

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	35503	1	0	0	0	0	Hornborg, Alf. 2001. The Power of the Machine: Global Inequalities of Economy, Technology, and Environment. (Hans Baer, University of Melbourne)	We are not sure why this reference is provided nor to what chapter of the report it is directed.
2	35743	1	0	0	0	0	A very thorough chapter that provides excellent coverage of developments so far. The chapter also does a very good job of explaining the roles of reviewers in the 5th FOD assessment process. The inclusion of summary / conclusions of Special reports SREX and SRREN and relevant findings of WG-I and III has given overall perspective of the mission. (Jitendra Desai, Reliance Industries Limited)	Thank you for the positive comments.
3	36168	1	0	0	0	0	General comments: The treatment of uncertainties is not fully consistent with the IPCC guidance as in Mastrandrea, M.D., C.B. Field, T.F. Stocker, O. Edenhofer, K.L. Ebi, D.J. Frame, H. Held, E. Kriegler, K.J. Mach, P.R. Matschoss, G.-K. Plattner, G.W. Yohe, and F.W. Zwiers, 2010: Guidance Note for Lead Authors of the IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties. Intergovernmental Panel on Climate Change (IPCC). Available at <http://www.ipcc.ch> The authors only used the confidence statement, but they don't include the depiction of evidence and agreement as indicated in Fig 1 of the document (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	The usage of the calibrated uncertainty language is consistent with the IPCC uncertainties guidance. As noted in the comment, confidence as defined in that document is based on evaluation of evidence and agreement. But explicit presentation of summary terms for evidence and agreement is not required. Rather, the evaluation of evidence and agreement is described in the relevant chapter text indicated by the line of sight references to specific chapter sections for each Executive Summary finding.
4	36807	1	0	0	0	0	Some chapters of the report in its present form (like chapter 3.2) are difficult to read. In fact, they are long sequences of statements and citations with few or little interconnection among them. Sometimes it is impossible to understand if the effects of the climate change stressed in the text result from scenarios or from observations. During the enumeration of previous studies it is common to mix in a same sentence results from America with those from Europe or Asia in a continuous process where all the effects, antagonistic or not, coexist. For example: sometimes the report discusses the effects of increasing river flows as if they were the only ones, while a few pages before of after it discusses the effects of decreasing river flows exactly in the same perspective. In Chapters 3.5 and 3.6 a much more comprehensive approach was adopted resulting in a much more clear and sequential text which much more useful content. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	Text has been edited to read clearly.
5	36808	1	0	0	0	0	There are several paragraphs that are authentic miscellaneous of ideas some of them without any interconnection - e.g., pg. 39, lines 15 to 22 "hydropower generation leads to fragmentation of river channels and to alteration of river flow regimes that negatively affect freshwater ecosystems, in particular biodiversity and abundance of riverine organisms (Döll, 2009; Poff and Zimmerman, 2010). In particular, hydropower operation often leads to fast sub-daily discharge changes that are detrimental to the downstream river ecosystem (Bruno et al., 2009; Zimmerman et al., 2010). If, in tropical regions, the ratio of hydropower generation to surface area of the related reservoir is less than 1 MW/km ² , the global warming potential (CO ₂ -eq. emissions from the reservoir per MWh produced) can be higher than in the case of coal use for energy production (Gunkel, 2009). Densification of urban areas to reduce traffic emissions may conflict with provisioning additional open space for inundation in case of floods (Hamin and Gurrán, 2009)". (Maria Manuela Portela, Instituto Superior Tecnico (IST))	This text has been reworded.
6	36809	1	0	0	0	0	The IPCC has already a considerable experience, with more than 20 years. Also, according to the experience of IPCC the world should already have noticed the effects of the climate change. So, I think it was reasonable to include an initial chapter comparing signs, effects or consequences of the climate change stressed by the IPCC in old reports (based on "old" scenarios) with what effectively occur or with the present vision, based on new scenarios and approaches. In fact, the gap of time already allows some reflection about such issue. Also, it would improve the confidence on the "forecasts" provided by the IPCC. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	Chapter 1 covers this material.
