet. (Trewin, Blair, Australian Bureau of Meteorology)	Done.
483	1	14	13	14	14	An example for a series of storms are the European windstorm events of winter/spring 1990, and the storms named "Lothar" and "Martin" during Christmas 2001, see Ulbrich, U., A.H. Fink, M. Klawa and J.G. Pinto , 2001: Three extreme storms over Europe in December 1999. <i>Weather</i> , 56, 70-80. (Ulbrich, Uwe, Freie Universitaet Berlin)	Included.
484	1	14	14	14	14	Series of events can not just produce disasters (such as a series of rainfall events, in which each individual event may not produce damage at all), they can also exacerbate events due to a binding of relief ressources. (Ulbrich, Uwe, Freie Universitaet Berlin)	The unique impacts of serial events are now noted throughout chapter.
485	1	14	14	14	17	The text says that stable patterns can last UP TO 6 weeks. Please check if this statement can be regarded as sufficiently explored, which I doubt. Clearly, the statement depends on what you regard as "stable". (Ulbrich, Uwe, Freie Universitaet Berlin)	Phrase removed.
486	1	14	14	14	19	An article clearly describing a major flood event on river Rhine which was produced by multiple rainfall events and augmented by the coincidence of flood surges from different tributaries. Fink, A.H., U. Ulbrich and H. Engel, 1996, <i>Weather</i> , 51(2), 34-39 (Ulbrich, Uwe, Freie Universitaet Berlin)	Reference included.
487	1	14	18	14	19	The context of this sentence is not clear to the reader. (Ulbrich, Uwe, Freie Universitaet Berlin)	We believe this is now clarified.
488	1	14	19	14	19	I think this is the first time ENSO appear in the report - should therefore spell out abbreviation in full. (Stocker, Thomas, IPCC WGI TSU)	Done.
489	1	14	23	14	25	The causal link with El Nino is debatable here - the 1997-98 El Nino had ended by mid-year and Mitch was in late October. (Trewin, Blair, Australian Bureau of Meteorology)	Removed.
490	1	14	25	14	25	It is not "Nino", it is "Niño" with a "ñ" (ALT+164). (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Noted.

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491	1	14	25	14	26	When did the heavy rains in Honduras associated to El Nino occur? Was it in winter and spring? It is important to recognize the persistence of the impact of an event. The text could read: "...that led heavy rains across Honduras during winter and spring caused saturated soils ahead of the arrival of the most powerful hurricane of the 1998 Atlantic season, the Hurricane Mitch (Oct 1998), which in turn... (Cavazos, Tereza, CICESE)	Removed.
492	1	14	30	14	30	Add after (Emanuel, 2001) something like: Heavy rains product of monsoons and hurricanes have also great benefits to society and ecosystems; in many occasions they help to fill dams, break up dry spells, and temporal agriculture and arid and vegetation depend on the tails of these strong events. (e.g., Cavazos et al. 2008)." The reference is: Cavazos, T., C. Turrent, and D. P. Lettenmaier, 2008: Extreme precipitation trends associated with tropical cyclones in the core of the North American monsoon, GRL, VOL. 35, L21703, doi:10.1029/2008GL035832 (Cavazos, Tereza, CICESE)	Now included.
493	1	14	30	0	0	"Based on White and Jentsch 2001: The sum of all events affecting a system is its event regime. Although the study of individual events plays a critical role, understanding the full significance of extreme events in both an evolutionary and ecological sense will require investigations of disturbance regimes. Elements of disturbance regimes are the kind of disturbance, spatial characteristics, temporal characteristics, magnitude, specificity and synergisms. Spatial characteristics include the area, shape and spatial distribution. Temporal characteristics include the duration, frequency, return interval and rotation period. Magnitude includes the intensity or physical force of the disturbance itself and the severity of impacts to the ecosystem. Specificity describes the correlation of the disturbance with the species, size class or successional state. Synergisms include the interactions among different kinds of disturbance. Reference: White PS, Jentsch A (2001): The search for generality in studies of disturbance and ecosystem dynamics. Progress in Botany 63: 399-449." (Jentsch, Anke, University of Koblenz-Landau)	Reference included.
494	1	14	33	14	37	This section addresses the problem of more or less coincident resp. coupled disasters or impacts; this is frequently called "multi-risk" or "multi-hazard", this nomenclature might be introduced; the important effect of certain atmospheric phenomena bearing several hazard types should be highlighted (e.g. cyclones with strong winds and precipitation; thunderstorms with hail, lightning, flash flood generating precip and gusts) (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Noted
495	1	14	33	14	47	Sub-section 1.2.4.1 suggests a sub-section 1.2.4.2 follows, which is not the case. I suggest the integration of the sub-section 1.2.4.1 in the section 1.2.4 (Cheval, Sorin, National Meteorological Administration)	Section rewritten and no longer applicable.
496	1	14	33	0	0	Section 1.2.4.1 seems like it would better fit in Section 1.2.2. Seems awkwardly placed here, especially because it doesn't actually provide much information about how climate extremes are changing. (Staudt, Amanda, National Wildlife Federation)	Section rewritten and no longer applicable.
497	1	14	35	14	39	Repeats earlier discussion. (IPCC WGII TSU)	Section rewritten and no longer applicable.
498	1	14	35	0	0	Use 'severity' instead of 'intensity', delete bracket ('and non-extreme') (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
499	1	14	35	0	0	I still miss where a small change in climate may turn into a social disaster. (Prather, Michael, UC Irvine)	We believe this is clarified throughout chapter 1.
500	1	14	36	0	0	1.2.5 does not exist (Goessling-Reisemann, Stefan, University of Bremen)	Had been changed in the text before the FOD was submitted and table of contents in the FOD did not reflect the update.
501	1	14	39	0	0	"gradual" - YES, this is an unsung issue here. (Prather, Michael, UC Irvine)	Noted.
502	1	14	42	14	42	Section 1.2.5 does not exist. (Stocker, Thomas, IPCC WGI TSU)	Had been changed in the text before the FOD was submitted and table of contents in the FOD did not reflect the update.
503	1	14	45	0	47	This is a "no duh" sentence - why use it? (Prather, Michael, UC Irvine)	Section rewritten and no longer applicable.
504	1	14	46	14	46	A reference to sections 3.5.3-3.5.5 would be appropriate here. (Stocker, Thomas, IPCC WGI TSU)	Section rewritten and no longer applicable.
505	1	14	46	14	47	Delete the last sentence, it is not related to climate. (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
506	1	14	51	15	7	There is need to use more recent literature especially to proof the statement on continued dryness in page 15 lines 5-6. The authors may also consult the Sahel box in WGII AR4 Ecosystems chapter 4. (Dube, Pauline, University of Botswana)	Box removed

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
507	1	15	1	15	28	This comment relates to the first two paragraphs in chapter 1 page 15 dealing with the Sahel. These two paragraphs are very disappointing and actually rather far from the research frontier. Rainfall has in fact increased again all over the Sahel (but especially in the western part) since the drought in the 1980s. Today, there is therefore little discussion of 'desertification' among the specialists on Sahelian environmental change, but rather on the ongoing greening (see e.g. special issue on the Greening of the Sahel of Journal of Arid Environments in November 2005). This greening involves more grass cover, more trees and more biomass in general. Also ideas of 'overgrazing', 'overcultivation', 'poor land management' etc have been undermined during the last 20 years by a large research literature. My own article in Journal of Peace Research vol 45 (6) (Benjaminsen 2008) reviews some of this literature. See also the publications by the AMMA project in Journal of Hydrology 375 (1-2) in 2009 (especially articles by Pierre Hiernaux). Climate modellers are now uncertain whether global warming will lead to more or less rain in the Sahel. This is also pointed out by the 4th report of the IPCC. To claim that millions of people are threatened by migration in response to desertification is simply poor science. It is important to understand that dryland environments are highly variable and if desertification is happening, it is a very slow process caused by decreasing rainfall. But as already mentioned, whether rainfall is decreasing or not in the Sahel, we do not know. (Benjaminsen, Tor A., Norwegian University of Life Sciences)	Box removed
508	1	15	1	15	32	The whole Sub-Saharan section is written somehow climate-biased and over-pessimistic: 1) there are findings, that rainfall variability is by far NOT the most important impact factor for the welfare of population 2) crossborder migration of people with cattle happens smoothly in several countries (e.g. from Mali to Burkina and back) 3) Lack of food a few years ago in Niger was mostly caused by an economic-political decision - crop prices became floating and caused enormous price speculations and shortage (sorry I do not have citations available) (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Box removed
509	1	15	1	0	14	this paper may be of interest from Ale Giannini- The region captured the world's attention in the 1970s and 1980s, when drought and famine killed more than a million people. In 2003, Dr. Giannini and her colleagues published a paper in Science suggesting the devastating drought was caused by warming of the Indian Ocean, which significantly reduced rainfall in the region, and not by land degradation as had been previously thought. A. Giannini, R. Saravanan, P. Chang, Science 302, 1027 (2003). (Hellmuth, Molly, International Research Institute for Climate and Society)	Box removed
510	1	15	1	0	28	this example is ok but by itself and without another complementary on may lead to place the burden of responsibility only on local populations and local conditions, ignoring for example how very often risk to disasters is determined by globalised agriculture, foreign companies land use.... that at the same time are also responsible for unequal access to energy or food insecurity (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Box removed
511	1	15	5	15	6	The prolonged drought started in 1970 is still in progress should be presented with more recent reference. 1996 reference is already 15 years ago. (Takeuchi, Kuniyoshi, ICHARM)	Box removed
512	1	15	5	15	7	"The prolonged period of reduced rainfall..... Is STILL in progress" - It is not possible to make this statement with some recent supporting references. Based on 2009 citations, section 3.5.1.1 of Chapter 3 says that the western Sahel has remained dry, while the eastern Sahel has 'returned' to wetter conditions, which partially contradicts the statement given here. (Stocker, Thomas, IPCC WGI TSU)	Box removed
513	1	15	5	15	7	The EU-IP AMMA (African Monsoon Multidisciplinary Analysis) addressed almost all issues related to precipitation, climate change, water availability for food production, and health issues in West Africa; there are sign of precip recovery (some wet years) in the 1990s after the long dry period (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Box removed
514	1	15	5	0	0	What does the reduced rainfall of 20-30% mean in an already very arid area. Please elaborate. (Casty, Carlo, PartnerRe)	Box removed
515	1	15	6	15	7	One cannot argue that the drought continues in 2010 based on references of 1996 and earlier. In the CRU TS 3 dataset the drought is no longer in progress in the whole Sahel. (van Oldenborgh, Geert Jan, KNMI)	Box removed
516	1	15	6	15	8	Please delete last part of the sentence '...and reflects regional shift...' as this mentioned connection to ENSO can partly explain the decrease but not the entire decrease since the 70's. (Casty, Carlo, PartnerRe)	Box removed