7	37651	1	0	0	0	0	Comment 1: Uncertainty is explained (defined) in this chapter but not risk (risk being the integral of probability and consequence). Thus, a tail contribution of uncertainty (very unlikely) but with a large consequence may dominate the risk equation and thus be an important component of informing decision makers. Further, uncertainty is discussed as almost an apology for not having precise answers. Uncertainty reflects the limits to our best understanding of climate change. The estimate of uncertainty is a benefit to decision makers because it can help them understand where the societal risk lies and what aspect of uncertainty most contributes to that risk. As such, uncertainty (when recast as a contribution to risk) helps prioritize research to either better define or reduce the uncertainty. Conversely, the risk, that uncertainty implies, guides decisions for critical adaptation measures. Houses are built to take the pressures of a once-in-a-hundred-year wind storm, and it would be grossly inadequate to adapt the house to only consider only the "very likely" wind levels. (George Backus, Sandia National Laboratories)	The reviewer's point is well taken, we address the topic of "risk" in greater detail in subsequent sections, particularly in Sections 1.1.4 and 1.2.3 and new figure 1-7.

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8	37652	1	0	0	0	0	Comment 2: Certainly, the same logic applies to drought, storm surges, heat etc. Uncertainty is incredibly useful for engineering design, and therefore crucial to adaptation. It sets the contingency factor that must be applied to faculties for ensuring resilience. It is never reasonable to design to the best estimate or the most likely condition. Because the rest of the document speaks at length about adaptation, resilience, and risk, and because uncertainty was a key element of the review to improve upon AR4, this chapter, in this aspect of incorporating uncertainty as an advantage to minimize societal impacts, falls short of being a "point of departure." Climate change is important because it affects the future of humankind. Even our ecological concerns are an expression of human values. The interpretation of scientific evidence is to shed light on its implication for human impacts and response. (George Backus, Sandia National Laboratories)	In this chapter we summarize the IPCC guidance note and terms used to communicate uncertainty. We certainly agree with the reviewer's last two statements.
9	37653	1	0	0	0	0	Comment 3: Additionally, China, most of SE Asia, Europe, South America, and North America are composed of industrialized nations. Those industries provide the jobs and economic benefits to the population. The WGII may note a few core sectors, but seldom in the context of what happens to the industry itself. The report presents concerns for the environment and the laborers, but it is the industries who will need to change their practices. They are the source of for the majority of the emissions, directly and indirectly. They will be the bearers, innovators, or implementers of adaptation/mitigation measures. They are given essentially no voice with the WGII. They are, to a large extent, the prime audience for accommodating and limiting the impact of climate change. With the current financial constraints, governments are a weak force for change. The subsistence-farmer victims of climate change can contribute little to prevent the impacts of climate change. Neglecting the impact on and concerns of industry, fails to engage business and industry in solving the problems of climate change. (George Backus, Sandia National Laboratories)	We disagree, each nation has the opportunity to nominate scientists as lead authors of the IPCC assessments. There are many scientists on the writing team from China and all of the regions mentioned by the reviewer.
10	37654	1	0	0	0	0	Comment 4: I apologize, but I only know of the U.S. Department of Homeland Security's National Infrastructure Simulation and Analysis Center (NISAC) that deals with the quantified risk and resilience of industry to natural and man-made disasters. This work is performed by Los Alamos National Laboratory and Sandia National Laboratories. I have attempted to lightly pepper this work throughout the report to give some airing of the above concepts. (George Backus, Sandia National Laboratories)	We are not sure what is intended with this comment or to what section or chapter it refers.
11	39308	1	0	0	0	0	An important reference concerning the aspect of potential "tipping points" would be: Levermann, A., Bamber, J.L., Drijfhout, S., Ganopolski, A., Haeberli, W., Harris, N.R.P., Huss, M., Krüger, K., Lenton, T.M., Lindsay, R.W., Notz, D., Wadhams, P. and Weber, S. (2011): Potential climatic transitions with profound impact on Europe - Review of the current state of six 'tipping elements of the climate system'. Climatic Change 110 (3-4), 845-878 DOI 10.1007/s10584-011-0126-5 (Wilfried Haeberli, University of Zurich)	The literature on "tipping points" is addressed primarily in the sectoral and regional chapters. The reference provided would be most useful to the AR5 chapter on Europe.
12	39405	1	0	0	0	0	Don't use a venn-diagram format for figure 1.7 - it looks as though regional aspects has no overlap with framing of good policy decisions, etc. Good to have sustainability 'central' - but in my way of thinking it is overarching - surrounds all those themes. Not sure about the word 'unifying' either. Look at the DPSIR framing... you've got drivers, impacts and responses there already. What's the problem with using a tried-and-tested framing that many in the policy world (Europe, China/SE Asia, Australia, OECD) use? (Sarah Cornell, Stockholm Resilience Centre)	Accepted, Venn diagram figure has been deleted
13	39406	1	0	0	0	0	General comments on chapter: Covers the right territory, but the text is still too patchworked - there are obvious differences in writing style with some sections phrased in the 'in-house' jargon from the various I, A and V sectors of the research community. In many places, the key messages need to be set out more prominently (the easy way is to make sure they are the clear, concise sentences in the first lines of each paragraph), and there are some structural issues - partial repetition, spatially split arguments, odd paragraph breaks, and flips in usage between old and current definitions of key terms. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, we have reorganized part of the chapter, which will help in the structure. We have also rewritten the key messages so they are more concise and less repetitive.
14	40321	1	0	0	0	0	GENERAL: This is an extremely well written document – a pleasure to read and comprehensive in detailing the layout of the full document, some history of previous reports and goals etc. of this work. Excellent flow, succinct and informative. Fine editing work. (VICTORIA EDGE, PUBLIC HEALTH AGENCY OF CANADA)	Thank you for the positive comment.
15	40967	1	0	0	0	0	Good introduction and discussion of where WGII has come from in past reports and a snapshot as to how this report is different (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Thank you for the positive comment.
16	41144	1	0	0	0	0	TOC – headings under 1.3 are not consistent with those in the body of the text. (e.g. 1.3.1.2 in the TOC reads “Projections of Vulnerability, Exposure...” and in the text it reads “Advances in Conceptualizing...” (Susan Evans, WWF-Canada)	Accepted, the Table of Contents has been corrected.
17	41561	1	0	0	0	0	Authors are to be commended on this chapter. It provides a useful introduction the the whole assessment. An important element missing is, to my mind, one which addresses the Q: "How do authors achieve a consistent synthesised assessment when dealing with a wide range of info which is based on different assumptions, eg different CC scenarios, different s-e scenarios, different timelines. For example, much recent literature is still SRES-based, some is based on sensitivity analysis (+1deg c, =2 degC, etc). Do authors try to scale the different impact statements against a single common and consistent set of assumptions eg AR5 CC with consistent s-e scenarios (if so, the pop, income, techn etcbehind these need describing); or leave readers to infer this? The methodologies involved, in scaling/inferring from variable information in the literature across a range of different climate and non-climate assumptions, need summarising. (Martin Parry, Imperial College)	Thanks for the positive overview. To the question about the different assumptions upon which to base the assessment, we make it clear that the assessment teams used a combination of climate model simulations forced with two primary sets of scenarios: the RCPs and the SRES scenarios. We have also added a short introduction to the SSPs (shared socioeconomic pathways)? Also see chapter 21 on this topic.