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
517	1	15	6	0	0	This seems to be old news - I though that the Sahel drought had reversed recently (as noted in the AR5) - please check to avoid an embarrassing glitch. Also, why bring up ENSO here, makes no sense. (Prather, Michael, UC Irvine)	Box removed
518	1	15	7	15	7	The main factor influencing Sahel drought is the AMO (eg Zhang and Delworth, GRL, 2006, doi:10.1029/2006GL026267), ENSO only has an influence on the eastern Sahel (van Oldenborgh and Burgers, GRL, 2005, doi:10.1029/2005GL023110) (van Oldenborgh, Geert Jan, KNMI)	Box removed
519	1	15	7	15	7	delete " ." (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Box removed
520	1	15	7	0	0	two full stops (Saad-Hussein, Amal, National Research Centre)	Box removed
521	1	15	8	0	0	two commas (Saad-Hussein, Amal, National Research Centre)	Box removed
522	1	15	8	0	0	annual growth rate (add 'rate') (Casty, Carlo, PartnerRe)	Box removed
523	1	15	9	15	9	delete " ." (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Box removed
524	1	15	16	15	23	As this is a Box, aren't any concrete example village cases available? (Takeuchi, Kuniyoshi, ICHARM)	Box removed
525	1	15	16	0	23	There is literature indicating that other fcators exercebated the effect of drought including poor food distribution between the north and South in Sudan, conflict over the horn of Africa and constrain in the movement of nomadic population etc these factors culd also be reflected in the box to bring sources of vulnerability in addition to exposure. (Dube, Pauline, University of Botswana)	Box removed
526	1	15	16	0	28	This is in the "Sahel Drought" box, but seems to be discussing other areas of Africa ? Please be sure to focus on a single area and not slip around to different places. (Prather, Michael, UC Irvine)	Box removed
527	1	15	18	15	18	The drought of 2001-2003: where was his drought? (van Oldenborgh, Geert Jan, KNMI)	Box removed
528	1	15	21	15	21	Should read "The population threatened by migration PARTIALLY in response to desertification". (Gaillard, JC, The University of Auckland)	Box removed
529	1	15	21	15	23	What is the source of these numbers on migration? The UN-ECA Report? (Goodess, Clare, Climatic Research Unit)	Box removed
530	1	15	25	15	28	This paragraph doesn't really seem to follow on from the previous one. I'm not sure what point is being made here. (Goodess, Clare, Climatic Research Unit)	Box removed
531	1	15	25	15	28	How does this paragraph illustrate the Complex Ways in which Extreme Events, Long-Term Trends, and High Vulnerability 52 Interact to Produce Extreme Impacts? (van Oldenborgh, Geert Jan, KNMI)	Box removed
532	1	15	35	15	36	Whether the drm community "developed" them may be debated, but what is important here is that they have progressively sought to employ or engage them. This is significant because some of the measures exlictly not developed by the drm community but found useful were developed by, or an existing strategy of adjacent or tangential professional interests or communities of practice. One such example is "cat" bonds which were derived from within the financial, (economic) risk management, or insurance industries. Another example is the widespread use of GIS applications withing the drm community, even though the technology and many of the professionals involved were not originally considered members of the drm community. I cite this issue becuause it underlines the importance for drm and cca practioners and institutions alike to identify, value and engage with such tangential interests in furtherance of their own objectives. Indeed this reasoning is fundamental to the entire purpose of the SREX in seeking to find commonly valued "bridges" to dimnish their own individual "gaps". (Jeggle, Terry, University of Pittsburgh)	This paragraph has been replaced. However this important point is now addressed in Section 1.3.5
533	1	15	40	15	47	Don't really need this. (IPCC WGII TSU)	Removed.
534	1	15	47	15	47	I would remove the opposition between "developed" and "developing" countries. See later comment. (Gaillard, JC, The University of Auckland)	This paragraph has been deleted
535	1	15	50	16	26	The "Probabilistic Risk Analysis Framework" is described here in a rather simplistic way, this may be sufficient as an introduction, but it should be mentioned at least, that only the tip of the iceberg is made visible. The challenge is not only in implementation. (Kottmeier, Christoph, Karlsruhe Institute of Technology)	New text aims to address this point.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
536	1	15	50	0	0	Probabilistic approach as a single approach to address uncertainties. In my opinion this document should point out some other scientific concepts available for addressing uncertainty (specially subjective types of uncertainty). I am very strong advocate for the use of fuzzy set approach as an efficient method for incorporating subjective uncertainty and addressing social issues, perception, and risk communication in management of disasters. There is a very reach literature on the applications of fuzzy set theory (for example Chongfu, H. (1996), "Fuzzy risk assessment of urban natural hazards," Fuzzy Sets and Systems, 83:271–282; Karimi, I. and E. Hullermeier (2007), "Risk assessment system of natural hazards: A new approach based on fuzzy probability," Fuzzy Sets and Systems, 158:987–999). There is an interesting way of using the fuzzy set theory to define risk measures (El-Baroudy, I., and S.P. Simonovic, (2004) "Fuzzy Criteria for the Evaluation of Water Resources Systems Performance " Water Resources Research, 40(10):W10503, pp.10). Also my text (in print) is devoting Chapter 4.5 to comparing probabilistic and fuzzy set approaches for management of disasters (Simonovic, S.P., Systems Approach to Management of Disasters: Methods and Applications, John Wiley & Sons Inc., New York, pp.348, ISBN: 978-0-470-52809-9, 2011 - in print, available Nov 1, 2010). (Simonovic, Slobodan, University of Western Ontario)	Addressed In Section 1.3.2.1
537	1	16	1	8	0	The definition of risk and Eq. 1 should be made consistent with the above comment. (Ayyub, Bilal, University of Maryland)	Done.
538	1	16	1	16	26	This subsection should deal more effectively with the decision process that follows the analysis of risk. It is not sufficient to roll this into Eqn 1, which can only deals with some existing state. Shouldn't the equation be the sum of the product of the probability of an event and the consequences of that event? The decision process is complex - it involves some estimated incremental increase or decrease of risk from a management intervention, the likely costs of the intervention, the associated side effects of it, and the implications of the uncertainty in the probabilities, which are very high in the case with projections of climate change for local scales. These factors are all critical in the case of acting on an early warning. The decision process also must consider time frames, in that some interventions require planning decades ahead irrespective of the uncertainties while others can be made at very short notice once the uncertainties are better known. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	We believe all of these points are now included in the discussion in this and other sections.
539	1	16	1	0	26	Probabilistic risk analysis would be better served here if more attention to vulnerability were to be incorporated. (Ammann, Walter J., Global Risk Forum GRF Davos)	Noted and done.
540	1	16	1	0	27	We think that at this point there should have been a more thorough discussion of he role of personal agency in coping and resilience. Perhaps linked to the term capabilities which is agency based. Often it is peoples capacity to be agents what determines their response to risks. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Some discussion on p. 22, lines 34-37
541	1	16	3	16	3	Please add ecosystems. (IPCC WGII TSU)	We believe this is included in the discussion of consequences.
542	1	16	10	16	14	The definition of total risk described by Eqn(1) should be carefully checked. In accordance with 'AS/NZS ISO 31000:2009 Risk Management - Principles and Guidelines', risk is geberally defined as 'effect of uncertainty on objectives', and 'often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence'. In this regard, Total Risk = Sum [Prob(event(i))*Prob(Consequence event(i))*Cost(Consequence)], where Prob(Consequence event(i)) is the probability of the occurrence of 'Consequence' given 'event(i)', Cost(Consequence) is the cost of 'Consequence' that can be positive or negative (or benefit). It should be especially emphasised that the equation is valid only when all 'events' are independent of each other. On the basis of the equation, the options for risk management are generally linked to the reduction of the occurrence probability of the 'Consequence' at a given 'event', as well as reduction of the cost from the 'Consequence'. Risk sharing and transfer (for example, insurance) is related to the last term in the equation. Enhancement of adpative capacity is related to the 2nd term in the equation. (Wang, Xiaoming, Commonwealth Scientifc and Industrial Research Organisation (CSIRO))	Definition revised.
543	1	16	10	16	26	This definition of risk would be useful up front, in section 1.1.3.1.The equation needs to be explained furhter and emphasis placed on Consequences - which are subjective and complex, as I mention in point 2 above. Communities and others can try to reduce the magnitude of consequences in far more ways than just risk transfer. This discussion is about reducing sensitivity to risk - which is why sensitivity needs to be discussed in more detail (point 1 above). (Rickards, Lauren Amy, University of Melbourne)	Section now has more discussion of consequences, setting stage for later discussion of risk reduction via reducing sensitivity/vulnerability.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
544	1	16	13	1	13	the eq.1 is good for clear definiton of risk (morisugi, Hisayoshi, Nihon University)	Noted.
545	1	16	13	16	13	Usually, risk is defined as $\sum \text{events prob}(\text{event}) \cdot \text{cost}(\text{event})$. Pleaes clarify why a different definition is used here. (van Oldenborgh, Geert Jan, KNMI)	Definition revised.
546	1	16	13	16	13	I think that this equation is not very informative and could be expressed in another way, depending on what is defined as "Total Risk". As the equation states the total risk is a sum of probabilities of the combined probability of the event and its consequences measured over all events and all consequences. Therefore the total risk is an arbitrary sum of probabilities which is dependent on the number of events and the number of consequences. For example, using this equation the probability of occurence (probability of the event) of hurricane Katrina is, perhaps a 1 in 50 year event, the probability of the consequences is arguably a much lower number, say 1 in 100 years, therefore the total risk from this event is 0.0002, now do the same for all other historical storms affecting the Louisiana region and you have a sum of probabilities.. What should one do with such a sum of probabilities? What does this number mean? Risk, as defined by ISO 31000 (see references in chapter 2) could be useful as a reference here. In the definition of risk contained therein, risk is not a probability but a measured quantity, such, a monetary loss of 1000000 USD, or the death of 10 or more people. I believe risk should be defined in this way, not as a probability as defined in equation 1. In order to express total risk in this framework, one would have to modify equation 1. In order to this this we must first define risk: Risk = Probability x Consequences, e.g say there is a 33% chance (Probability, P) that a windstorm will cause a loss of 10000\$, then the Risk would be 3333\$. Next we must define consequences: Consequences = Hazard x Exposure x Vulnerability, e.g. the Hazard is 100knot windspeed, the exposure is 1 house worth 100000\$, the vulnerability is set at 0.001% per knot, therefore the consequences of this windstorm are $H \times E \times V = 100 \times 100000 \times 0.001 = 10000\$$, this is not a risk but a consequence, to obtain the risk we must multiply consequence, C, with probability, P: $R = P \times C = 0.333 \times 10000 = 3333\$$, The probability of such a consequence, here given at 33% is derived from historical observations of how often a consequence of this magnitude has happened. Therefore I propose that equation one be written as: Risk, $R = P \times C = P \times H \times E \times V$ and total risk is simply the sum of all risks. Keeping the same format as equation 1, equation 1 should be written: total risk=(sum over all all consequences)prob(consequence). In other words for equation 1 to make sense, one has to remove the prob(event), since by definition of C already includes the event (or in my notation, the Hazard, H). I would be happy to communicate directly with the chapter authors to clarify and or in order to give more information regarding this concept. Please consider referencing ISO 31000 and Sarawitz et al (2003): Sarewitz, D., R. A. Pielke, Jr., and M. Keykhah (2003), Vulnerability and risk: Some thoughts from a political and policy perspective. Risk Analysis 23 (4) 805-810. (Della-Marta, Paul, Partner Reinsurance Company)	Definition revised.
547	1	16	13	16	13	If you want multiplying two probabilities should guarantee the independence of the same itself (mutually excuses). Such rule of the theories of probabilities does not fail to keep this expression itself. (Lamprea Quiroga, Pedro Simon, Ideam - Advisor (Colombian institute of hydrology , meteorology and environmental studies))	Definition revised.
548	1	16	13	0	0	It will be useful to elaborate on the risk equation (1) and point out what components are affected by climate change and how. In my opinion this will be the most significant starting point of much more value than a very large number of different definitions. (Simonovic, Slobodan, University of Western Ontario)	New text aims to address this point.
549	1	16	13	0	0	Equation (1) does not make sense (becomes 1 if hazards and consequences are independent) and is not compatible with definition of 1.1.3.1 nor the definition of IPCC AR4 WGII Report Chap 19. (Takeuchi, Kuniyoshi, ICHARM)	Definition revised.
550	1	16	13	0	0	Please state the dimension of total risk [Prob]. On the next page you introduce 'return period', this should be defined and introduced here as the inverse of this probability. I recommend also introducing the equation for loss a function of total risk x exposure x vulnerability as these key words are mentioned and introduced earlier in the chapter. (Castv, Carlo, PartnerRe)	Definition revised.
551	1	16	13	0	0	(A single) risk, to my knowledge, and even according to the cited Bedford, is defined as (Probability of Occurrence X Damage/Consequence) and not as you have defined here. The total risk should thus include a measure of the damage/consequence as well. Maybe multiplication with "damage" has simply been forgotten? (Goessling-Reisemann, Stefan, University of Bremen)	Definition revised.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
552	1	16	15	16	26	Especially the lead sentence of the paragraph gives the impression that disaster risk management literature is focused on the community level, rather than looking at risk management across different scales. Please consider rephrasing. (Sperling, Frank, WWF)	Section rewritten and no longer applicable.
553	1	16	18	0	19	while increasing it for others'... this snapshot approach to insurance misrepresents the objective of insurance to reduce costs for everyone over time (Hellmuth, Molly, International Research Institute for Climate and Society)	Section rewritten and no longer applicable.
554	1	16	21	16	23	As currently worded, this sentence could be read as implying that spatial variations in greenhouse gas emissions affect changes in the occurrence of extreme events. Also 'probabilities' implies a probabilistic approach to climate projections which is not currently common. So I think some rewording is needed, and maybe a reference to Chapter 3 of this assessment report. (Goodess, Clare, Climatic Research Unit)	Section rewritten and no longer applicable.
555	1	16	21	16	23	I think it's fair to say that the confidence in the relationship between extreme weather and greenhouse warming has increased since the 2007 IPCC report. See Chapter 3 of this report, in particular ES statements about temperature, precipitation, extratropical storm tracks, drought. It would be appropriate to cite more recent sources, e.g., the CCSP SAP 3.3, papers by Solomon et al and Seager et al examining the connection between climate change and drought. (Staudt, Amanda, National Wildlife Federation)	Section rewritten and no longer applicable, attribution statements are left to chapter 3.
556	1	16	23	16	23	Should include a reference to chapter 3 here also. (Stocker, Thomas, IPCC WGI TSU)	Done
557	1	16	23	0	0	No, the shift to more intense precipitation is part of the GHG warming attributed trend, it is not an extreme, hard-to-predict event. Please just refer to AR4 (Prather, Michael, UC Irvine)	Section rewritten and no longer applicable, attribution statements are left to chapter 3.
558	1	16	24	16	25	"In the broadest context, policies to address climate change can reduce risk both by limiting atmospheric concentrations of greenhouse gases (mitigation) and taking actions that limit the consequences of such events (adaptation)." It's actually too bad that the report couldn't incorporate the risk-reduction potential and cost of limiting emissions and compare that to adaptation efforts. Other analyses have shown that mitigation is much more cost effective than adaptation in general, and it would be an incredibly useful contribution to examine whether the same holds true for disasters specifically. (Staudt, Amanda, National Wildlife Federation)	This is not in the scope of this report, but is touched on briefly in 1.3.4.
559	1	16	25	16	25	so as to avoid confusion here, or elsewhere in the SREX, with this first introduction of the phrase "mitigation" it would be important to indicate that the word has quite different understandings and professional usage within the drm and the cca communities. (Jeggle, Terry, University of Pittsburgh)	Now defined in 1.1.
560	1	16	29	18	52	Other key barriers are political, economic, institutional. Different interest groups benefit or lose out from different actions taken to reduce risks. Conflicts can also arise over who bears the costs of reducing risk and which agencies are responsible for taking action. (Leichenko, Robin, Rutgers University)	This section focuses on barriers particularly relevant to extreme events. The more general discussion of the barriers mentioned here is in 1.4.3.2. Also in 1.3.2.2.3 and at the end of section 1.3.4.
561	1	16	29	0	0	Section 1.3.2: Good to see inclusion of these topics (Chambers, Lynda, Australian Bureau of Meteorology)	Noted
562	1	16	29	0	0	Section 1.3.2 should include a subsection on uncertainty analysis, modeling and quantification (see Ayyub and Klir 2006 above). At a minimum, it should include a discussion of aleatory and epistemic uncertainty types (Ayyub, Bilal, University of Maryland)	Section 1.3.2.1 discusses various approaches to uncertainty analysis. Section 1.3.4 discusses approaches to uncertainty management. It is not clear the discussion of aleatory and epistemic uncertainty adds to this discussion, in particular in the light of other reviewers who suggest the existing text is already too technical. One review of best practice approaches for communicating climate change uncertainty concluded "While this distinction [between aleatory and epistemic uncertainty] is common in much of the more theoretical literature, we believe that it is of limited utility in the context of climate and many other applied problems in assessment and decision making where most key uncertainties involve a combination of the two." (Morgan et. al. 2009).
563	1	16	29	0	0	The subsection needs to consider literature concerning costs and benefits, given that this is the crucial issue facing public decisionmakers. Would be good to have examples of how governments have approached and decided interventions. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Section 1.3.2.1 now has brief discussion of challenges in quantifying costs and benefits. A discussion of how governments use these frameworks may be best deferred to later chapters.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
564	1	16	31	16	36	Most of this can be deleted. (IPCC WGII TSU)	Done
565	1	16	31	0	0	Why should a mathematical procedure be understood as "elegant?" There is no argument in the surrounding lines that explain why this should be.... (León, Alejandro, Universidad de Chile)	Section rewritten and no longer applicable.
566	1	16	31	0	31	The phrase should read as follows: "applies to all events including geophysical ones and their...." (Dube, Pauline, University of Botswana)	Section rewritten and no longer applicable.
567	1	16	33	0	0	Use 'resources' instead of 'training'. Add 'exposure and vulnerability' in front of term 'data'. (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
568	1	16	35	16	36	There are actually three issues here: ... both events and consequences, their relative distributions spatially and demographically, as well as risk communications. (Jeggle, Terry, University of Pittsburgh)	Section rewritten and no longer applicable.
569	1	16	39	17	33	Section 1.3.2.1 This section only discusses the difficulties in estimating the Prob(event), and neglects the (probably even more difficult) task of estimating Prob(Consequence) (van Oldenborgh, Geert Jan, KNMI)	Challenges of estimating Prob(consequence) now discussed.
570	1	16	39	17	33	You may want to refer to modeling practices of the Insurance industry - see http://media.swissre.com/documents/Nat_Cat_reins_en.pdf (Spiegel, Andreas, Swiss Re)	Done and reference included.
571	1	16	39	17	33	The attempt to deal with sources of uncertainty in probabilistic risk estimates is welcome. However, I think that this section could have dealt more carefully with the difficulties of estimating extremes in a non-stationary environment. It begins with a discussion of frequency and lifetime exceedance probabilities, but these aren't of much relevance in a changing climate. If one is prepared to accept that non-stationarity is in the form of a trend then statistical progress can be made; the assumptions and implications of this aren't discussed. There should be a more careful treatment of sources of uncertainty, including uncertainty about distribution type, which may lead to having to deal with sets of probability measures and imprecise probabilities. A broader issue is that after this introduction to statistical issues in the opening chapter I was expecting more thorough treatment of quantified risk analysis (proclaimed on page 3 to be "a powerful and elegant framework") but that never came in subsequent chapters of the report. (Hall, Jim, Newcastle University)	These issues now discussed.
572	1	16	39	0	0	Although it is further developed in other parts of the document, the policy relevance of imprecise probabilities could be emphasized as policy decisions and decision makers will refrain from committing either economic or political capital under high uncertainty levels of data (Zapata-Martí, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Section 1.3.2.2 aims to address this point, though the next draft might mention the relevance of imprecise probabilities more directly.
573	1	16	42	0	42	Should read as "associated with extreme climate events" (Dube, Pauline, University of Botswana)	Section rewritten and no longer applicable.
574	1	16	45	0	0	probability and losses ('add and losses') (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
575	1	16	45	0	0	But is it the absolute or relative change here? (Prather, Michael, UC Irvine)	In practice, it can be difficult to estimate both types of changes. Depending on the decision under consideration, one may be more difficult or consequential than the other.
576	1	16	47	16	52	Consideration should be given to using the more accurate expression "average recurrence interval" (ARI). It has more words and is less well recognised, but it avoids the endless misunderstandings about the term "return period". The last sentence makes no sense to me. An ARI of 100 years for some event magnitude means an estimate of one event, on average, over any 100 year period. Unless there is some reason for a long term pattern or trend, each year must have a 1/100 th chance of an event of that magnitude. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	We use the phrase return period, and better explain the last sentence.
577	1	16	47	16	52	In order to clarify the concept of mean recurrence time it is proposed that a comment like the following be added: "Owing to the great asymmetry of the recurrence time distribution a 100-year event has a 50% chance of occurring before 69 years have passed (and even a 25% chance of occurring before 28 years). In any case it should be stressed that these relations between exceedance probabilities and waiting times are only valid for a stationay climate." (López-Díaz, José Antonio, Agencia Estatal de Meteorología (Spain))	See comment #576.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
578	1	16	47	17	7	The concept of return period or average recurrence interval (ARI) seems not explained properly. ARI is the most commonly used to describe the MEAN interval of recurrence of an event. The multiplicative inverse of ARI is the MEAN annual exceedance probability. However, there is a probability that the event may occur more than once within the ARI with a decreasing probability. The occurrence of the event can be described by stochastics in theory. Meanwhile, ARI is spatially specific, not only on the aspect of occurrence location of the event, but also on the aspect of space (size) that is in association with the occurrence of the event (the larger the space, the smaller the ARI). (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	See comment #576.
579	1	16	47	0	52	This nonsensical result needs to be fixed or dropped - 1%/100y and 63% in 100 y are the same? (Prather, Michael, UC Irvine)	See comment #576.
580	1	16	48	0	0	...of a 1 in 100-year' and '1 in 50-year'. Please use the correct term for return periods '1 in...' or '1:x' throughout the entire report. (Casty, Carlo, PartnerRe)	See comment #576.
581	1	16	51	16	51	Why is it 63%? Any reference? "addiive" should be additive. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	See comment #576.
582	1	16	52	0	0	additive (Casty, Carlo, PartnerRe)	Noted and done.
583	1	16	52	0	0	"additive" instead of addiive (Kottmeier, Christoph, Karlsruhe Institute of Technology)	Noted and done.
584	1	16	0	18	0	All three sections (1-3) are hardly taken into account the vast literature existing on the topic of people's risk perception of natural hazards/disasters. This literature gives a much more nuanced picture than presented here underlying the importance of people's risk appraisal, their previous experience as well as their trust in experts, authorities and the media. It is recommended to take this literature into account. A review of the literature was conducted in the EU funded FP 7 project CapHaz-Net. The report is made available on the website (www.caphaz-net.org). (Kuhlicke, Christian, Helmholtz Centre for Environmental Research - UFZ)	Reference will be included in next draft and a more extensive discussion of these issues is now in 1.3.2.2.3.
585	1	16	0	0	0	Section 1.3.2 Comment: A factor that is not mentioned here is that it is politically always more expedious to emphasize external factors (eg climate change) than internal factors (eg exposure) as the cause for a disaster. This absolves all local parties from blame and even opens the possibility for compensation from other countries. To some extent the same bias on the physical side can be seen in this section. (van Oldenborgh, Geert Jan KNMI)	See comment #560.
586	1	17	2	17	7	The paragraph makes some interesting points on the importance of considering scale. It may be useful to review in more depth how return period of extreme events is used in risk profiling exercises and decision-making processes at different scales, particular regional, national and subnational. At what scale is it most useful for planning processes? What are the implications of climatic change? (Sperling, Frank, WWF)	This point might be more usefully raised in subsequent chapters
587	1	17	2	0	0	Define 'return period'. (Casty, Carlo, PartnerRe)	See comment #576.
588	1	17	13	0	0	...centuries (citation needed). (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
589	1	17	14	0	0	Use 'severity' instead of 'intensity'. (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
590	1	17	17	17	20	This paragraph seems somewhat unnecessary and out of place here. Chapter 3 discusses the use of spatial pooling, for example. I suggest deletion. (Goodess, Clare, Climatic Research Unit)	Section rewritten and no longer applicable.
591	1	17	17	17	20	Paragraph appears to be a bit out-of-scope, could be deleted. (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
592	1	17	18	0	0	This sentence sound very weak (Prather, Michael, UC Irvine)	Section rewritten and no longer applicable.
593	1	17	22	17	25	This remark is spot on, and probably requires a separate paragraph. Whys is only the imprecision of hazard probabilities discussed? Imprecision in estimation of probable consequences (even excluding human behaviour) is at least as important, and there is literature abound that this may entail larger uncertainties than hazard probability undertainty. (Bouwer, Laurens, Institute for Environmental Studies)	See comment #569.
594	1	17	24	0	0	1.4.4.1 does not exist (Goessling-Reisemann, Stefan, University of Bremen)	Noted and fixed.
595	1	17	27	0	0	duplication in the word communities (Saad-Hussein, Amal, National Research Centre)	Section rewritten and no longer applicable.
596	1	17	27	0	0	delete 'communities' (2x) (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
597	1	17	30	17	30	DRM- Disaster Risk Management? (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Section rewritten and no longer applicable.
598	1	17	30	17	30	Since it is the first time DRM it is used in the text, please expand the acronym. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Section rewritten and no longer applicable.

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599	1	17	30	0	0	Introduce the abbreviation DRM in the very beginning of the chapter and be applied throughout the chapter accordingly. (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
600	1	17	30	0	0	? define DRM (Prather, Michael, UC Irvine)	Section rewritten and no longer applicable.
601.1	1	17	36	18	54	An analysis of 104 empirical studies of barriers to change showed the following barriers, that could refine the discussion of barriers: Issues of resourcing (76%), for instance, “not enough resources” (Post and Altman 1994), “lack of adequate resources such as time and staff” (Adams and McNicholas 2007), limited or no budgeting (e.g. Harris 2000 and Anumba et al. 2006), access to capital and lack of time (Rohdin and Thollander 2006). Issues of capabilities (75%), for instance, “low technology literacy” (Stewart, Mohamed and Marosszeky 2004), “ill-equipped in terms of training and expertise” (Whitaker 1987), “employees are not trained” (Tamimi and Sebastianelli 1998), “lack of understanding” (Waldron 2005), “lack of technical skills” (Rohdin and Thollander 2006), “lack of skill, knowledge and expertise” (Kirkland and Thompson 1999), etc. Issues of communication (64%), for instance, “communication barriers” (Heide, Grønhaug and Johannessen 2002), “communication overload and distortion” (Allen 2002), “lack of communication within the team” (Attaran and Nguyen 1999), “lack of communication among those sharing responsibility for different aspects” (Kunda and Brooks 2000), “poor communication practices that damaged employee commitment to projects” (Jacobs et al. 2006), “tension among departments arising from the incompatibility of actual or desired responses” (Aggarwal 2003), etc. Issues of organizational structure (62%), for instance, bureaucracy (e.g. Molinsky 1999; Borins 2000; Abdul-Hadi, Al-Sudairi and Alqahtani 2005), “salary structure” (Al-Qirim 2007), “complexity, centralization, and formalization”(e.g. Allen 2002), “rigid organizational boundaries” (Butler 2006), “departmental fortresses” (Cicmil 1999), and organizational structure (e.g. Scarbrough and Lannon 1988; McGaughey and Snyder 1994; Yauch and Steudel 2002). Abdul-Hadi, N., Al-Sudairi, A. und Alqahtani, S. (2005): Prioritizing barriers to successful business process re-engineering (BPR) efforts in Saudi Arabian construction industry, In: Construction Management & Economics, Vol. 23, Nr. 3, S. 305-315. Adams, C.A. und McNicholas, P. (2007): Making a difference: Sustainability reporting, accountability and organisational change, In: Accounting, Auditing and Accountability Journal, Vol. 20, Nr. 3, S. 382-402. Aggarwal, N. (2003): Organizational Barriers to Market Orientation, In: Journal of Management Research, Vol. 3, Nr. 2, S. 87-97. Allen, R.Y.W. (2002): Assessing the impediments to organizational change: A view of community policing, In: Journal of Criminal Justice, Vol. 30, Nr. 6, S. 511-517. Al-Qirim, N. (2007): The adoption and diffusion of E-commerce in developing countries: The case	See comment #560.