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18	41565	1	0	0	0	0	I was expecting to find a description here (as it is a point of departure) of the global projected futures (climate, technology, governance) against which the Assessment will evaluate projected impacts from climate change. Of course, this could be in Ch 21, but could be lost there (Martin Parry, Imperial College)	See comment #14 and response. We are not confident in presenting projections of global futures other than those typically used by the IPCC author team (i.e., SRES scenarios and RCPs). But we do introduce the concept of SSPs
19	42584	1	0	0	0	0	In AR5 WG2, there are some isolated attempts to address the issue of the need to recognise a 'whole of climate approach'. This issue is alluded to in the SREX report that is referred to in the text of Chapt 1. In AR5 WG2 Chapt 1 there is a commendable reference in here that mentions 'natural climate variability and human generated climate change influence the frequency, intensity, spatial extent and duration of some extreme weather and climate events'. This is true! - it is also the framework in which industry and governments interest actually occur. Unfortunately, in terms of developing a range of decision systems that can match 'a whole of climate approach' this is very badly lacking, probably throughout the world and needs to be addressed by WG2. (Roger Stone, University of Southern Queensland)	Thank you for the positive remark about our summary of the SREX report. We are not sure how to respond to the need for a "whole of climate approach".
20	44445	1	0	0	0	0	Figure 1.6 with FAR to AR5 emission scenarios emissions plus projected RF – much more information is needed describing this figure, e.g., the RF for the time period 1990 to 2000, and explaining how exactly scenarios from different sources, different base years etc. are combined and made comparable.. Most importantly, the figure needs to be consistent with what WGI AR5 Chapter 1 (and possibly Chapter 12) do when comparing scenarios and climate projections from FAR to AR5. (Thomas Stocker, IPCC WGI TSU)	Yes, this figure was a placeholder and will be replaced with one that is based on the WGI AR5 Chapter 1 (or later chapters).
21	44446	1	0	0	0	0	Figure 1.6 with FAR to AR5 emission scenarios emissions plus projected RF: including RF here moves the figure beyond simply describing the emission scenarios resp. the inputs provided to the climate models. RF is calculated interactively and depends on emissions plus projected climate change and thus needs to refer to and be consistent with the respective WGI AR5 assessment. (Thomas Stocker, IPCC WGI TSU)	Yes, and no. The RF has been shown for pre-RCP in the SAR/TAR/AR4. What is needed for AR5, however, is a consistent RF value as discussed/derived in WG1 AR5.
22	44447	1	0	0	0	0	Figure 1.7: Working Group II – Physical Drivers??? We assume this is meant to read 'Working Group I'. (Thomas Stocker, IPCC WGI TSU)	Accepted, we have changed this to "Working Group I"
23	45568	1	0	0	0	0	References: Chambers, R.G. and Quiggin, J. (2000). Uncertainty, Production, Choice, and Agency: The State-Contingent Approach. Cambridge University Press, New York. Quiggin, J. and Chambers, R.G. (2006). The state-contingent approach to production under uncertainty, The Australian Journal of Agricultural and Resource Economics 50, 153-169. Available from URL: http://www.blackwell-synergy.com/doi/abs/10.1111/j.1467-8489.2006.00320.x Adamson, D., Mallawaarachchi, T. and Quiggin, J. (2007). Water use and salinity in the Murray-Darling Basin: A state-contingent model, The Australian Journal of Agricultural and Resource Economics 51, 263-281. Adamson, D., Mallawaarachchi, T. and Quiggin, J. (2009). Declining inflows and more frequent droughts in the Murray-Darling Basin: climate change, impacts and adaptation, Australian Journal of Agricultural and Resource Economics 53, 345-366. Available from URL: http://dx.doi.org/10.1111/j.1467-8489.2009.00451.x (Thilak Mallawaarachchi, The University of Queensland)	We are not sure what part of the chapter the list of references is intended to apply (no page or section numbers provided by the reviewer). Also this level of detail is more suitable for the regional and sectoral chapters.
24	46427	1	0	0	0	0	Comments to Chapter 1. Point of Departure (Review of all the Chapter) (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	This comment just contains the chapter 1 title, not a suggestion or critique.