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601.2	1	17	36	18	54	<p>of an NGO in Jordan, In: Information Technology for Development, Vol. 13, Nr. 2, S. 107-131. Anumba, C.E.H., et al. (2006): Understanding structural and cultural impediments to ICT system integration: A GIS-based case study, In: Engineering Construction & Architectural Management, Vol. 13, Nr. 6, S. 616-633. Attaran, M. und Nguyen, T.T. (1999): Design and implementation of self-directed process teams, In: Management Decision, Vol. 37, Nr. 7, S. 553-561. Borins, S. (2000): What Border? Public Management Innovation in the United States and Canada, In: Journal of Policy Analysis and Management, Vol. 19, Nr. 1, S. 46-74. Butler, J.C. (2006): Ten Lessons Learned: Data Warehouse Development Project, California Department of Fish and Game, In: CrossTalk: The Journal of Defense Software Engineering, Vol. 19, Nr. 10, S. 16-20. Cicmil, S. (1999): Implementing organizational change projects: impediments and gaps, In: Strategic Change, Vol. 8, Nr. 2, S. 119-129. 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(1994): The obstacles to successful CIM, In: International Journal of Production Economics, Vol. 37, Nr. 2-3, S. 247-258. Molinsky, A.L. (1999): Sanding down the edges: Paradoxical impediments to organizational change, In: Journal of Applied Behavioral Science, Vol. 35, Nr. 1, S. 8-24. Opportunities, In: Journal of Organizational Change Management, Vol. 7, Nr. 4, S. 64-81. Rohdin, P. und Thollander, P. (2006): Barriers to and driving forces for energy efficiency in the non-energy intensive manufacturing industry in Sweden, In: Energy, Vol. 31, Nr. 12, S. 1836-1844. Scarbrough, H. und Lannon, R. (1988): The successful exploitation of new technology in banking, In: Journal of General Management, Vol. 13, Nr. 3, S. 38-52. Stewart, R.A., Mohamed, S. und Marosszeky, M. (2004): An empirical investigation into the link between information technology implementation barriers and coping strategies in the Australian construction industry, In: Construction Innovation, Vol. 4, Nr. 3, S. 155-171. Tamimi, N. und Sebastianelli, R. (1998): The barriers to total quality management, In: Quality Progress, Vol. 31, Nr. 6, S. 57-60. Waldron, M. (2005): Overcoming Barriers to Change in Management Accounting Systems, In: Journal of American Academy of Business, Cambridge, Vol. 6, Nr. 2, S. 244-249. Whitaker, M. (1987): Overcoming the barriers to successful implementation of information technology in the U.K. hotel industry, In: International Journal of Hospitality Management, Vol. 6, Nr. 4, S. 229-235. Yauch, C.A. und Steudel, H.J. (2002): Cellular manufacturing for small businesses: key cultural factors that impact the conversion process, In: Journal of Operations Management, Vol. 20, Nr. 5, S. 593-617. 2. A Harvard workshop on barriers to Green Chemistry added definition and metrics barriers (Confusion as to what defines something as being "green chemistry", difficulty with optimizing over multiple dimensions, lack of widely applicable metrics for measuring level of "green"). 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601.3	1	17	36	18	54	<p>investigation into the link between information technology implementation barriers and coping strategies in the Australian construction industry, In: Construction Innovation, Vol. 4, Nr. 3, S. 155-171. Tamimi, N. und Sebastianelli, R. (1998): The barriers to total quality management, In: Quality Progress, Vol. 31, Nr. 6, S. 57-60. Waldron, M. (2005): Overcoming Barriers to Change in Management Accounting Systems, In: Journal of American Academy of Business, Cambridge, Vol. 6, Nr. 2, S. 244-249. Whitaker, M. (1987): Overcoming the barriers to successful implementation of information technology in the U.K. hotel industry, In: International Journal of Hospitality Management, Vol. 6, Nr. 4, S. 229-235. Yauch, C.A. und Steudel, H.J. (2002): Cellular manufacturing for small businesses: key cultural factors that impact the conversion process, In: Journal of Operations Management, Vol. 20, Nr. 5, S. 593-617. 2. A Harvard workshop on barriers to Green Chemistry added definition and metrics barriers (Confusion as to what defines something as being "green chemistry", difficulty with optimizing over multiple dimensions, lack of widely applicable metrics for measuring level of "green"). So definition and metrics barriers could occur for renewable energies to, especially when measuring environmental performance and experience curve effects) Matus, K. J. M.; Anastas, P. T.; Clark, W. C.; Itameri-Kinter, K.: Overcoming the Challenges to the Implementation of Green Chemistry. CID Working Paper No. 155. Center for International Development at Harvard University, December 2007 1. An analysis of 104 empirical studies of innovation to change showed the following barriers, that could refine the discussion of barriers: Issues of resourcing (76%), for instance, "not enough resources" (Post and Altman 1994), "lack of adequate resources such as time and staff" (Adams and McNicholas 2007), limited or no budgeting (e.g. Harris 2000 and Anumba et al. 2006), access to capital and lack of time (Rohdin and Thollander 2006). Issues of capabilities (75%), for instance, "low technology literacy" (Stewart, Mohamed and Marosszeky 2004), "ill-equipped in terms of training and expertise" (Whitaker 1987), "employees are not trained" (Tamimi and Sebastianelli 1998), "lack of understanding" (Waldron 2005), "lack of technical skills" (Rohdin and Thollander 2006), "lack of skill, knowledge and expertise" (Kirkland and Thompson 1999), etc. Issues of communication (64%), for instance, "communication barriers" (Heide, Grønhaug and Johannessen 2002), "communication overload and distortion"</p>	

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601.4	1	17	36	18	54	<p>(Allen 2002), “lack of communication within the team” (Attaran and Nguyen 1999), “lack of communication among those sharing responsibility for different aspects” (Kunda and Brooks 2000), “poor communication practices that damaged employee commitment to projects” (Jacobs et al. 2006), “tension among departments arising from the incompatibility of actual or desired responses” (Aggarwal 2003), etc. Issues of organizational structure (62%), for instance, bureaucracy (e.g. Molinsky 1999; Borins 2000; Abdul-Hadi, Al-Sudairi and Alqahtani 2005), “salary structure” (Al-Qirim 2007), “complexity, centralization, and formalization”(e.g. Allen 2002), “rigid organizational boundaries” (Butler 2006), “departmental fortresses” (Cicmil 1999), and organizational structure (e.g. Scarbrough and Lannon 1988; McGaughey and Snyder 1994; Yauch and Steudel 2002). Abdul-Hadi, N., Al-Sudairi, A. und Alqahtani, S. (2005): Prioritizing barriers to successful business process re-engineering (BPR) efforts in Saudi Arabian construction industry, In: Construction Management \& Economics, Vol. 23, Nr. 3, S. 305-315. Adams, C.A. und McNicholas, P. (2007): Making a difference: Sustainability reporting, accountability and organisational change, In: Accounting, Auditing and Accountability Journal, Vol. 20, Nr. 3, S. 382-402. Aggarwal, N. (2003): Organizational Barriers to Market Orientation, In: Journal of Management Research, Vol. 3, Nr. 2, S. 87-97. Allen, R.Y.W. (2002): Assessing the impediments to organizational change: A view of community policing, In: Journal of Criminal Justice, Vol. 30, Nr. 6, S. 511-517. Al-Qirim, N. (2007): The adoption and diffusion of E-commerce in developing countries: The case of an NGO in Jordan, In: Information Technology for Development, Vol. 13, Nr. 2, S. 107-131. Anumba, C.E.H., et al. (2006): Understanding structural and cultural impediments to ICT system integration: A GIS-based case study, In: Engineering Construction & Architectural Management, Vol. 13, Nr. 6, S. 616-633. Attaran, M. und Nguyen, T.T. (1999): Design and implementation of self-directed process teams, In: Management Decision, Vol. 37, Nr. 7, S. 553-561. Borins, S. (2000): What Border? Public Management Innovation in the United States and Canada, In: Journal of Policy Analysis and Management, Vol. 19, Nr. 1, S. 46-74. Butler, J.C. (2006): Ten Lessons Learned: Data Warehouse Development Project, California Department of Fish and Game, In: CrossTalk: The Journal of Defense Software Engineering, Vol. 19, Nr. 10, S. 16-20. Cicmil, S. (1999): Implementing organizational change projects: impediments and gaps, In: Strategic Change, Vol. 8, Nr. 2, S. 119-129. Harris, L.C. (2000b): The organizational barriers to developing market orientation, In: European Journal of Marketing, Vol. 34, Nr. 5, S. 598-624. Heide, M., Grønhaug, K. und Johannessen, S. (2002): Exploring barriers to the successful</p>	

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601.5	1	17	36	18	54	implementation of a formulated strategy, In: Scandinavian Journal of Management, Vol. 18, Nr. 2, S. 217-231. Jacobs, G., et al. (2006): The fatal smirk: Insider accounts of organizational change processes in a police organization, In: Journal of Organizational Change Management, Vol. 19, Nr. 2, S. 173-191. Kirkland, L.-. und Thompson, D. (1999): Challenges in designing, implementing and operating an environmental management system, In: Business Strategy and the Environment, Vol. 8, Nr. 2, S. 128-143. Kunda, D. und Brooks, L. (2000): Assessing organisational obstacles to component-based development: a case study approach, In: Information & Software Technology, Vol. 42, Nr. 10, S. 715-726. McGaughey, R.E. und Snyder, C.A. (1994): The obstacles to successful CIM, In: International Journal of Production Economics, Vol. 37, Nr. 2-3, S. 247-258. Molinsky, A.L. (1999): Sanding down the edges: Paradoxical impediments to organizational change, In: Journal of Applied Behavioral Science, Vol. 35, Nr. 1, S. 8-24. Opportunities, In: Journal of Organizational Change Management, Vol. 7, Nr. 4, S. 64-81. Rohdin, P. und Thollander, P. (2006): Barriers to and driving forces for energy efficiency in the non-energy intensive manufacturing industry in Sweden, In: Energy, Vol. 31, Nr. 12, S. 1836-1844. Scarbrough, H. und Lannon, R. (1988): The successful exploitation of new technology in banking, In: Journal of General Management, Vol. 13, Nr. 3, S. 38-52. Stewart, R.A., Mohamed, S. und Marosszeky, M. (2004): An empirical investigation into the link between information technology implementation barriers and coping strategies in the Australian construction industry, In: Construction Innovation, Vol. 4, Nr. 3, S. 155-171. Tamimi, N. und Sebastianelli, R. (1998): The barriers to total quality management, In: Quality Progress, Vol. 31, Nr. 6, S. 57-60. Waldron, M. (2005): Overcoming Barriers to Change in Management Accounting Systems, In: Journal of American Academy of Business, Cambridge, Vol. 6, Nr. 2, S. 244-249. Whitaker, M. (1987): Overcoming the barriers to successful implementation of information technology in the U.K. hotel industry, In: International Journal of Hospitality Management, Vol. 6, Nr. 4, S. 229-235. Yauch, C.A. und Steudel, H.J. (2002): Cellular manufacturing for small businesses: key cultural factors that impact the conversion process, In: Journal of Operations Management, Vol. 20, Nr. 5, S. 593-617. 2. A Harvard workshop on barriers to Green Chemistry added definition and metrics barriers (Confusion as to what defines something as being "green chemistry", difficulty with optimizing over multiple dimensions, lack of widely applicable metrics for measuring level of "green"). So definition and metrics barriers could occur for renewable energies to, especially when measuring environmental performance and experience curve effects) Matus, K. J. M.; Anastas, P. T.; Clark, W. C.; Itameri-Kinter, K.: Overcoming the Challenges to the Implementation of Green Chemistry. CID Working Paper No. 155. Center for International Development at Harvard University, December 2007 (Guenther, Edeltraud, Technische Universität Dresden)	
602	1	17	36	0	0	sub-section 1.3.2.2. is an important, and well stated one. It addresses a subject often overlooked and reinforces the importance of more holistic considerations that extend beyond ones own perceptions or language. (Jeggle, Terry, University of Pittsburgh)	Noted.
603	1	17	38	17	44	what does 'probabilist risk analysis' mean? Regardless of the possible typo, risk analysis is always based on probability, and it is unusual to call 'probabilistic risk analysis'. (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	Noted.
604	1	17	38	18	3	This section addresses in part the need to acknowledge the sociological complexity of identifying and discussing risk and some parts could usefull be included earlier (see note 2 above). This is particularly important as different understandings of risk are about more than 'communication challenges' and overcoming 'barriers' to people 'properly assimilating' information about risks, which implies the problem is their lack of 'correct knowledge'. Rather, there is no 'proper' way to do it - it is about acknowledging there are a diversity of perspectives of risks, including low probability events, and that probabilistic risk analyses by experts are only one of these ways. This touches on the large governance issues involved in adaptation. (Rickards, Lauren Amy, University of Melbourne)	Point taken and incorporated throughout 1.3
605	1	17	38	18	3	DRM seems quite "one-dimensional" to handle complex risks as described here. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	We believe that this chapter, and the report as a whole shows otherwise.
606	1	17	38	0	42	Very interesting and well written. (Prather, Michael, UC Irvine)	Noted
607	1	17	41	0	0	low probability... and add 'high severity'. (Casty, Carlo, PartnerRe)	Done
608	1	17	42	0	0	This sentence still does not address the basic problem - otherwise it is a tautology: communication requires communication. (Prather, Michael, UC Irvine)	Revised and clarified.
609	1	17	44	17	44	You may wish to add educators to this list. (Jeggle, Terry, University of Pittsburgh)	Done

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
610	1	17	44	17	44	I would suggest to replace "the public" by "people" as these are not a homogenous group. The same recommendation applies elsewhere in the chapter and the report. (Gaillard, JC, The University of Auckland)	We have retained the word public.
611	1	17	49	0	0	vulnerability... and add 'exposures' (Casty, Carlo, PartnerRe)	Given the challenge of definitions across multiple communities, we have retained only the word vulnerability here
612	1	17	50	0	0	very important piece here! (Prather, Michael, UC Irvine)	Noted.
613	1	18	1	18	3	This is an important statement. However if it is just left like that it does not make clear whether and how one can tackle with this important aspect. In order to make explicit that sustainability research has more to offer than just stating the problem I suggest to add in line 3 the following sentence: "In order to practically and productively deal with the interfaces of knowledge of the scientific and non-scientific (stakeholders) communities sustainability science has made considerable progress in understanding and acting upon these interfaces by promoting interactive co-production of knowledge between scientific and other actors, based on transdisciplinarity (Jasanov 2004, Pohl et al. 2010) and social learning (Pelling et al. 2008, Pahl-Wostl, 2009). Pohl C, Rist S, Zimmermann A, Fry P, Gurung GS, Schneider F, Ifejika Speranza C, Kiteme B, Boillat S, Serrano E, Hirsch Hadorn G, Wiesmann U. 2010. Researchers' roles in knowledge co-production: experience from sustainability research in Kenya, Switzerland, Bolivia and Nepal. Science and Public Policy 37 (4) 267-281. Jasanoff S. 2004. States of knowledge the co-production of science and social order. London, Routledge. Pahl-Wostl C. 2009. A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. Global Environmental Change 19 (3) 354. Pelling M, High C, Dearing J, Smith D. 2008. Shadow spaces for social learning: A relational understanding of adaptive capacity to climate change within organisations. Environment and Planning A 40 (4) 867-884. (Rist, Stephan, Centre for Development and Environment (CDFE))	Now included.
614	1	18	6	18	23	this section speaks of "nonscientists estimations". I need to add, either as a part of this section or in another section, the involvement of politicians as a must in their plans considering the extremes. I might also add the importance of the same idea in education sphere. (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	The role of decision makers is treated elsewhere in the report; discussion is now phrased in terms of expertise.
615	1	18	6	18	23	Section 1.3.2.2.1: The definition of non-scientists is not clear. This section puts non-scientists in a negative light. It can be replaced with theoretical concepts of rational and non-rational or normative and positive views. (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	discussion is now phrased in terms of expertise.
616	1	18	6	0	0	please clarify the term 'nonscientists' as opposed to 'nonexperts' (Surminski, Swenja, Association of British Insurers)	discussion is now phrased in terms of expertise.
617	1	18	8	18	16	Alternatively, repeated extremes may condition people and alter their perception of "normal". I am not aware of any literature on the subject but it is has certainly been apparent in, for example, public reaction to the near-normal rainfall in southeast Australia in winter 2010 following several successive extremely dry winters, with many people perceiving this winter as having been extremely wet. (Trewin, Blair, Australian Bureau of Meteorology)	Noted.
618	1	18	8	18	23	This entire sub-section should integrate issues of daily life and a strong discussion on local knowledge. (Gaillard, JC, The University of Auckland)	Noted and done.
619	1	18	8	18	23	Yes, cognitive biases exist in estimations of risk - but it is not only 'non-scientists' whose perspectives are affected. Being a scientist does not make you immune from subjectivity. See for example Barke et al (1997) 'Risk perception of men and women scientists', Social Science Quarterly 78(1): 167-76. (Rickards, Lauren Amy, University of Melbourne)	discussion is now phrased in terms of expertise; refernece included.
620	1	18	8	0	23	in this discussion of non scientists perception of risk it is important to note that poor and insecure people may have distorted perceptions of risk. Insecure people tend to constantly adapt and perceive as risk that which is one or the most immediate among many threats. that is, people get used to live under risk. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Noted and done.
621	1	18	18	18	18	This sentence should also consider cultural, social and economic structural daily constraints. (Gaillard, JC, The University of Auckland)	Addressed in section on culture and ideology 1.3.2.2.3

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
622	1	18	26	18	33	This paragraph sounds like responses to risks are always irrational, which is not entirely true. reference should be made to the literature on risk aversion. EG, from an economic perspective, it is rational to focus more strongly on losses than gains, as there usually is diminishing marginal utility of wealth, and people, communities and even governments can be risk averse. (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	We will address this by modifying a phrase or two in section 1.3.2.2.2 in the next draft. For instance, we might have added to the end of line 14 on p. 20 something along the lines of "Such asymmetry may also arise from the recognition that is it often appropriate to be risk averse"
623	1	18	26	18	33	Is this sub-section useful? (Gaillard, JC, The University of Auckland)	We think it is.
624	1	18	26	18	52	Change the order of section 1.3.2.2.3 and section 1.3.2.2.2 (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	We disagree and kept the same order.
625	1	18	28	18	33	There aren't many studies or valuations on gains due to climate change. In most developing countries perception on gains is closely linked to national policies. (Carla, Encinas, Intercooperation)	Noted.
626	1	18	28	0	33	This discussion about peoples perverse view of risk is very important but seems for forget the entire history (predating the ref's here) of the min-max principle whereby people choose paths that minimize their maximum risk - please include a brief paragraph. (Prather, Michael, UC Irvine)	Now addressed in Section 1.3.2.2
627	1	18	36	18	52	This subsection may be merged with 1.3.2.2.1 and should also consider the huge literature in the disciplines of anthropology and geography on the discussed topic. (Gaillard, JC, The University of Auckland)	Discussion extended to the extent that word limits allow.
628	1	18	36	18	52	Chapter 1.3.2.2.3. The chapter's focus on culture and ideology is superficial, and should contribute more through illuminating the mechanisms for how culture and ideology influence implementation of the Probabilistic Risk Framework. (Asphiell, Torgrim, Climate and Pollution Agency (Norway))	Discussion extended to the extent that word limits allow.
629	1	18	36	0	0	Same as previous comment, in spite of inclusion in other parts/ chapters, make a stronger statement here on the crucial importance of cultural perceptions of development and risk as opposed to sustainability and equilibrium, and how in many cultures it is the latter that define well being and welfare and not the notion of progress or growth, thus leading to a different notion of risk in terms not of damages or losses but of rupture or disruption of equilibrium. (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Discussion extended to the extent that word limits allow.
630	1	18	38	18	46	Important points, but consider to rephrase and simplify lead sentence. (Sperling, Frank, WWF)	Rephrased to clarify.
631	1	18	42	18	44	The role of world views, ideology and mental models is also important for communicating adaptation strategies and guiding their implementation. This would make an important addition to the report. (Goessling-Reisemann, Stefan, University of Bremen)	Discussion extended to the extent that word limits allow.
632	1	18	44	18	46	... and not infrequently in their own immediate family or proximate community opinion, even if it may be devoid of demonstrable specialist knowledge. (OK, now see that this point is made in lines 48-52). (Jeggle, Terry, University of Pittsburgh)	Noted.
633	1	18	44	0	0	There is an almost laughable, but well known principle here that should be noted: when I was in Boston, it became clear that every winter, each "broadcast meteorologist" would try her/his best to predict the most dire snow storm (well beyond the NWS stats) in order to take credit for predicting the biggest disaster. (Prather, Michael, UC Irvine)	Noted.
634	1	18	48	18	52	Can you provide any examples? (IPCC WGII TSU)	Nuclear example included.
635	1	18	52	0	0	Is it possible to give an example of a socially undesirable action? (Goodess, Clare, Climatic Research Unit)	Nuclear example included.
636	1	19	1	20	19	This section of 1.3.3 is dominated by definitions, which are partly already defined in sections 1.2.1. and 1.2.4. It should be considered to merge the definition sections. (Ulbrich, Uwe, Freie Universitaet Berlin)	Now resolved and all definitions are grouped at beginning
637	1	19	1	0	0	Section 1.3.3 should include risk profiles defining acceptable risks from other industries (see Ayyub 2003) (Ayyub, Bilal, University of Maryland)	Section completely rewritten; no longer relevant.
638	1	19	9	19	11	What is the source of the quote? And more importantly: this risk definition lacks the quantification of the damage (see above) (Goessling-Reisemann, Stefan, University of Bremen)	Section completely rewritten; no longer relevant.
639	1	19	9	0	0	Define 'expected losses' e.g. as mentioned on page 16, line 13 as additional formula. (Casty, Carlo, PartnerRe)	Section completely rewritten; no longer relevant.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
640	1	19	13	19	18	More definitions again? Better to appear earlier in one place? The source of the definition should be referred to as the United Nations International Strategy for Disaster Reduction (UNISDR). It would be best to say (accurately) this is the UNISDR definition of "Disaster" and not just loosely say the UNISDR "refers to contexts..." (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See comment #636
641	1	19	13	19	18	Repeated elsewhere. (IPCC WGII TSU)	Noted
642	1	19	14	0	0	Here and many places - is it ISDR or UNISDR - pick one. (Prather, Michael, UC Irvine)	Noted
643	1	19	20	0	0	I suggest revision to "The UNISDR definition is accompanied by the important clarification" (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See comment #636
644	1	19	20	0	0	Define "risk process" (Goessling-Reisemann, Stefan, University of Bremen)	Section completely rewritten; no longer relevant.
645	1	19	24	19	27	This implies specific important criticisms of the 2009 UNISDR definition of disaster; if so it would be best to say what they are, or simply refer to the "criticisms of the various disaster-related definitions" (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Section completely rewritten; no longer relevant.
646	1	19	24	19	27	This sounds like a value judgment and should be rephrased or deleted. (IPCC WGII TSU)	Section completely rewritten; no longer relevant.
647	1	19	26	19	26	the word "an" repeated twice. Please erase one of them. (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	Section completely rewritten; no longer relevant.
648	1	19	26	19	26	Delete first "an" and replace it for as. (Carla , Encinas, Intercooperation)	Section completely rewritten; no longer relevant.
649	1	19	26	0	0	duplication of an (Saad-Hussein, Amal, National Research Centre)	Section completely rewritten; no longer relevant.
650	1	19	26	0	0	Please delete second 'an'. (Casty, Carlo, PartnerRe)	Section completely rewritten; no longer relevant.
651	1	19	29	19	33	This sentence is virtually impenetrable, given its extreme length and multiple ideas linked in a seeming unending string. The single expression of the "the disaster intervention problematic" is not intuitively comprehensible to the non-specialist and should be stated in more accessible language. I also wonder if the situation described might not be more accurately related to the past 30 years ? (Jeggle, Terry, University of Pittsburgh)	Section completely rewritten; no longer relevant.
652	1	19	29	19	39	Repeated elsewhere. (IPCC WGII TSU)	Noted
653	1	19	32	19	32	It may be worth a definition of prevention and mitigation. (Gaillard, JC, The University of Auckland)	Mitigation now defined earlier
654	1	19	41	20	2	Generally, the chapter should be more focused and omit stating many different definitions of DRM but come up with its own which then should be applied throughout climate change adaption literature and act as the standard reference. (Casty, Carlo, PartnerRe)	OK See also comment #6
655	1	19	41	0	0	This is not the current UNISDR 2009 definition of disaster risk management. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted
656	1	19	45	19	45	This is one of the instances where the use of the word "mitigation" is different to that used typically (but wrongly) in the climate change literature. (Stone, John M R, Carleton University)	See comment #653
657	1	19	0	39	0	This second half of the paper is more accessible than the first half. In my opinion the chapter would benefit from a shortening of the first part and more in-depth of historical evolution of disaster risk management and climate change adaptation concepts, policy frameworks, funding mechanisms and institutional frameworks up-front. It should also be recognized that DRM is focused on managing hydro-meteorological and geological hazards. The integration of climate change concerns is fairly recent with much policy and conceptual linked to the Hyogo Framework for Action. (Sperling, Frank, WWF)	Noted and chapter reworked in general Section completely rewritten
658	1	20	4	20	5	Is not "a series of concatenated and related actions" equivalent to "a process" ? Especially as the UNISDR definition begins as "'the systematic process ..." ? (Line 41). (Jeggle, Terry, University of Pittsburgh)	Section completely rewritten; no longer relevant.
659	1	20	9	20	54	There are half a dozen "clearly" on this page. One is probably too many. (IPCC WGII TSU)	Section completely rewritten; no longer relevant.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
660	1	20	15	20	18	I believe there are 2 inaccuracies here: There is no reference listed at the end of the Chapter as UNISDR 2002. Actually, I believe the citation should properly be UNISDR 2004 (Living with Risk: A global review of disaster reduction initiatives (2004 final version), Volume II, in which earlier definitions were subsequently revised. The definition quoted here in lines 15-18 is actually the definition provided for "Disaster Risk Reduction" (disaster reduction) (Vol. II, page 3) - not "risk reduction" as suggested here. It also bears noting that the UNISDR definitions were further revised in 2009, although it needs to be verified to what extent the definitions of either drm or drr (or rr) were modified at that time. (Jeggle, Terry, University of Pittsburgh)	Section completely rewritten; no longer relevant.
661	1	20	15	20	18	UNISDR 2009 does not define "risk reduction". It defines "disaster risk reduction" but this definition is not what has been provided by the authors in these lines. Best to use the current 2009 definition. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	See definitions section.
662	1	20	20	20	25	As an "insider" I understand what the author is driving at in this over-long and prolix sentence, but I doubt that previously uninitiated readers will easily or intuitively make all the connections intended. They are clearly much more familiar to the author than the readers, and given their importance to the topic here, they should be expressed in a much more accessible manner. (Jeggle, Terry, University of Pittsburgh)	Section completely rewritten; no longer relevant.
663	1	20	21	20	21	according to the listed references for Chapter 1, UNISDR 2009 should probably be the Global Assessment Report (rather than review). Also be the time of the eventual issuance of the final publication of SREX, it will not be a "recent" GAR, so best to avoid that adjective. As another GAR is expected in 2011 too, the use of "recent" could sow confusion between the two. (Jeggle, Terry, University of Pittsburgh)	Noted and remedied
664	1	20	21	20	21	Might be better to delete "recent" or in general not to qualify the literature used .This chapter makes use of "not so recent or old" literature and also fairly new. (Carla , Encinas, Intercooperation)	OK Section completely rewritten
665	1	20	28	0	0	The issue of risk transfer and sharing is of great interest to UNFCCC Parties and there is plenty of literature to consider. I suggest that it be given a separate subsection in this chapter. There are several new publications in this area, including one prepared by the Munich Climate Insurance Initiative and published by the UNISDR as "Adaptation to Climate Change: Linking Disaster Risk Reduction and Insurance." (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Insurance given more time and space in other chapters
666	1	20	36	20	37	There are lots of references; please include a few from the adaptation literature. (IPCC WGII TSU)	OK Section completely rewritten
667	1	20	45	20	45	CORRECTION: FEMA is Federal Emergency Management Agency (not authority) (Jeggle, Terry, University of Pittsburgh)	Section completely rewritten; no longer relevant.
668	1	20	45	0	54	Provide a reference to support the discussion. (Dube, Pauline, University of Botswana)	Section completely rewritten; no longer relevant.
669	1	21	1	0	5	related to No. 3- can't really discuss DRM without explaining the multi-faceted disasters - beyond hydromet (Hellmuth, Molly, International Research Institute for Climate and Society)	Context of multi hazard now incorporated
670	1	21	3	0	0	Define lahar. (Goodess, Clare, Climatic Research Unit)	Section completely rewritten; no longer relevant.
671	1	21	7	21	28	Repeated elsewhere. (IPCC WGII TSU)	Section completely rewritten; no longer relevant.
672	1	21	7	21	8	These two lines contain important ideas but they are, or should be, elaborated earlier in the chapter. The idea of frequent "recurrent" events is something that particularly should be raised in the consideration of what is meant by extreme events and extreme impacts. Incidentally, the UNISDR 2009 Global Assessment Report "Risk and Poverty in a changing climate" is rich in information on this topic. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Now noted earlier in chapter
673	1	21	20	21	28	As I understand this paragraph, the explanation given in the first half, is restated in not actually repeated in the second half. If that is not the intention, that is the way it reads. (Jeggle, Terry, University of Pittsburgh)	Section completely rewritten; no longer relevant.
674	1	21	28	21	28	Should read (Maskrey, 1989) I guess. (Gaillard, JC, The University of Auckland)	Noted

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
675	1	21	39	21	40	The term "maladaptaion" is bad enough, but please don't inflict upon us "mal-disaster risk management". The "mal" idea quaintly assumes there is a perfect world. In contrast, international disaster risk reduction policy starts with realism, from the premise that disaster risk is neglected and not well managed - hence the Hyogo Framework's high focus on advocacy, political mobilization, and public awareness raising. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Section completely rewritten; no longer relevant.
676	1	21	39	21	40	It can be considered to replace 'Mal-disaster risk management' with 'mismanagement of disasters' (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	Section completely rewritten; no longer relevant.
677	1	21	40	0	0	(maladaptation) must be corrected to maladaptation (Saad-Hussein, Amal, National Research Centre)	Section completely rewritten; no longer relevant.
678	1	21	43	23	23	This section could benefit from putting climate change adaptation into the context of general framework for "dealing with uncertainty". Global change and economic volatility already create turbulent conditions, climate change adds to this significantly and on a longer time scale. Common to these developments is that they are hard to foresee and that their path is highly uncertain. It is therefore wise to put climate adaptation into a bigger context and make use of the synergies. Cf above article by Smit&Wandel 2006: "One of the fundamental findings from this work is that it is extremely unlikely for any type of adaptive action to be taken in light of climate change alone (Huq and Reid, 2004; Handmer et al., 1999; Morduch and Sharma, 2002; Huq et al., 2003). Again, preparing for the general uncertainty of future developments needs guiding principles. Resilience as a design principle could be a candidate. (Goessling-Reisemann, Stefan, University of Bremen)	We do situate CCA in several uncertainty frameworks, in particular iterative risk management (p. 22). We relate CCA to the resilience literature (p. 22).
679	1	21	43	0	0	A number of public private institutions (EU commission, Rockefeller, Swiss Re, McKinsey and others) have developed an adaptation framework / methodology under the Economics of Climate Adaptation project consortium, a framework for decision making - see http://media.swissre.com/documents/rethinking_shaping_climate_resilient_development_en.pdf (Spiegel, Andreas, Swiss Re)	We will provide this references in line 12 on p. 18, subsequent draft
680	1	21	43	0	0	Section 1.3.4. This entire section sounds a bit technocratic. For example, what about uncertainty in securing livelihoods in a changing economic and political world? Furthermore, it may be worth indicating that thea framework and definitions emphasized here reflect the state of the disaster literature back in the 1930's-40's. See for example: Jessica Mercer's paper in vol. 22(2) of the Journal of International Development in 2010. (Gaillard, IC, The University of Auckland)	Uncertainty in securing livelihoods is one example of an important uncertainty in socioeconomic conditions(line 2 p. 22). It is also addressed in lines 46-54 on p. 22
681	1	21	45	21	45	Should read "Climate change may change hazards face by communities". (Gaillard, JC, The University of Auckland)	Section rewritten and no longer applicable.
682	1	21	45	21	47	Repeated elsewhere. (IPCC WGII TSU)	Noted.
683	1	21	46	21	47	"In some cases climate changes may prove beneficial" Could you provide at least one example to clarify this point? (Mokssit, Abdalah, Direction de la Météorologie Nationale (DMN))	Section rewritten and no longer applicable but discussed in 1.2.
684	1	21	46	0	47	in some cases climate change may prove beneficial' -> add temporal component (in the long run too?) (Thalmann, Philippe, EPFL Swiss Federal Institute of Technology Lausanne)	See comment #683
685	1	21	0	23	0	The discussion of frameworks for adaptation should provide further detail on the international policy and institutional set-up. Furthermore, it should also take into account the evolution of thinking about adaptation in the development context. There is a shift towards a more holistic climate risk management (CRM) approach, that aims to manage risks associated with climate variability and change. CRM has to integral part of managing risks to development processes. This is appararent in various strategy papers and project documents of various development organizations, please consider further review of respective conceptual, strategic and technical documents from World Bank, UNDP, ADB, and bilateral development organizations etc. Furthermore, the chapter would benefit from further clarity whether it is more focused on managing climatic extremes in relation to impacts on society or also in their impact on environment. Obviously there are linkages between human, socioeconomic and environmental disasters, but the chapter does not treat this consistently at present in its scope and use of definitions. Consider taking into reports and studies dealing with the relationship of natural resources, vulnerability, disaster risk management and adaptation. See for example, thematic publications by IUCN, WWF and UNEP on these topics. (Sperling, Frank, WWF)	We do deal with this in a variety of places, for instance lines 43-51 on p. 22, as well as in many other places.
686	1	22	2	22	4	It can be considered to move this definition of climate of change to previous sections as a lot has already been talked about climate change in the previous sections (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	Section rewritten and no longer applicable.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
687	1	22	2	0	0	Here as in the overall comments - it suddenly stands out- do we have a structural problem with IPCC nomenclature, language, leadership, .. that preclude the AR5 from working with the risk community? (Prather, Michael. UC Irvine)	this is most properly addressed by the WG chairs.
688	1	22	5	11	8	Not sure why a web-based definition has been used. Could a more robust source be used for this definition? (Stocker, Thomas, IPCC WGI TSU)	Misplaced comment, answered in previous section.
689	1	22	6	22	16	This paragraph may warrant a sentence or two to acknowledge the consequential effects of the events described per se, as for example the additional disasters likely to be created by the droughts (decimation of crops and food access), or as is presently occurring in Pakistan under the unprecedented floods of food destruction, and likely huge migrations of unhoused and unfed populations. While not a "natural" or climatic disaster themselves, the likely secondary famines, diseases and uncontrolled migrations will become their own disasters, occasioned by climatic conditions. This is recognized as an ambivalent set of circumstances and situations, but it is just such ambivalent conditions that increasingly will define future disasters, as well as the intersection of concerns among the disaster risk management and climate change adaptation "professional communities". (Jeggle, Terry, University of Pittsburgh)	Discussed elsewhere in chapter and included in term "socioeconomic".
690	1	22	6	22	16	Yes, but it is important also to consider that successful adaptation to climate change starts with taking into account and addressing current climate related vulnerabilities, as noted by AfDB et al. 2003. Poverty and Climate Change-Reducing the Vulnerability of the Poor through Adaptation. (Sperling, Frank, WWF)	Reference to be included in later draft; comment is addressed many places in chapter, particularly 1.3.
691	1	22	6	22	16	Consolidate with previous discussion of this. (IPCC WGII TSU)	Noted.
692	1	22	8	22	8	It is not clear what is meant by "these systems". (Ulbrich, Uwe, Freie Universitaet Berlin)	Rephrased to clarify.
693	1	22	11	22	14	Needs referencing. For example, Sperling and Szekely 2005 discuss the range of possible changes conceptually. (Sperling, Frank, WWF)	Rewritten and no longer applicable.
694	1	22	14	22	16	Chapter 3 does not attempt to identify events outside of 'any previous human experience' - which would in any case be quite problematic to claim/identify. I suggest deleting this sentence. (Goodess, Clare, Climatic Research Unit)	Rephrased.
695	1	22	14	22	16	This is a very general and vague statement. Glaciers for example, in many parts of the world have ALREADY retreated beyond any historical limits. Probably the same can be said for sea level impacts on many small island nations. (Stocker, Thomas, IPCC WGI TSU)	Rephrased.
696	1	22	23	22	24	How can a citation IPCC 1990 be used to support a statement that in recent years something has changed since IPCC 1995? (van Oldenborgh, Geert Jan, KNMI)	We now use a more recent citation.
697	1	22	23	22	33	Re Adaptation: in keeping with the DRR literature and debate, there seems to be no mention in this paragraph regarding livelihood diversification as a form of adaptation, rather than responding to the physical changes projected under climate change. In recent meetings of the Community Based Adaptation network (in Bangladesh, 2009, and Tanzania, 2010) it was clear that the attendees were divided between those who saw adaptation in terms of older debates from environmental management or cultural/political ecology as how different people live with scarcity, and those who saw adaptation only in terms of the additional likely physical events of climate change. Again, this Chapter 1 seems to focus on the latter of these two groups. Specifically, this page of the Chapter refers to 'human systems' in relation to adaptation, but does not specify what it means by this term. NB there is some discussion of livelihoods on p33, line 3-13, but the suggestion here is that this is relatively [sic] 'recent' debate, when in fact there has been discussion of livelihood / income diversification etc as forms of enhancing resilience under, for example, the sustainable livelihoods literature of the 1990s onwards. (Forsyth, Tim, London School of Economics and Political Science)	we will add references in next draft.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
698	1	22	23	22	33	This discussion should also take into account the different project life-times and decision-making time horizon of stakeholder groups, as this has implications for the type of data and information needed to inform risk management practices. For example, interventions focused on reducing vulnerabilities of rural communities may require a strong emphasis on understanding and characterizing current climate conditions and observable changes that have an immediate impact on livelihoods. However, climate change projections and scenarios will be become important when considering the long-term viability of such livelihoods and possible implications for development planning strategies (e.g. emphasis on education initiatives, economic diversification and conflict resolution), or where long-term infrastructure investments are made. Climate risk management at the community level is discussed in Sperling et al. 2008, based on studies in Peru. (Sperling, Frank, WWF)	See comment #697
699	1	22	23	0	33	We find it very narrow and misleading to use references to the World Bank WDR 2010 and ignore references to the UNDP Human Development Report 2007-2008. Not only has the HDR very different takes and idea on the issues than the WDR, there is also a very good collection of background papers that deserve mention . (Asphjell, Torgerim. Climate and Pollution Agency (Norway))	We now also cite the work of the UNDP
700	1	22	24	22	25	Not entirely clear what is meant here. Communities have always adapted to climatic variations and not only recently. However, there are thresholds and limitations to adaptation. Is this sentence referring specifically to changes in risk profiles due to climate change? (Sperling, Frank, WWF)	Rephrased and clarified.
701	1	22	25	22	26	The "US National Academy of Sciences 2010" reference should be "National Research Council 2010" (Staudt, Amanda, National Wildlife Federation)	Noted.
702	1	22	27	22	33	Pleased to see this practical example of how the adaptation and risk reduction can work together. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted.
703	1	22	27	0	0	"Alternative options of reducing vulnerability and increasing adaptive capacity lie in managing for particular vegetation traits." (Jentsch, Anke, University of Koblenz-Landau)	Rewritten and no longer applicable.
704	1	22	28	22	30	Is it the best example as we know that relocation is always the worst solution and often fails? (Gaillard, JC, The University of Auckland)	Rewritten and no longer applicable.
705	1	22	36	22	38	The expression "ex ante" may not be easily understood by non-native speakers (I had to look it up in a dictionary) (van Oldenborgh, Geert Jan, KNMI)	**** Removed here, will work on removing elsewhere in document.
706	1	22	36	0	0	"ex ante" - this bothered me when you used it earlier - I think it appear snobbish and rather elite, please just use English. (Prather, Michael, UC Irvine)	See comment #705
707	1	22	37	0	0	make a space between adaptation and will (Saad-Hussein, Amal, National Research Centre)	Noted
708	1	22	40	22	50	This paragraph confuses several terms used to distinguish different types of adaptation, which is wrongly based on an unspecific reference to the IPCC TAR. However, the first paragraph of Section 18.2.3 of the WG II contribution to the IPCC TAR makes very clear that "autonomous" adaptation is always reactive whereas "planned" adaptation can be either "anticipatory" or "reactive". Hence, the appropriate distinctions would be: 1. autonomous (reactive); 2. planned reactive; 3. planned anticipatory. (Fuessel, Hans-Martin, European Environment Agency)	Section rewritten and no longer applicable.
709	1	22	42	22	50	Please introduce examples for each bullet point. (Casty, Carlo, PartnerRe)	Section rewritten and no longer applicable.
710	1	22	42	22	50	Reactive or Palliative adaptation has also been talked about in literature. It can be considered to include this concept here. The following paper also talks about reactive adaptation: Fankhauser, S., Joel, S. B., & Tol, R. S. (1999). Weathering Climate Change: Some Simple Rules to Guide Adaptation Decisions. Ecological Economics , 30, 67–78. (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	Section rewritten and no longer applicable.
711	1	22	52	22	52	the word "claimate" to be "climate". (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	Noted.
712	1	22	52	22	52	Please, replace "claimate" with "climate". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Noted.
713	1	22	52	22	53	Contain typos (León, Alejandro, Universidad de Chile)	Noted.
714	1	22	52	23	2	These taxonomies are not clear. (IPCC WGII TSU)	Section rewritten and no longer applicable.
715	1	22	52	0	0	climate (Casty, Carlo, PartnerRe)	Noted.
716	1	23	1	24	30	Recommend discussing the important discussion of iterative risk management with the gradual shift of understanding adaptation as climate risk management approach that entails managing climate variability and change (Sperling, Frank, WWF)	Noted, see also section 1.4.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
717	1	23	4	0	0	The iterative risk management framework is used in a recent study on CCA in New York City. See: Yohe, G. and Leichenko, R. 2010. Adapting a Risk Based Approach. Annals of the New York Academy of Sciences, Special Issue on the New York City Panel on Climate Change. Vol 1196: 29-40. (Leichenko, Robin, Rutgers University)	we will add references in next draft.
718	1	23	14	0	0	The "exemplar process" - should this be just "example" or does the author mean "exemplary"? (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Rewritten and no longer applicable.
719	1	23	17	23	19	"... adaptation literature, only very few communities have adopted this or similar practices. (Jeggle, Terry, University of Pittsburgh)	Rewritten and no longer applicable.
720	1	23	19	23	19	Might be useful to see which other tools or methodologies can help to identify and assess climate related risks at different levels (from national to local). See Ofhodd and Schoer 2010. (Carla , Encinas, Intercooperation)	Some cases examined in 1.3.4.
721	1	23	22	0	0	I'm not sure that this framework has been so widely applied in practice - but perhaps some references could be included, e.g. To some of the UKCIP adaptation tools which are based on this framework. (Goodess, Clare, Climatic Research Unit)	See comment #717.
722	1	23	26	24	30	An similar approach was proposed in Japan as adaptation of flexible approach suggesting "Adaptation measures should be designed and implemented in a flexible manner in which prediction scenarios for the measures will be continuously revised in accord with accumulation of observational data and knowledge because climate change prediction always contains some uncertainties." (Panel on Infrastructure Development, MLIT, 2008) (Takeuchi Kunivoshi ICHARM)	we will add references in next draft.
723	1	23	26	0	0	I wonder whether some reference to Bayesian approaches allowing to update probabilities might be helpful for this discussion. (Mechler, Reinhard, INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS ANALYSIS)	we will add references in next draft.
724	1	23	26	0	0	Section 1.3.4.1: As noted in the general comments we suggest to add a Box introducing the IPCC guidance notes on the consistent treatment of uncertainties here (or elsewhere in Chapter 1). As there is already quite a bit material available in both Chapters 1 and 3 on this topic, we suggest to coordinate closely with Chapter 3 (and others) on the Uncertainty issue. (Stocker, Thomas, IPCC WGI TSU)	See comment #13.
725	1	23	26	0	0	Section 1.3.4.1 treatment of uncertainty is narrowly focused. It would benefit from examining all the possible sources (see Ayyub and Klir 2006). (Ayyub, Bilal, University of Maryland)	Section rewritten. Also see comment #562.
726	1	23	26	0	0	Is the "iterative risk management" part of the "probabilistic risk management?" Should it be mentioned in the Ex Summary? (León, Alejandro, Universidad de Chile)	PRA is a tool used in iterative risk management. Now included in ES.
727	1	23	36	23	40	The flow of arguments seems flawed. In particular, the climate stabilization goal of the Copenhagen Accord is not an example of "negative learning". (Fuessel, Hans-Martin, European Environment Agency)	Rewritten and no longer applicable.
728	1	23	37	23	40	The example is not adequate to explain the statement in the sentence before (on how advancing theory and models could make prediction even less reliable) (Goessling-Reisemann, Stefan, University of Bremen)	Rewritten and no longer applicable.
729	1	23	37	23	40	Given that there was no agreement on a post 2012 climate policy regime here, I recommend being more specific here and making explicit reference to the Copenhagen Accord. (Sperling, Frank, WWF)	Rewritten and no longer applicable.
730	1	23	37	23	40	The SREX comes out in late 2011; this will not be relevant. (IPCC WGII TSU)	Rewritten and no longer applicable.
731	1	23	45	0	0	how do we do iterative risk management if Katrina comes only every 100 years? (Prather, Michael, UC Irvine)	One can learn how to make human systems less vulnerable. The relevant feedbacks have time scales shorter than 100 years.
732	1	23	50	23	54	As noted earlier, this paragraph needs further differentiation. Uncertainties in climate change projection may not always be the bottleneck for interventions. Whether climate change scenarios are crucial will depend on the type of stakeholder group and sector that is being considered. At the community level, improving understanding of current climate condition and identifying changes already underway may be much more important to reduce risks, than what happens 20, 50 yrs. from now. Please consider different further along time-scales. For example, based on case studies in Peru Sperling et al. 2008 discuss elements of climate risk management approaches for natural resource dependent communities. (Sperling, Frank, WWF)	See comment #698
733	1	24	1	0	6	It is incorrect to say that applications of these ideas are beginning to appear and cite the WDR or Dessai and Hulme only, please see HDR 2007-2008. (Asphjell, Torggrim, Climate and Pollution Agency (Norway))	Noted, see comment #699

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
734	1	24	5	0	6	It will be good to provide at least one such example of "robust uncertainty management strategies" (Dube, Pauline, University of Botswana)	See comment #717, 735.
735	1	24	6	24	6	See also Hine and Hall (2010) for an application of robustness analysis to flood risk management decisions: Hine, D and Hall, J.W. Information-gap analysis of flood model uncertainties and regional frequency analysis, <i>Water Resources Research</i> . 46 (2010): W01514. (Hall, Jim, Newcastle University)	we will add references in next draft.
736	1	24	10	24	10	Which literature on resilience? There are several. (Gaillard, JC, The University of Auckland)	Now more specific with references.
737	1	24	13	0	0	Refer to section 1.4.4 on single, double and triple loop learning! (Goessling-Reisemann, Stefan, University of Bremen)	Now more specific with references.
738	1	24	22	24	22	"Least developed countries" is awkward. (Gaillard, JC, The University of Auckland)	Rewritten and no longer applicable.
739	1	24	22	24	22	I do not agree with the statement that adaptive management has had a mixed history. I think this clearly understates the current progress and state of art of such approaches. The existence of difficulties and resistances in certain institutional settings is not a failure of the concept and practice of adaptive, interactive and learning-oriented approaches of transdisciplinary co-production of knowledge. These difficulties are a rather typical situations one always finds in the context of social learning processes. I therefore suggest to add the following sentence in line 21: Moreover, many of the above mentioned difficulties showed to be tackled by adequately moderating and feeding scientific knowledge into platforms and fora of non-scientific stakeholders (Rist et al. 2006, Rist et al. 2007). Rist S, Chiddambaranathan M, Escobar C, Wiesmann U. 2006. "It was hard to come to mutual understanding..." Multidimensionality of social learning processes in natural resource use in India, Africa and Latin America. <i>Journal of Systemic Practice and Action Research</i> 19 (3) 219-237. Rist S, Chiddambaranathan M, Escobar C, Wiesmann U, Zimmermann A. 2007. Moving from sustainable management to sustainable governance of natural resources: The role of social learning processes in rural India, Bolivia and Mali. <i>Journal of Rural Studies</i> 23 (1) 23-37. (Rist, Stephan, Centre for Development and Environment (CDE))	The literature is pretty clear that adaptive management works in some instances and not others. I don't think examples of instances where adaptive management has worked well are counter example to this statement. The NRC report Informing Decisions in a Changing Climate lists four conditions that lead to more successful adaptive management: Limited spatial and temporal scale, uncertainties that can be relatively easily resolved for decision makers with an experimental approach, rules for keeping risks for all stakeholders at an acceptable level, and institutional support. I am not familiar with the examples given, but perhaps they all meet these conditions for success. We will revisit in the next draft.
740	1	24	25	24	30	Maybe there should be some hint, or more wider talk about this issue in education. We actually prepare students for future, and then we should make them well prepared for future risk management, in basic and higher education. (Yasseen, Adel, Ain Shams University - Institute of Environmental Research and Studies)	***we will add references in next draft.
741	1	24	26	0	0	Yes, the gradual changes also get you. Nice sentence. (Prather, Michael, UC Irvine)	Noted
742	1	24	27	24	29	Is this related to climate change? Or to political and social structures? (Gaillard, JC, The University of Auckland)	Rewritten and no longer applicable.
743	1	24	33	24	33	Is it possible for this section to provide examples of initiatives that try to integrate disaster risk management and climate change adaptation? In Bolivia there is an 8 year old project that in its 3rd phase has this as one of its tasks. (Carla , Encinas, Intercooperation)	Tyoes and examples now given in SOD
744	1	24	33	25	39	I am missing the aspect of long term variability, existing irrespective of anthropogenic climate change. Such variability is relevant as adaptation and memory can be expected to be restricted to comparatively short periods of time. For example, hydrology is making use of measurements from the recent decades , while it is rarely asked in how far these decades are representative in a longer term climate perspective. (Ulbrich, Uwe, Freie Universitaet Berlin)	NOTED AND CONSIDERED
745	1	24	33	25	39	This section discusses how climate change affects disaster risk management, but does not offer an integration. (IPCC WGII TSU)	Now remedied
746	1	24	33	0	33	It is not clear how far the section addresses the title. Rather the section points out evolving interactions and linkages between DRM and climate change adaptation which could form the basis for integration. The section raise critical issues but lacks references to back these up, for example references are required for page 24 lines 35-42; bullet points from line 44 to line 4 on page 25 and for the second and 4th bullet points in page 25. (Dube, Pauline, University of Botswana)	Now remedied
747	1	24	39	24	41	This sentence needs improvement. The idea is fine but the term "non-stationarity", which is an important one in statistics of time series, looks like overkill for the simple idea of "long term change". The changes arising from climate change are not driven by "the concepts of non-stationarity" but by alteration of the climate system. Moreover, long term change in most aspects of planning and management is the norm; it is only the natural world that we have taken for granted as unchanging. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted and remedied

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
748	1	24	41	24	41	Would be good to define or refer the concept of " complexity" (Suarez, Avelino, Institute of Ecology and Systematic, Cuban Environmental Agency)	Noted
749	1	24	44	25	4	In order to make it more accessible consider discussing changes in exposure to 100 yr events rather than 500 yr events. This may also draw on analysis of Stott et al (2003) on the human contribution to the European heat wave in 2003 and other studies that explore how climate change may have changed the probabilistic occurrence of extreme events. (Snerling, Frank, WWF)	Noted
750	1	24	45	0	48	Indicate the implications of these changes on DRM. (Dube, Pauline, University of Botswana)	OK
751	1	24	47	24	48	not only events, but also unprecedented measures of "weather occurrence", such as unprecedented absolute totals or rates of precipitation (eg. rainfall amounts in 24 hrs. in Mozambique in 2000/2001, or current 2010 monsoonal rains in Pakistan - unless these measures of precipitation are themselves considered as "extreme events" ? This may however already be implied in the bullet point on page 25, lines 8-9 , and elaborated in the third bullet point on page 25, lines 16-21. (Jeggle, Terry, University of Pittsburgh)	Noted
752	1	24	47	0	0	Do you mean no spatial or temporal analogue? (Goodess, Clare, Climatic Research Unit)	spatial
753	1	25	5	0	0	The discussion of spatial modeling should also mention limits associated with this approach. Maps can't readily show institutional weaknesses or differences in political power between areas which might also influence vulnerability. (Leichenko, Robin, Rutgers University)	Noted
754	1	25	6	25	39	These topics seem to be a trace of scholastic expressions: They need to have some degree of likelihood. Should not be better to assign some level of probability? (Mata, Luis Jose , IMF)	Now considered
755	1	25	6	25	7	Somewhere here, perhaps as another bullet point, there should be some statement of how existing levels of latent risk, in some circumstances, are like a bomb waiting to be triggered by a relatively small change in climate, and therefore that a basic adaptation task must be to urgently identify and reduce these points of extreme risk. I think this idea appears somewhere in the AR5 and may be in the other SREX chapters, hopefully in more elegant and scientific expression that what I have written here. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Noted and considered
756	1	25	6	0	40	Elaborate on the implications of bullet No.1, 3 and 4 on adaptation given that the title addresses integrating DRM with adaptation. Also indicate for the last bullet what the anticipated changes will mean for both DRM and climate change adaptation (Dube, Pauline, University of Botswana)	OK
757	1	25	8	25	29	I suggest combining these bullet points into one or two simpler points about the difficulties and uncertainties inherent in projections of climate extremes, referring to Chapter 3 which discusses these issues in more detail. (Goodess, Clare, Climatic Research Unit)	Now rewritten
758	1	25	8	25	9	See similar comment for page 5. Again am concerned with this generalisation that there will be a 'need to deal with GREATER levels of uncertainty'. (Stocker, Thomas, IPCC WGI TSU)	OK
759	1	25	8	25	9	Here it might be stated that in many countries even to date extreme events did not play a major role in planning (e.g. New Orleans was not prepared for Katrina, i.e. Hurricane category 5, despite better knowledge) (Schmidt-Thome, Philipp, Geological Survey of Finland)	Good and OK
760	1	25	8	25	9	Once again. There has been much deeper change as a consequence of the industrial revolution and widespread neoliberalism. (Gaillard, JC, The University of Auckland)	Noted and considered
761	1	25	8	25	9	Dealing with uncertainty should be guided by principles to generate direction in a world of growing complexity! (Goessling-Reisemann, Stefan, University of Bremen)	Noted
762	1	25	8	0	0	Use 'severity' instead of 'intensity', use 'frequency' instead of 'magnitude' (Casty, Carlo, PartnerRe)	Noted but disagree in second point
763	1	25	8	0	39	We miss in this list references to serious research on critical poverty research agendas emerging that offer important argument for social protection as tool to minimize shocks and risks for the poor. Social protection, access to insurance, problems with formal/informal insurance issues are key research agendas. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Noted
764	1	25	11	25	11	Please clarify what is "a range of characteristics" (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Noted
765	1	25	11	0	0	Its not clear what is meant by small/medium/large scale. Is this with respect to spatial scale? Such terms can be rather misleading as different research communities tend to have different definitions. (Goodess, Clare, Climatic Research Unit)	Noted and commented
766	1	25	14	25	25	I don't really understand the terms 'routine' and 'non-routine' events (Goodess, Clare, Climatic Research Unit)	Term not now used

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
767	1	25	16	25	24	Chapter 1.3.5. The chapter's contents does not sufficiently reflect the headline. By integrating the two perspectives one would expect some more explicit comparison and discussion about how to integrate, and the synergies by doing so. Further, points are treated on a high abstraction level, and could be made more concrete, perhaps through the use of examples. For instance, on page 25, line 16-24, it is expressed some factors that needs to be "considered", and that this "will increase the importance of learning and of adopting more holistic processes as regards development and disaster risk management and the integration of concerns for averages and extremes in a single planning framework from the beginning". This is not saying much without a concrete example to relate to and some indication of what this brings into the analysis. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Now rewritten and taken into account
768	1	25	16	0	0	"more routine" is not very instructive. (Prather, Michael, UC Irvine)	OK
769	1	25	16	0	24	There is need to explicitly link bullet No. 3 and 4 to adaptation than for the reader to be left to assume that "development" for e.g. in bullet 3 also includes adaptation. (Dube, Pauline, University of Botswana)	OK
770	1	25	19	0	0	Even at the present day, there is some unpredictability inherent in climate/weather forecasts/predictions/projections. (Goodess, Clare, Climatic Research Unit)	OK
771	1	25	28	0	0	It's not clear what is meant by anomalous, extraordinary and potentially recurring events. (Goodess, Clare, Climatic Research Unit)	OK
772	1	25	30	25	39	Last bullet point (on global and local DRM in the face of climate change), consider also introducing a link to climate change mitigation, given the importance of reducing GHG emissions and stabilizing atmospheric concentrations in order to avoid changes that no longer can be managed. see Schellnhuber and other relevant references here. Additional note: It may be worthwhile to note the different scope of meaning of 'mitigation' in the context of DRM and climate change literature. (Sperling, Frank, WWF)	Noted
773	1	25	33	25	33	Replace "eventually" with "eventually". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	ok
774	1	25	34	25	34	Resiliency or resilience? (Gaillard, JC, The University of Auckland)	Resilience
775	1	25	36	25	36	What is a "human agency"? (Gaillard, JC, The University of Auckland)	Human actions
776	1	25	36	25	37	Please, remove "of god" from the text. (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	OK
777	1	25	40	0	0	I remember in 2006 the effort of the World Bank and Caribbean nations to establish a hurricane disaster risk pool - did anything come of it? can it be used as an example? (Prather, Michael, UC Irvine)	The pool is commented in other chapters
778	1	25	42	26	8	What lessons have been learned? How have these efforts faired? What were the challenges? Etc? (IPCC WGII TSU)	Text eliminated
779	1	25	44	25	44	Disaster risk reduction although before the chapter uses disaster risk management. This needs to be harmonized. (Gaillard, JC, The University of Auckland)	Text eliminated
780	1	25	44	25	50	This subsection needs to explicitly describe the intergovernmental context for disaster risk reduction, including government application of the Hyogo Framework and the references on adaptation in the UNFCCC Bali Action Plan and in the agreed language at COP-15 in Copenhagen. These formal documents are not merely the viewpoints of an author or a publisher but a living agreement between governments on what to do in both national and international settings. Other sources of information include the two UNISDR Policy Briefs on climate change and disaster risk reduction. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text eliminated
781	1	25	44	0	54	We are surprised not to see UN agencies working with development listed here, UNDP is the facto the agency co-ordinating work of other UN agencies on the ground. Again, We see a bias towards the World Bank that is unjustified. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	IMPORTANT Text eliminated
782	1	25	47	25	47	The ISDR acronym has been introduced before so need to repeat here. (Gaillard, JC, The University of Auckland)	Text eliminated
783	1	25	50	25	50	Information is missing. (Gaillard, JC, The University of Auckland)	Text eliminated
784	1	25	51	0	0	GFDRR includes multiple partner countries and donor, please double check definition of partnership (Sperling, Frank, WWF)	Text eliminated

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
785	1	25	54	26	1	As presented this statement is unclear. Is it intended to mean the equivalent of " ... cca and drm have (together) in their (combined association) become a strategic priority for ..." or "... (separately, each) cca and drm have (to varying individual degrees) become strategic priorities for ..." ? While there is some emerging evidence of the former, I do not believe it can be considered significantly manifest yet. The latter statement may be somewhat more evident, although it misses the intended point of combined association or synthetic consideration of shared issues. In neither case, do I believe the statement accurately applies to anything approaching widespread understanding, much less acceptance in programme orientation and practice among a considerable majority of NGOs. This first stated ambiguity, and the more questionable assertion of NGO evidence are both important enough that IF they are to remain as stated, both should be substantiated by documentary reference. The expressed sympathy is indeed a well-founded desire, and perhaps a belief in some quarters, but I am skeptical how valid the conditions may be currently in 2010. (Jeggle, Terry, University of Pittsburgh)	Text eliminated
786	1	26	1	26	8	Would also be appropriate to mention that reinsurance and insurance companies are re-evaluating their business practices in the light of climate change. For example... (Staudt, Amanda, National Wildlife Federation)	Text eliminated
787	1	26	11	0	37	The title should in our view be changed in order to better reflect that the following text deals with fundamental needs with regard to adaptation and disaster risk reduction, namely the mapping of hazards and vulnerability, by observations, models, predictions. We further suggest adding text on the important work of the WMO in establishing the Global Framework for Climate services, which will collect and disseminate targeted weather and climate information worldwide. (Asphjell, Torggrim, Climate and Pollution Agency (Norway))	Text eliminated
788	1	26	11	0	37	The title seems to be disconnected from the text. There is no mention of knowledge transfer- given new risks this takes on increasing importance (Hellmuth, Molly, International Research Institute for Climate and Society)	Text eliminated
789	1	26	13	26	21	The text repeatedly touches upon several important insights, without explicitly lifting them to a good analytical level. (Asphjell, Torggrim, Climate and Pollution Agency (Norway))	Text eliminated
790	1	26	16	27	16	The terminology regarding the countries differs from one section to another throughout the chapter. (Gaillard, JC, The University of Auckland)	Text eliminated
791	1	26	19	26	21	"But ubiquity of information and high capacity to model and analyze risk does not necessarily result in systematic risk reduction..." This suggests an awareness of other barriers to risk reduction, which is not mentioned in the report. For real reduction of risk, these barriers seem important to overcome, and how the two approaches to risk reduction address these is not apparent in the report. (Asphjell, Torggrim, Climate and Pollution Agency (Norway))	Text eliminated
792	1	26	19	0	21	It will help to end the paragraph by indicating what then is required for systematic risk reduction to be realised (Dube, Pauline, University of Botswana)	Text eliminated
793	1	26	21	26	21	What is FEWS? (Gaillard, JC, The University of Auckland)	Text eliminated
794	1	26	28	0	0	'spatial', instead of 'geo-spatial', otherwise name of the box 1.4 would need to be changed as well. (Casty, Carlo, PartnerRe)	Text eliminated
795	1	26	37	26	37	Please, insert "(" before "Hoeppe". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	Text eliminated
796	1	26	39	27	7	Box 1-4 is just a text. It would be excellent if an application to North Korea is demonstrated. (Takeuchi, Kuniyoshi, ICHARM)	Text eliminated
797	1	26	41	26	50	General comments: no explanation on 'spatial modelling' (Wang, Xiaoming, Commonwealth Scientific and Industrial Research Organisation (CSIRO))	Text eliminated
798	1	26	41	27	7	Would be good to include some graphical examples of the mapping results from these studies. (Staudt, Amanda, National Wildlife Federation)	Text eliminated
799	1	26	41	0	0	Box 1-4 on spatial modelling: suggest to coordinate with what Chapter 3/4 have already included on modelling, thereby attempting to link the different types of modelling. Perhaps this could be done through a set of boxes in each of the chapters which could be cross-referenced? (Stocker, Thomas, IPCC WGI TSU)	Text eliminated
800	1	26	41	0	0	The box on spatial modelling doesn't actually say what spatial modelling is. (Hall, Jim, Newcastle University)	Text eliminated

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
801	1	26	41	0	0	This box on spatial modeling needs to be more informative and in-depth. As it is now it is snippets that mean nothing to those who not already familiar with the topics. (Prather, Michael, UC Irvine)	Text eliminated
802	1	26	50	26	50	I think the sentiment here more accurately pertains to "... a comprehensive understanding of disaster risk". Not "disasters". This seems borne out by the examples cited in the following paragraph (Page 26, line 52 to Page 27, line 5). (Jeggle, Terry, University of Pittsburgh)	Text eliminated
803	1	26	53	26	53	Cutter and Finch, 2008 was not in the reference (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	Text eliminated
804	1	27	5	0	0	...targets' then add 'to detect potential exposure and vulnerability.' (Casty, Carlo, PartnerRe)	Text eliminated
805	1	27	9	27	49	This can be condensed, focusing on lessons learned. Also, there are many, many more references that can be cited, including the Millennium Ecosystem Assessment. (IPCC WGII TSU)	Text eliminated
806	1	27	9	0	18	Provide references in this paragraph. It will also help to indicate whether what is discussed in lines 14-18 is actually being done, if so give examples. (Dube, Pauline, University of Botswana)	Text eliminated
807	1	27	9	0	49	Bias with the World Bank. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Text eliminated
808	1	27	10	27	10	Is there any data that can be used to support the statement that the Philippines is one of the most disaster-prone countries? (Trewin, Blair, Australian Bureau of Meteorology)	Text eliminated
809	1	27	10	27	11	Regarding the Philippines, yes, but another law has just been passed for disaster risk reduction, thus reflecting a lack of coordination between the DRR and CCA communities. (Gaillard, JC, The University of Auckland)	Text eliminated
810	1	27	10	27	11	The Philippines has also passed a comprehensive Act on climate change and disaster risk that formally links the two. I believe one or more Nordic countries have merged climate change and disaster risk reduction into one department. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text eliminated
811	1	27	13	27	14	a supporting reference or example of this may be useful to document the assertion. (Jeggle, Terry, University of Pittsburgh)	Text eliminated
812	1	27	20	0	30	A good example of this is HARITA- oxfam's work in ethiopia which combines risk transfer and reduction (see pages 44-45, http://iri.columbia.edu/csp/issue2/download) (Hellmuth, Molly, International Research Institute for Climate and Society)	Text eliminated
813	1	27	26	0	0	Use 'disaster' instead of 'catastrophic' (Casty, Carlo, PartnerRe)	Text eliminated
814	1	27	32	0	0	There are in fact a range of other approaches to risk financing beyond just insurance. Instead of equating risk financing with insurance, the text should say something like "risk financing (including tools such as insurance)". (O'Donnell, Ian, Asian Development Bank)	Text eliminated
815	1	27	32	0	0	Care needed in describing risk financing. It is not just insurance, but includes a variety of tools such as national reserve funds, contingent access to loans, etc, (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Text eliminated
816	1	27	38	27	39	Hanging Line (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	Text eliminated
817	1	27	41	27	49	Might want to mention that sea level rise makes it even more critical to proactively manage and implement adaptation measures for coastal wetlands, barrier islands, mangroves, etc. that provide natural protections for coastal communities. (Staudt, Amanda, National Wildlife Federation)	Text eliminated
818	1	27	41	0	0	important to 'disaster' risk management (add disaster) (Casty, Carlo, PartnerRe)	Text eliminated
819	1	28	1	28	31	I would remove the entire sub-section 1.3.6.2. There is nothing specific to the less affluent countries but the will of the North to impose its view and solutions. Those affected by disasters and the effects of climate change are the same everywhere. Only the proportions of people concerned differs. (Gaillard, JC, The University of Auckland)	Text eliminated
820	1	28	1	28	31	Most of this can be integrated with previous sections; there is not much new. The referencing is limited and should be expanded. (IPCC WGII TSU)	Text eliminated
821	1	28	1	0	31	In addition to the constrain noted, it might be worthwhile to also reflect on, how, many years of focusing strongly on disaster response and easy access to disaster relief/ humanitarian assistance as opposed to the more difficult process of acquiring resources for disaster risk reduction when there is no disaster could have also had a role in the lower attention on DRM in developing countries (some of this is reflected in Chapter 7). (Dube, Pauline, University of Botswana)	Text eliminated
822	1	28	1	0	8	bias on pointing at the World bank as the single or most important agency on the development/ climate nexus. HDR was published before this paper and has discussion on the issues. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Text eliminated

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
823	1	28	4	0	0	Delete brackets. (Casty, Carlo, PartnerRe)	Text eliminated
824	1	28	6	28	6	There are lots of other factors besides timely information, including the capacity to use such information. (IPCC WGII TSU)	Text eliminated
825	1	28	10	0	13	Missing is the why they struggle- it has a lot to do with market atrophy, or lack of demand for the information as a result of lack of economic evidence of its value. (IRI Gap analysis- http://portal.iri.columbia.edu/portal/server.pt/gateway/PTARGS_0_2_2806_0_0_18/GapAnalysis.pdf) (Hellmuth, Molly, International Research Institute for Climate and Society)	Text eliminated
826	1	28	11	28	13	I could not find the concrete support of the 2 papers quoted for the statement in this paragraph. Moreover, I followed many presentations in which people reported the reduction of weather stations administrated by the National Meteorological Services, at least in Europe. I think it would good to provide some concrete examples of "national hydro-meteorological services struggle to maintain a basic network of observational infrastructure". The importance of such an infrastructure for disaster risk management should be emphasized better. (Cheval, Sorin, National Meteorological Administration)	Text eliminated
827	1	28	15	28	24	Cite ECLAC/OECS assessment of Grenada as well as other economic valuations of disasters published in ECLAC's webpage: www.eclac.org , under the button DISASTERS. (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Text eliminated
828	1	28	25	28	31	While not a weather related disaster I am surprised no mention is made of the disasterous earthquake in Haiti when discussion the role and capacity of governments to respond. (Stone, John M R, Carleton University)	IMPORTANT Text eliminated
829	1	28	34	28	34	There is literature on the other side which tries to differentiate very strongly between these two terms and the way they are applied which the section entirely misses out. Of one being a reactive method compared to the other being proactive and therefore coping in no-ways can be categorised to be similar to adaptive capacities (Bhadwal, Suruchi, The Energy and Resources Institute)	This section does review the reactive orientation of coping and the proactive orientation of adaptation. Instead of exhaustively reviewing the usage in various disciplinary literature, however, this section assesses the terms' meanings and suggests a way forward that recognizes the utility of each term.
830	1	28	34	34	40	6 pages on coping versus adaptation is a lot- seems more like someones pet peeve than relevant to the discussion. There are good points, but this could be written in a page. It needs more focus on adaptation and drmm, and how it fits into development (Hellmuth, Molly, International Research Institute for Climate and Society)	The length has been reduced substantially and the section is now more focused.
831	1	28	34	38	51	Entire section is not very focused and one should reconsider shortening. Please come up with a single and general definition of coping / adaption as this is one of the main goals a introductory chapter like this has to have. It is not enough to state how difficult and different current approaches / definitions of those terms are but to condense it. This chapter should become the key reference for adaption literature in future and should therefore attempt in presenting precise definitions. (Casty, Carlo, PartnerRe)	The length has been reduced substantially and the section is now more focused and definitions of each term are provided.
832	1	28	36	28	49	I suggest deleting; it doesn't really add anything needed for the reader. (IPCC WGII TSU)	Done.
833	1	28	36	29	54	As resilience was given importance in the beginning of the chapter, more use of the concept and it's relation to coping and adapting should be made here. (Ammann, Walter J., Global Risk Forum GRF Davos)	Resilience is introduced in section 1.3.
834	1	28	39	0	0	make a space between by and disaster (Saad-Hussein, Amal, National Research Centre)	N/A - text deleted
835	1	28	40	28	40	Should read "the '70s onwards in particular". (Gaillard, JC, The University of Auckland)	N/A - text deleted
836	1	28	42	0	0	Is it possible to give some references reflecting this division of views? (Goodess, Clare, Climatic Research Unit)	N/A - text deleted
837	1	28	44	28	49	What about 'adjustment' in the disaster literature since the 1940s? This is more or less the same framework. (Gaillard, JC, The University of Auckland)	N/A - text deleted
838	1	28	49	0	0	Is it possible to give some references reflecting this struggle? (Goodess, Clare, Climatic Research Unit)	N/A - text deleted
839	1	28	51	29	7	This is missing a great deal of literature, including publications by Roger Jones, Nick Brooks, and others. Reading that literature will provide a different perspective. (IPCC WGII TSU)	The perspectives of these authors have been added and referenced.
840	1	28	53	28	54	Its not clear which are these recent definitive reviews. (Goodess, Clare, Climatic Research Unit)	Reference added.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
841	1	28	0	33	0	1.4 While certainly important, I found the discussion of coping to be much too long and too detailed relative to other issues presented in the chapter. The OED definition and Box 1-6 provide more detail than is needed. This whole section could be much shorter. (Leichenko, Robin, Rutgers University)	This section has been shortened.
842	1	28	0	0	0	Sections 1.4.1. and 1.4.2. Why do not relocate these entire conceptual sections just after the other early definitions? (Gaillard, JC, The University of Auckland)	This section's location was dictated by the plenary outline for the report.
843	1	29	6	29	7	Even the first time I read this comparison of coping and adaptation, my immediate first thought is "what about resilience?" Resilience seems to be held in reserve throughout the report and only brought back into chapter 8 as a solution for recognizing overlaps between coping and adaptation. It would be useful though to reference resilience more thoroughly throughout the rest of the document -- even starting with this initial point in the discussion. (O'Donnell, Ian, Asian Development Bank)	
844	1	29	6	29	7	Some would disagree that adaptation is associated with transformation and say it is understood in a much more limited way as being about 'adjustment', based on its ecological definition. (Rickards, Lauren Amy, University of Melbourne)	N/A - text deleted
845	1	29	9	29	21	In general I would not spend too much time to clarify the difference with concepts very close like coping and adapting. Surely I disagree that adaptation is: "primarily pre impact, anticipatory etc.". In fact important adaptations are also reactive (see e.g. air conditioning) and post impact (see also the definition of IPCC TAR). My impression is that adaptation includes any possible reaction to a stimulus, thus it includes resilience and coping, but it is wider. (Bosello, Francesco, Fondazione Eni Enrico Mattei, Milan University \)	This section has been shortened.
846	1	29	9	29	21	Can be condensed. (IPCC WGII TSU)	The text was condensed.
847	1	29	12	25	13	Disagree with statement of resilience being post-impact. Resilience as an analytical category carries a post-impact notion, but used as a guiding principle for general adaptation it does NOT. In contrast, it is then strongly anticipatory and precautionary (Goessling-Reisemann, Stefan, University of Bremen)	The concept of resilience is discussed earlier in the chapter in the revised version and incorporates this pre-impact notion
848	1	29	12	29	14	It may be useful to indicate that these characterizations of coping, resilience and adaptation, are expressed here in terms of their respective "effects", while also noting that measures taken to include or consider means that may advance any of them may also be taken in anticipation, or prior to the realization of the adverse consequences of extreme events or a disaster. (Jeggle, Terry, University of Pittsburgh)	The fluidity between pre- and post-event notions for each of terms has been acknowledged in this section and the definition portion of the chapter.
849	1	29	12	29	14	You elaborate a lot on the terms 'coping' and 'adaptation', however, you introduce 'resilience' without proper definition, please balance. And please make sure terms are used consistently within report. (Casty, Carlo, PartnerRe)	Definitions are now included at the beginning of the chapter and the discussion throughout is more balanced in re: coping, adapting, and resilience.
850	1	29	13	29	14	Reactive or Palliative adaptation has also been talked about in literature. It can be considered to include this concept here. The following paper also talks about reactive adaptation: Fankhauser, S., Joel, S. B., & Tol, R. S. (1999). Weathering Climate Change: Some Simple Rules to Guide Adaptation Decisions. Ecological Economics, 30, 67–78. (GARG, AMIT, INDIAN INSTITUTE OF MANAGEMENT AHMEDABAD)	This text has been condensed and the citation is not appropriate here.
851	1	29	15	29	16	I suggest deleting 'and many extreme impacts are becoming more severe and less reliability predictable'. I think the reference to Chapter 3 is sufficient. (Goodess, Clare, Climatic Research Unit)	This text has been removed.
852	1	29	23	30	2	The Netherlands case is fine especially with mortality rate with life expectancy. (Takeuchi, Kuniyoshi, ICHARM)	Rates are included.
853	1	29	25	19	54	While interesting, I'm not clear on the intended lesson-learned or conclusion to be drawn based on the example in box 1-5 or how the box is intended to relate to the adjacent text. Risk was not increasing because of changing climate conditions, but because of increasing population, in part caused by the coping decisions. And, ultimately, the risk is substantially reduced, so the box title "Adapting to Rising Levels of Risk" doesn't exactly make sense. (Staudt, Amanda, National Wildlife Federation)	The box text now has an introduction that explains its intended purpose.
854	1	29	25	29	54	I don't really understand what is the element causing rising levels of risk in this example. (Goodess, Clare, Climatic Research Unit)	The study focuses primarily on historical adaptation, though rising levels of risk associated with climate change are now explicitly discussed.
855	1	29	25	0	0	I missed reference to this Box in the text? (Dube, Pauline, University of Botswana)	There is now a reference on p 33, line 20
856	1	29	25	0	0	Interesting box, but the message seems to be concerned only with the engineering. It should be accompanied by a further paragraph that describes the rapidly changing thinking and policy in the Netherlands on flooding. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	There is now reference to current adaptation efforts.
857	1	29	27	29	27	Please, clarify what is "CE". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	CE is a standard denotation referring to Common Era and is equivalent to AD. The term has been changed to AD.

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858	1	29	27	29	27	I don't think in general the CE is needed after dates unless it is needed to avoid possible confusion with BCE. (Trewin, Blair, Australian Bureau of Meteorology)	We retained the date to be clear.
859	1	29	27	29	36	Cite other cases of adaptation in other regions of the world such as the Mekong river and Cambodian adaptation to regular flooding (the culture of Angkor Watt (http://www.mrcmekong.org/flood_report/2008/flood-benefits.htm) or the Mojo culture in the Amazon basin upstream flood plains (see for example:Castillo, Joseph (1906). "Relación de la provincia de Mojos." In Documentos para la historia geográfica de la República de Bolivia, serie primera: Epoca colonial , edited by Manuel V. Ballivián. Vol. 1, Las provincias de Mojos y Chiquitos , 294-395. La Paz: J. M. Gamarra. Nordenskiöld, Erland (1924). The Ethnography of South America Seen from Mojos in Bolivia. Comparative Ethnographical Studies, no. 3. Gothenburg: Elanders Boktryckeri Aktienbolag. Parroquias de Moxos (1988-1989). Historia cultural de Mojos. 2 vols. Trinidad, Bolivia: Parroquias de Moxos. HYPERLINK "/content/0891-4486/"International Journal of Politics, Culture, and Society. HYPERLINK "/content/0891-4486/15/1/"Volume 15, Number 1, 107-123, DOI: 10.1023/A:1011171901299. Historical Perspectives on Gender, Security, and Technology: Gathering, Weaving, and Subsistence in Colonial Mission Communities of Bolivia. HYPERLINK "/content/?Author=Cynthia+Radding"Cynthia Radding. Riester, Jürgen (1975). Indians of Eastern Bolivia: Aspects of Their Present Situation. Copenhagen: International Work Group for Indigenous Affairs. Read more: HYPERLINK "http://www.everyculture.com/South-America/Mojo-Bibliography.html" "ixzz0zJTuyt6q"http://www.everyculture.com/South-America/Mojo-Bibliography.html#ixzz0zJTuyt6q) (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	This case focuses on the Netherlands and these references, while relevant in a larger sense, are outside the focused nature of the box.
860	1	29	27	0	0	CE = AD? (Casty, Carlo, PartnerRe)	Yes
861	1	29	39	0	0	Delete 'so' (Casty, Carlo, PartnerRe)	Done.
862	1	29	54	29	54	You may want to add that due to further economic development, and climate change, the standards since 1953 are considered outdated. Potential economic losses and flood casualties have probably risen since. This has been shown in a number of extensive studies, specifically MNP (2004). Dutch dikes and risk hikes: a thematic policy evaluation of risks of flooding in the Netherlands. Report 500799002, Milieu- en Natuurplanbureau, Bilthoven; and earlier by the analysis described in Bouwer, L.M., P. Vellinga (2007). On the flood risk in The Netherlands. In: S. Begum, M.J.F. Stive, J.W. Hall (eds.), Flood Risk Management in Europe: Innovation in Policy and Practice, Springer, Berlin, 469-484 http://dx.doi.org/10.1007/978-1-4020-4200-3_24 . (Bouwer, Laurens, Institute for Environmental Studies)	Thank you for these suggestions. Appropriate references have been included.
863	1	30	5	34	40	The discussion of the differences between coping and adaptation appear to be rather academic and could be shortened considerably. (Goessling-Reisemann, Stefan, University of Bremen)	The discussion has been dramatically shortened.
864	1	30	5	0	0	Sub-section 1.4.1. is important, indeed essential, and is well and carefully presented here. The reviewer hopes that these distinctions are observed in the use of the words consistently throughout the SREX and across Chapters, which was not the case in the ZOD. (Jeggle, Terry, University of Pittsburgh)	We retained this section largely as written, and used these connotations to inform our definitions. We, too, hope that the remainder of the report will conform to the SREX definitions of the terms.
865	1	30	7	30	26	Can be condensed. (IPCC WGII TSU)	This text was condensed slightly but we felt it important to retain both the discussion of denotation, connotation, and examples.
866	1	30	13	30	26	Very good paragraph! (Gaillard, JC, The University of Auckland)	Thanks.
867	1	30	31	30	41	Repeated elsewhere. (IPCC WGII TSU)	This text has been removed.
868	1	30	44	30	44	I think this statement refers more generally to disaster management. (Stone, John M R, Carleton University)	This text has been removed.
869	1	30	0	34	0	This whole section focuses on setting up a dichotomy between coping and adaptation, which seems a bit odd given that the disaster risk management community has already adopted resilience to an extensive degree. There are some good points to be made in comparing coping to adaptation but they don't deserve 4 pages and especially not at the expense of talking about resilience at an earlier point than chapter 8. (O'Donnell, Ian, Asian Development Bank)	Coping and adaptation were mandatory topics from the chapter outline. While resilience is an increasingly important term, coping and adapting are still used widely in the DRM literature, as we note and cite. Resilience is introduced earlier in the chapter in the SOD.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
870	1	31	1	32	23	Box 1-6 can be briefly included in definition on concept. If history of "coping" should be treated, experiences of Chinese coping with disaster should be included. The current is too much detail of western/English literature. It may be more interesting to box that in Japanese or maybe in Eastern Hemisphere language there is no distinction of hazards from disaster and often confused. (Takeuchi, Kuniyoshi, ICHARM)	This box has been removed.
871	1	31	1	34	40	Box1-6 and also on the sections that follow it, sometimes it appears like indigenous knowledge systems (IKS) as a whole is equivalent/limited to coping/barely surviving impacts of extremes. IKS is also considered static. I think IKS is broader than coping with extreme events. Authors should consult more literature on IKS in general. We should not sound hypocritical either since the current civilisation is also built upon a number of elements of what was IKS and current societies continue to harvest, develop and integrate elements of IKS while on the other hand refusing to acknowledge this. These sections starting from page 31 to page 33 line 13 while reviewing literature and acknowledging Yohe and Tol's more helpful view of IKS should also carry an underlying but clear message on the need for development and conventional science to embrace IKS at all levels to facilitate its growth and transformation with time as part of DRM and adaptation. The role of IKS, contrary to for example, the narrow view noted in page 34 lines 34-36 goes beyond the response phase of disaster risk but we usually choose not to notice this. (Dube, Pauline, University of Botswana)	This box has been removed.
872	1	31	3	32	21	This is highly repetitive and can be reduced to a paragraph or two. It is not a comprehensive literature review and needs more references. (IPCC WGII TSU)	This text has been removed.
873	1	31	3	0	0	Box 1-6 Coping Historically: is this key to the Chapter? Suggest to delete this box given the overall need to reduce the length of Chapter 1 and the SREX. (Stocker, Thomas, IPCC WGI TSU)	This text has been removed.
874	1	31	20	31	29	References should include "United Nations Conference on the Human Environment - the Stockholm Declaration." 1972; "Natural Disasters: Acts of God or Acts of Man." Wijkman, Anders and Timberlake, Lloyd, 1984; "Prevention Better than Cure." Hagman, Gunnar, IFRC, 1984; "Incorporating Natural Hazard Assessment and Mitigation into Project Preparation." Committee of International Development Institutions on the Environment (CIDIE) and the Organization of American States, 1987 < http://www.oas.org/dsd/publications/classifications/publicationstitlea.htm >; "Disasters, Planning, and Development: Managing Natural Hazards to Reduce Loss." Organization of American States, 1990 < http://www.oas.org/dsd/publications/classifications/publicationstitlea.htm >; Primer on Natural Hazard Management in Integrated Regional Development Planning." Organization of American States, 1991 < http://www.oas.org/dsd/publications/classifications/publicationstitlea.htm > (Bender, Stephen Bender,	This text has been removed.
875	1	31	21	31	21	It is debateable if drm should be expressed "as sustainable development", as that is likely to obscure quite real distinctions between the concepts. It would however be suited to refer to drm as "contributing to sd" or "motivated by some of the same objectives of sd", or a similar expression of a contextual and contributing aspect of drm to sd, rather than equating them as presently stated. (Jeggle, Terry, University of Pittsburgh)	This text has been removed.
876	1	31	25	31	29	There may be a link to the concept of capacity. (Gaillard, JC, The University of Auckland)	This text has been removed.
877	1	31	31	31	31	I query the wisdom of referring to the DRiskMgmt cycle as a viable point of conceptual reference, especially as it has neither been introduced nor discussed/evaluated previously. I believe it may be open to considerable discussion to how accurately or indisputably it represents the concepts implied. See the comment pertaining to Figure 1.3. (Jeggle, Terry, University of Pittsburgh)	This text has been removed.
878	1	31	37	0	0	Figure 1.3. asserts certain characteristic elements which I believe are inaccurate, or otherwise mis-representative. E.g. it is questionable if risk reduction is only "community-based", nor whether risk reduction is delivered only "pre-impact". I would similarly query if crisis management measures are only "nationally and international based", nor that they are only delivered "post-impact" considering crisis management's (dm/em's) predominant role in "preparedness activities (pre-impact) as a case in point. Additionally, like all the other cycles, this drm cycle also misconstrues, or at least mis-implies, that all actions occur only within a cyclical or successive array, ignoring the actual situation that valid procedures or arrangements related to either drr or dm/em may occur at any temporal time related to an individual extreme event. By using this figure as a point of reference, it implicitly establishes the seeming accuracy or authority of what it connotes - which I think seems neither to be indisputable, nor necessarily accurate. (Jeggle, Terry, University of Pittsburgh)	This text has been removed.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
879	1	31	42	31	45	There is Jessica Mercer's framework: see for example Mercer et al. In Disasters Vol. 34(1) or Kelman et al. In Participatory Learning and Action Vol. 60. (Gaillard, JC, The University of Auckland)	This text has been removed.
880	1	32	29	33	54	See Sperling et al. 2008 for a discussion of various coping practices employed by communities. While coping practices may mitigate the immediate impact of a hazard it may also increase vulnerability in the future. For example a household may sell livestock to cope with a particular event. This may provide immediate income to buffer against the immediate event, but decrease also the asset base and hence increase vulnerability over the medium term (Sperling, Frank, WWF)	This text has been significantly condensed. The updated text incorporates the notion that coping can increase future vulnerability.
881	1	32	31	0	34	Perhaps some mention of capacity would be useful here, for it is the closely related cousin to coping. (Ammann, Walter J., Global Risk Forum GRF Davos)	We now introduce the term adaptive capacity at the beginning of this section.
882	1	32	48	0	0	Is it possible to cite some examples of these publications? (Goodess, Clare, Climatic Research Unit)	This text has been removed.
883	1	32	51	33	2	The UNISDR 2009 definition of coping capacity is limited to the first sentence listed. The second sentence is not part of the definition, but is only an explanatory comment. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	This text has been moved in the SOD to p 36, lines 18-19. Thank you for the clarification; we now only quote the first sentence.
884	1	32	51	33	2	This should reference the work by Nick Brooks and others on coping capacity. (IPCC WGII TSU)	This work is now included.
885	1	32	52	0	0	Its... (Casty, Carlo, PartnerRe)	N/A
886	1	33	16	34	14	This is too long and should be reduced considerably. Also, it is not a comprehensive literature review and needs more references. (IPCC WGII TSU)	This text has been significantly shortened.
887	1	33	18	33	18	FAR and AR4 need to be spelled out. (Gaillard, JC, The University of Auckland)	This text has been removed.
888	1	33	31	0	0	Schipper et al., will be replaced Schipper et al., 2010 (Incecik, Salahattin/Selahattin, Istanbul Technical University)	References have been updated as of the drafting date for the SOD. We will update all references prior to publication.
889	1	34	8	34	14	This is too short a consideration of resilience. (O'Donnell, Ian, Asian Development Bank)	There is additional text on the topic of resilience in earlier sections of the chapter.
890	1	34	17	34	40	With the addition of references, Section 1.4.2 could be replaced by this summary. (IPCC WGII TSU)	We folded the summary text into the new text for the Section.
891	1	34	27	0	0	'...somewhat in recent years, but there have been no exhaustive efforts to disentangle their meanings.' You name it, now one should do the effort and present precise and consistent definitions that future literature can reference to IPCC when using those terms. (Casty, Carlo, PartnerRe)	We have articulated clear definitions for the SREX at the beginning of the chapter.
892	1	34	30	34	30	Coupling these two terms here may be appropriate when considering social systems but I'm not sure it works for ecosystems - see Holling on resilience. (Stone, John M R, Carleton University)	This text has been removed. We do refer to Holling in our initial discussion of resilience in 1.1.2.3.
893	1	34	36	34	37	The text states that "the relationship between coping and resilience ... remains unclear" yet in chapter 8 resilience plays a quite significant role in the suggestions on approaches for the future. Resilience should get more treatment at this early stage as well, particularly as it is the more natural longer-term, future oriented corollary to adaption from the disaster risk management side than is coping. (O'Donnell, Ian, Asian Development Bank)	Resilience is discussed earlier in the chapter and has a larger role in the SOD ch. 1 than it did in the FOD.
894	1	34	43	34	54	See Barnett and O'Neill (2010) Maladaptation, Global Environmental Change 20: 211 (Rickards, Lauren Amy, University of Melbourne)	Thank you for this reference. We have cited their work on p 36, lines 32-33.
895	1	34	43	35	4	This is quite narrow view of the issues. It seems to take the view that climate is stationary, and lacks references. (IPCC WGII TSU)	This text has been removed and replaced with a discussion of barriers to adaptation, adaptation failures, maladaptation, and the role of complexity.
896	1	34	43	37	40	Maladaptation seems to be referred to here as something different to what I tend to think of in the context of climate change adaptation. Here, it seems to be more referring to the barriers to adaptation and policy resistance. E.g., I would think of the installation as air conditioning as a potential maladaptation because of the negative impact on mitigation. Cavity wall insulation in the UK has also been identified as a maladaptation to climate change, since it increases the cost and difficulty of flood repair. (Goodess, Clare, Climatic Research Unit)	The distinction between maladaptation and barriers to adaptation has been clarified in the SOD.
897	1	34	43	38	48	The discussion under section 1.4.3 needs to relate to scales covered in chapters 5, 6 and 7 i.e. reflect on adaptive and maladaptive risk management and insurance at local, national and international scales. The discussion is particularly lacking for international scales. There is also need to reflect on the role of humanitarian aspects of DRM (Dube, Pauline, University of Botswana)	The discussion in this section has been substantially recast. It continues to focus more on the local, regional, and national levels than international levels, in large part due to the dearth of literature giving examples on an international level.
898	1	34	47	34	47	Insert blank space between "strategies" and "may". (BONNET FERNANDEZ TRUJILLO, JORGE, GOBIERNO DE CANARIAS (CANARY ISLANDS GOVERNMENT))	This text has been removed.
899	1	34	47	0	0	make a space between strategies and may (Saad-Hussein, Amal, National Research Centre)	This text has been removed.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
900	1	34	50	0	0	Development actions are repeat with decisions that do not protect one population at the expense of another. Indeed much of the contribution to CC and the creation and amplification of vulnerability are done in the name of development. They also benefit some at the expense or loss of opportunity to others. There is no reason to believe CCA and DRM actions as tools will be different. The issue is development values, whose risk, what can be done, who pays and who benefits, all difficult questions for a society and its government, private sector and individual citizens. (Bender, Stephen Bender, Organization of American States (retired))	Agreed. However, we are constrained by the literature and must frame our discussion based on what it contains. For instance, the definitions of maladaptation in the literature state that maladaptive strategies are those that increase net greenhouse gas emissions.
901	1	34	54	35	1	Capital' and 'store' are jargon for non experts. (Gaillard, JC, The University of Auckland)	Capital is a commonly used term that denotes available assets. We have attempted to minimize jargon but certain terms are in <u>common usage and have been retained</u> .
902	1	34	0	0	0	Sections 1.4.3. and 1.4.2. These sections also sound technocratic, wordy in some instances, and often irrelevant in most places and people of the world, especially those most vulnerable to natural hazards and the impact of <u>climate change</u> . (Gaillard, JC, The University of Auckland)	The discussion has been focused and we have attempted to make it more relevant to those who are exposed.
903	1	35	1	35	4	The main reason of maladaptation should be incomplete understanding and treatment of "future uncertainty" in addition to incomplete consideration of system complexity. (Takeuchi, Kuniyoshi, ICHARM)	This is one source of maladaptation, as we outline in the SOD, though there are several others to consider.
904	1	35	7	35	16	The title "Types of Maladaptation" of Section 1.4.3.1 is not appropriated. This section is more or less discussing the causes to Maladaptation. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	The title of this section has been changed.
905	1	35	7	36	16	This needs a much more comprehensive view of the issue. See, for example, publications by Tol and Yohe. (IPCC WGII TSU)	The discussion has been broadened in an attempt to make it more comprehensive. Tol and Yohe's work has been included.
906	1	35	7	0	0	Does maladaptation also include the human foibles that focus on min-max - which governments cannot afford to do? (Prather, Michael, UC Irvine)	It is not entirely clear what this comment refers to. We have attempted to broaden the discussion of maladaptation to be <u>inclusive and relevant at the policy level</u> .
907	1	35	9	0	0	I don't understand the phrase 'each correlated with a particular wrinkle in the interface'.... (Goodess, Clare, Climatic Research Unit)	This text has been removed.
908	1	35	9	0	51	to what extent is it needed to know the hazard universe ? Example of dangerous driving, we cannot know all the accidents hazard universe but we can know they will happen and cause harm, similar here. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	The phrase refers to the range of possible hazards. Outlining the possible range and assigning probabilities to their likelihood is central to the risk management processes discussed in this chapter <u>and other parts of SREX</u> .
909	1	35	10	35	11	The sentence "As Sterman and others..." needs rephrasing. (Casty, Carlo, PartnerRe)	It is not clear from this comment what the issue with the sentence was and we believe its intent is clear. If the meaning remains unclear on reading the SOD, please suggest identify what needs <u>rephrasing</u> .
910	1	35	14	35	15	Remove "universe (or the universe of relevant risk management strategies)" as it sounds very awkward. (Gaillard, JC, The University of Auckland)	Please see comment 908 above.
911	1	35	20	0	22	As someone working with GHGases, this sentence about GHG stocks makes no sense. - Sterman 2008 seems to have covered every topic? (Prather, Michael, UC Irvine)	A different example of stocks and flows - debt and deficit - is used in the SOD.
912	1	35	27	35	35	An important paragraph, well stated and with good illustrative examples. (Jeggle, Terry, University of Pittsburgh)	Thank you.
913	1	35	27	0	0	Quoting work by Sterman in the context of risk management may be misleading. His work and publications are related to the System Dynamics (SD) simulation approach for addressing complexity. SD is deterministic in nature and does not accept the existence of uncertainty and risk. The whole theoretical concept assumes that the behavior of complex systems is caused by the system structure, feedback relationships between its components and delays. Uncertainty is according to this approach only lack of knowledge used to define the system structure. I would suggest that this section be carefully re-written. SD does have very important role in addressing dynamics of complex systems but using it in the context of risk management may be misleading. Chapter 5 of my textbook clearly talks about SD and its use in disaster management and section 4.2 is offering general discussion of SD approach (Simonovic, S.P., Systems Approach to Management of Disasters: Methods and Applications, John Wiley & Sons Inc., New York, pp.348, ISBN: 978-0-470-52809-9, 2011 - in print, available Nov 1, 2010) (Simonovic, Slobodan, University of Western Ontario)	We refer to Sterman's work and the role of SD to discuss the larger issue of complexity and its relationship to CCA. Uncertainty is definitely a driver of complexity and its complicating effect on CCA, and we note this in the SOD. Whether SD is too deterministic to use in DRM is not the focus of the discussion and is, regardless, quite arguable.
914	1	35	38	35	39	Please delete sentence: "The world's climate is..." as it is very vague. (Casty, Carlo, PartnerRe)	This sentence has been removed.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
915	1	35	43	35	51	It is not suitable by giving "The World Health Organization's estimate of the global burden of disease attribute to climate change..." as example in "Types of Maladaptation" Section. (Li, Yun, CSIRO Mathematics, Informatics and Statistics)	This example has been removed.
916	1	35	50	0	0	I am missing a simple identification of systems approach to disaster risk management. Figure 1.2 is presenting it but there is no explicit discussion of the approach and its value. Mileiti (Mileti, D.S. (1999), Disasters by Design, Joseph Henry Press, Washington, DC) is identifying it as the only way to address the future disasters and my whole book is devoted to the topic (Simonovic, S.P., Systems Approach to Management of Disasters: Methods and Applications, John Wiley & Sons Inc., New York, pp.348, ISBN: 978-0-470-52809-9, 2011 - in print, available Nov 1, 2010) Chapter 3 and section 2.5 are offering clear definitions of systems approach in the context of integrated disaster management. (Simonovic, Slobodan, University of Western Ontario)	The role of a systems approach to DRM is quite important but outside the focus of this section.
917	1	36	1	36	1	Should read "local coping". Ditto line 4. (Gaillard, JC, The University of Auckland)	This text has been removed.
918	1	36	4	36	5	Maybe worth a real example? (Gaillard, JC, The University of Auckland)	This text has been removed.
919	1	36	5	0	0	"Conventionally" seems like a bad word choice if the intent is to make a distinction with indigenous approaches, as appears to be the case in this sentence. (O'Donnell, Ian, Asian Development Bank)	This text has been removed.
920	1	36	20	0	0	Serious shortcoming of the whole document and specially this Chapter is discussion of risk communication. It has been mentioned but this issue is so important in the context of climate change that a separate section should be devoted to risk communication only. I am finding the best source of very useful knowledge on risk communication in the work of W. Leiss (appropriate reference here is – Leiss, W., (2001), The Chamber of Risks – Understanding risk controversies, McGill-Queen's University Press, Montreal. (Simonovic, Slobodan, University of Western Ontario)	Risk communication is mentioned several times in the first chapter. It is not the focus of Section 1.4 but is mentioned there, as well.
921	1	36	23	0	26	I really object to this analogy and feel it should be stripped from the chapter. There is absolutely no parallel on the science between climate and the financial sector. (Prather, Michael, UC Irvine)	There are multiple potential parallels, including connections between understanding and regulation of complex systems and socialization of losses assumed from risks taken by private enterprise. Nevertheless, in deference to the need to cite an extensive literature base, this example has been removed.
922	1	36	38	36	47	Include references on the challenges of managing risks that are changing over time and space. (IPCC WGII TSU)	This challenge is outlined in the section on Barriers to Successful Adaptation.
923	1	36	42	0	0	maladaptation as one word for consistency reasons. (Casty, Carlo, PartnerRe)	The intent of this comment is unclear.
924	1	37	5	37	52	In addition, a no regrets approach is laudable, but exists in a framework where some benefit (even a very few, such as the level contractors) and some loss, and so decisions have to be made based on societal values. (Bender, Stephen Bender, Organization of American States (retired))	Societal values are important, and we chose to emphasize the role of robustness as a policy priority.
925	1	37	5	0	10	taking the "no Regrets" as the key concept here while ignoring literature on protecting the poor and social development that has proven the notion of regrets in the Bank wrong is biased. Earlier in discussions with coping it would have been good to cite O'Brien and Leichenko on double exposures. Their argument here is valid as well perhaps with more relevance than the no regrets argument. at least as worthy of referencing. Ian Gough has also written on the overlaps between welfare tools and the need to protect people from climate hazards. a Third lines coming from science is Steve Hansen 2009, and 2008 arguing for a universal access to income as a way to protect people from climate hazards, putting resilience and coping capacity directly in their hands. ILO Global social floor arguments are also relevant here even if not explicitly designed for reducing climate change disaster risk. There have been many regrets with poverty and development policy because of the very narrow knowledge base on which knowledge has been built. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Thank you for these suggestions. We cite O'Brien and Leichenko's work in this Section, though not in the subsection on no-regrets. We chose instead to focus on the concept of robustness here.
926	1	37	13	0	0	maladaptation as one word for consistency reasons. (Casty, Carlo, PartnerRe)	Again, the intent of this comment is unclear.
927	1	37	13	0	0	Risk transfer and insurance need a separate section as I note above; it may be better to bundle all such material together. (Basher, Reid, Secretariat of the High-Level Taskforce on the Global Framework for Climate Services)	Insurance and risk transfer are covered more in depth in Section 1.3.1 on Probabilistic Risk Analysis.
928	1	37	18	0	0	The fund pays out for claims when a natural catastrophe event... (Casty, Carlo, PartnerRe)	This text has been removed.
929	1	37	19	0	0	...is declared... (Casty, Carlo, PartnerRe)	This text has been removed.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
930	1	37	22	0	0	This problem would be less important if spatial planning regulations are in place that account for the flood risks (Willems, Patrick, Katholieke Universiteit Leuven)	This text has been removed.
931	1	37	31	37	36	Please rephrase entire sentence or divide. (Casty, Carlo, PartnerRe)	This sentence has been revised (see p 38, lines 36-39).
932	1	37	40	0	0	Are 'maladaptive risk management processes' different to climate change maladaptation? (Goodess, Clare, Climatic Research Unit)	Not all maladaptive risk management is climate change maladaptation, but all climate change maladaptation is maladaptive risk management.
933	1	37	43	38	48	Additionally to learning the change management literature can help here (Guenther, Edeltraud, Technische Universität Dresden)	We now also include select change management citations in the discussion.
934	1	37	43	38	48	Consider also introducing a graphic on (disaster) and comparing risk management cycles (from preventive to reactive) and their consideration of climate change used in the scientific and development literature, see relevant literature used by GFDRR, UNISDR and other agencies. Suggested literature: Add further literature and references related to conceptual and practical use of terms, inter alia, hazard (single, multihazard), extreme events, exposure, disaster (hydro-meteorological, geologic), risk management, adaptation, mitigation, please refer also to relevant strategy paper, technical reports by UNDP, World Bank, UN-ISDR, GFDRR, WWF, IUCN, UNEP, EC, bilateral agencies, and analysis from relevant private sector companies, e.g. insurance sector, Munich Re and Swiss Re analysis. The type of terms used their and how they relate to the scientific literature is important considering the applied nature of the issue under review. Additional references: (i) Stott, P.A, Stone, D.A. and Allen, M.R, 2003. Human contribution to the European heat wave in 2003. Nature 432; (ii) Sperling F. and F. Szekely 2005. Disaster Risk Management in a Changing Climate 2005. Discussion Paper prepared for the World Conference on Disaster Reduction on behalf of the Vulnerability and Adaptation Resource Group (VARG). Reprint with Addendum on Conference Outcomes. Washington, D.C.; (iii) Sperling F. with Valdivia C., Quiroz R., Valdivia R., Angulo L., Seimon A. and Noble I. (2008). Transitioning to Climate Resilient Development - Perspectives from Communities in Peru. Environment Department Papers - Climate Change Series. Paper number 115. The World Bank, Washington, D.C. (iv) World Bank (2005). Natural Disaster Hotspots - A Global Risk Analysis. Disaster Risk Management Series No.5. The World Bank and Columbia University. Washington, D.C. (Sperling, Frank, WWF)	Your suggested graphic did not fit with the thrust of Section 1.4 as conceived for the SOD, but we are considering an additional sub-section on learning in the DRM community for the FGD and such a figure may have a place there. Otherwise, thank you for the suggested references. We have reviewed these citations but most do not refer specifically to learning, the focus of this sub-section.
935	1	37	45	0	0	I think that the 'no regrets' approach is closer to how I tend to interpret climate change maladaptation. But it would be good to give some references/examples of why this approach is complex. (Goodess, Clare, Climatic Research Unit)	We have expanded this discussion considerably and included a wider range of references.
936	1	37	45	0	45	In practice, no regrets measures can help to simplify choices, not be 'remarkably complex'- usually they are presented in a specific context- are demand side oriented (Hellmuth, Molly, International Research Institute for Climate and Society)	We refer to the concept of robustness as an important way to address the issue of complexity in pursuing no regrets adaptation.
937	1	37	45	0	53	We object the continued use of the no regrets term ignoring others. Also, the best no regrets planning is immediate decarbonisation of economies and mitigation. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	No regrets is referred to in this report as a special case. It is not clear what other terms or strategies this comment refers to. Aggressive mitigation is obviously important, though the focus of the SREX is climate change adaptation efforts and there robustness is an important principle
938	1	37	46	37	46	There should be a mention to the humanitarian literature, especially to M.B. Anderson concept of Do No Harm (eponym book in 1999). (Gaillard, JC, The University of Auckland)	This text has been removed.
939	1	37	50	37	52	What are the "new methods"? Please be more specific. (Goessling-Reisemann, Stefan, University of Bremen)	These methods are discussed in the papers by Lempert and others cited in reference to robustness. This specific text has been removed in the SOD, however.
940	1	37	0	0	0	Section 1.4.3.3. What about micro-insurance? (Gaillard, JC, The University of Auckland)	Many of the discussions of insurance can be generalized to include micro-insurance as well, though we do not include any examples of micro-insurance specifically.
941	1	38	1	38	15	Is there an example or two that is directly related to the SREX? (IPCC WGII TSU)	We were not able to generate an example that is as universally recognizable and translatable, though we did try to highlight the potential public health benefits of third-loop learning in re: compact urban design and active transport.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
942	1	38	1	0	48	learning loops is confusing, and brings us back to coping versus adapting debate, unnecessarily (Hellmuth, Molly, International Research Institute for Climate and Society)	By the plenary-approved outline, this section of chapter one was to focus on the topic of coping and adapting. We discuss learning in an effort to bridge the apparent gap between the two concepts and because of its central importance to climate change adaptation.
943	1	38	8	0	0	Is it possible to give some references on 'triple-loop' learning? (Goodess, Clare, Climatic Research Unit)	We have included some references in the caption to the figure on learning loops.
944	1	38	10	38	12	The following wording is suggested for the sake of clarity: In triple loop learning about climate change risks the social structures, cultural mores, and other structures that mediate constructions of risk are changed in response to evidence that these deep social structures are not serving a larger agreed upon goal addressing climate change. (Radunsky, Klaus, Umweltbundesamt GmbH)	This text has been changed to: "In triple-loop learning about risk, the social structures, cultural mores, and other structures that mediate constructions of risk (see section 1.3.2.2.3) are changed in response to evidence that these deep social structures are not serving a larger agreed upon goal, i.e. are maladaptive when assessed in a more comprehensive risk-benefit calculus." The amended text is on p. 42, lines 21-24.
945	1	38	12	38	12	I think it is important to mention that the learning loop theory (developed in the 60/70ties) have developed into a much more systematic understanding of learning processes. I suggest to add the following sentence in lines 12 after the word "goal": "During the last years the understanding of learning processes has been progressing significantly mainly regarding the 'nature', hindering and enabling factors of what nowadays is conceptualized as social learning processes aiming at the co-production of environmental knowledge between members of the scientific and implied non-academic communities (stakeholders). This allowed to formulate a broader theory and practice on how to understand and promote in more systematic ways social learning processes between scientists, experts, policy makers and/or local stakeholders giving emphasis on the creation of spaces allowing to transform strategic into communicative interaction in the context of networks, platforms of stakeholder platforms (Rist et al. 2006, Rist et al. 2007, Schneider et al. 2009, Schneider et al. 2010). Rist S, Chiddambaranathan M, Escobar C, Wiesmann U. 2006. "It was hard to come to mutual understanding..." Multidimensionality of social learning processes in natural resource use in India, Africa and Latin America. Journal of Systemic Practice and Action Research 19 (3) 219-237. Rist S, Chiddambaranathan M, Escobar C, Wiesmann U, Zimmermann A. 2007. Moving from sustainable management to sustainable governance of natural resources: The role of social learning processes in rural India, Bolivia and Mali. Journal of Rural Studies 23 (1) 23-37. Schneider F, Fry P, Ledermann T, Rist S. 2009. Social Learning Processes in Swiss Soil Protection - The 'From Farmer - To Farmer' Project. Human Ecology 37 (4) 475-489. Schneider F, Ledermann T, Fry P, Rist S. 2010. Soil conservation in Swiss agriculture-Approaching abstract and symbolic meanings in farmers' life-worlds. Land Use Policy 27 332-339. (Rist, Stephan, Centre for Development and Environment (CDE))	We discuss the role of social learning briefly in this sub-section and other sections of the chapter. Knowledge co-production and sustainable resource management may be important examples to include in the FGD in the planned section on DRM's learning.
946	1	38	21	38	22	I am not sure whether the part regarding single-loop learning is correct : In my understanding single loop learning is rather REACTIVE and not REFLEXIVE. I would rather add the qualification of REFLEXIVE to double-loop learning. (Rist, Stephan, Centre for Development and Environment (CDE))	We have changed this wording.
947	1	38	37	38	38	I don't understand the final part of this sentence 'societies may come....'. (Goodess, Clare, Climatic Research Unit)	This language has been removed.
948	1	38	51	39	51	The outline of the chapters needs to resonate with the purpose and scope of the report given in page 3-4 particularly points 1-3 in page 4 lines 13-19 . The chapter outline on page 39 should not only emphasise climate change adaptation but also indicate linkages to DRM.i.e. for chapter 2 lines 5-10 page 39 indicate link to DRM; for chapter 5-7 indicate that this is where practical linkages between DRM and adaptation are explored at various administrative scales; for chapter 9 also show how these case studies relate to adaptation (Dube, Pauline, University of Botswana)	We believe these resonate now.
949	1	38	51	39	51	This useful summary of the chapters of the report belongs in the missing Executive Summary. (Wright, Richard, American Society of Civil Engineers)	Executive summary forthcoming.
950	1	38	53	39	3	It would be helpful to indicate which chapters fall in which section. (Goodess, Clare, Climatic Research Unit)	Text rewritten and no longer applicable.
951	1	38	53	0	0	Use 'parts' instead of 'section'. (Casty, Carlo, PartnerRe)	Text rewritten and no longer applicable.
952	1	39	1	0	0	The second part (Chapters x, y, z) focuses... (Casty, Carlo, PartnerRe)	Text rewritten and no longer applicable.
953	1	39	3	39	3	And that highlight key conclusions from the other chapters. (IPCC WGII TSU)	Text rewritten and no longer applicable.

#	Ch	From Page	From Line	To Page	To Line	Comment	Response
954	1	39	3	0	0	...finally, chapter x on case studies... (Casty, Carlo, PartnerRe)	Text rewritten and no longer applicable.
955	1	39	12	0	16	Is Chapter 3 really missing the the whole issue of slow crossing of thresholds and tipping points? Since this report is trying to deal with extreme risk (and not just WX/CX), it needs to be better balanced. (Prather, Michael, UC Irvine)	See chapter 3 for more details.
956	1	39	13	0	0	Chapter 3 reviews past changes as well as future projections. (Goodess, Clare, Climatic Research Unit)	Included.
957	1	39	14	39	14	"revises this assessment" -- suggest to reword this sentence. The SREX builds on the IPCC AR4 and overall updates the earlier assessments, which in some instances, due to new literature available, could mean a revision... (Stocker, Thomas, IPCC WGI TSU)	Noted and changed.
958	1	39	14	39	14	WGI? (Gaillard, JC, The University of Auckland)	Noted and changed.
959	1	39	25	39	28	Language of these questions is tending to be policy-prescriptive; rephrase to be policy-neutral (Stocker, Thomas, IPCC WGI TSU)	Noted and changed.
960	1	39	25	39	32	The structure described for Chapters 5, 6 & 7 with a common set of questions that are explored from 7 perspectives is not clear in the Chapters. Suggest rephrasing this paragraph. (Stocker, Thomas, IPCC WGI TSU)	Noted and changed.
961	1	39	40	0	41	The section of the sentence beginning with ""where the emphasis is on institutions..." could read as follows " where the emphasis is on institutions, organisations, knowledge generation and sharing, legal frameworks, and practices which..." (Dube, Pauline, University of Botswana)	Done.
962	1	39	41	0	42	The last sentence could read as follows: " This chapter also discusses integration of responsibilities across all governmental scales , emphasizing linking DRM with climate change adapation and development. (Dube, Pauline, University of Botswana)	Done.
963	1	39	50	39	21	Consider also Sperling et al. 2008 in discussion of migration as a coping strategy. There is a difference btw. push migration and planned, adaptive migration. Members of a household or community may be forced to (temporarily or permanently) migrate when alternative options of coping with one or repeated set of hazards are no longer available and the lack of assets make migration the only viable option. Migration then becomes an option of last resort. (Sperling, Frank, WWF)	Migration no longer discussed here. Reference belongs in other chapters.
964	1	39	51	39	51	we note the current lack of a section with the "SREX" definitions in Chapter 1 (perhaps here and in the Glossary?), that can then be used by all the other chapters and guarantee consistency throughout the SREX. This is needed in order for this Chapter to "providing a key reference point for the entire report". (Stocker, Thomas, IPCC WGI TSU)	See comment #13.
965	1	39	0	0	0	Structure of this report' section could be made more user friendly and more intuitive. (Ammann, Walter J., Global Risk Forum GRF Davos)	We this it is now improved.
966	1	42	34	0	0	The word 'de' in the title of the paper may be changed to 'to'. (Iqbal, Muhammad Mohsin, Global Change Impact Studies Centre (GCISC))	We will change in next draft.
967	1	45	46	45	47	Where is this article submitted? (Gaillard, JC, The University of Auckland)	We will find out in next draft.
968	1	48	0	0	0	Figure 1.1. This figure is good but unfortunately not all chapters use this terminology and stick to this framework. The concept of resilience for example is absent here (which is fine) although recurrent in many chapters. (Gaillard, JC, The University of Auckland)	Noted
969	1	49	0	49	0	Figure not clear where the evolution process for either begins (Bhadwal, Suruchi, The Energy and Resources Institute)	Noted
970	1	49	0	0	0	Figure 1.4. Is this figure useful? Such circle diagrams have been widely critized for emphasizing a vicious circle back to disasters after recovery. (Gaillard, JC, The University of Auckland)	Figure removed.
971	1	50	0	50	0	Not sure whether adds to the explanation or not (Bhadwal, Suruchi, The Energy and Resources Institute)	Noted
972	1	50	0	0	0	Culturally induced bias, derived from the indigenous cultures definition of well being, development and risk as opposed to well being, equilibrium and coping with disturbances to equilibrium pose a major problem since in those contexts variability and change, as well as risk are not culturally integrated. (Zapata-Marti, Ricardo, United Nations Economic Commission for Latin America and the Caribbean (ECLAC))	Noted.
973	1	0	8	0	0	We propose inserting text from page 26, lines 13-27, since the ES lacks mentioning of the need for observations and models to map and understand risks, which is fundamental. This would also link this chapter to following chapters on the science of extreme events. (Asphjell, Torgrim, Climate and Pollution Agency (Norway))	Unsure where this comment is referring to. Too much information for the executive summary.