25	47241	1	0	0	0	0	General Comment - The shifts towards adaptation and the relationship mitigation seems to drop the key dimension of adaptation in the development context, which is essential from a policy-making perspective as well as form the very foundation of the adaptation in the UNFCCC. The chapters needs to regain that tone of framing adaptation in the context of sustainable development. (Juan Hoffmaister, Third World Network)	New text has been added to establish a context for understanding how development status influences vulnerability. Also we reference findings about the influence of development status on vulnerability in the SREX.
26	47242	1	0	0	0	0	Another issue that needs attention in this chapter is reflection of the challenges of slow-onset impacts and attribution from Cp18. This is a key issue in the UNFCCC discussions at the moment and the 4AR does not provide any insight. If 5AR does not address slow onset impacts and contextualizes slow onset impacts in development (in contrast to only showcasing extreme events), the 5AR is set to fail and be of little meaning to climate discussions. (Juan Hoffmaister, Third World Network)	This is covered more appropriately in the regional and sectoral chapters.
27	47621	1	0	0	0	0	a good setting of the context. (richard arthur fleming, canadian forest service)	Thank you for the positive comment.
28	48712	1	0	0	0	0	Focuses on risk and vulnerability, but adaptation is defined to included taking advantage of opportunities. Because risk and vulnerability are typically associated with a focus on negative outcomes, this is potentially confusing. (Jennifer Hoffman, EcoAdapt)	We have clarified these interactions in our revised text.
29	48713	1	0	0	0	0	It would be good to address somewhere the reality that published reports and indeed the overall conversation around climate adaptation tends to focus on negative effects of climate change rather than on positive or neutral effects. Although this bias stems in part from a desire to get people to accept the seriousness of the issue and the need for action, it may contribute to poor decision-making. (Jennifer Hoffman, EcoAdapt)	The positive aspects of climate change are covered in the chapters as appropriate. In Chapter 1 we do not evaluate the literature or evidence in terms of "positive" or "negative" effects.
30	49017	1	0	0	0	0	In the chapter both C and CO2-equivalents are used, expressed in Gt, Pg etc. This makes it harder to compare figures, eg emission reductions at p.21 line 17-18 with global emissions. Recommend to make the use of units more consistent (Oyvind Christophersen, Climate and Pollution Agency)	This is a long-standing issue. Carbon-cycle science reports units of 'C', while the mitigation reports use 'CO2-eq' - It cannot always be reconciled as we cannot just change the published figures, but where numbers are in table and compared, we will try to use only CO2-eq.

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31	49833	1	0	0	0	0	This is a framing chapter for the whole volume, but note that Chapter 21 is a framing chapter for the regional part of the volume (plus WG I and WG III regional aspects). We need to avoid unnecessary duplication or overlap between the two chapters. On the other hand, I wonder if this chapter currently contains all of the contextual climate and socioeconomic scenario information/assumptions that underpin the assessments conducted in the sectoral and cross-cutting chapters. Or should such information appear somewhere else (e.g. in Ch 2 or Ch 19?), though logically Ch 1 would be the place for this. What types of future changes are being assumed in impact studies that are reported in the volume and how do these relate to the new projections/scenarios being reported in WG I and WG III? Conditional findings about impacts (e.g. if climate changes by this amount then impacts of this magnitude can be expected), really need to be placed into a risk perspective, which means if at all possible also accounting for some assessment of the likelihood of such changes occurring, based on ensemble projections and/or expert judgement. (Timothy Carter, Finnish Environment Institute)	We have attempted to delete some of the duplication, but the regional aspects will stand as a separate volume and it is reasonable to have some contextual information at the beginning of that report. We have addressed the comments about risk in Section 1.2.4. Risk Assessment as a Response to Climate Change. Also we have added new figure 1-7 on risk and resilience.
32	52141	1	0	0	0	0	"Vulnerability has been defined in an inclusive manner and five reasons thereto have been correctly identified for climate change" (Shelley Bhattacharya, Visva Bharati University)	We use the IPCC AR5 glossary definition.
33	52672	1	0	0	0	0	A simple reasoning on the purpose of this very wisely introduced AR 5 WG 2, First Chapter, brings the opportunity to emphasise, softly but critically, the need for knowing, in the best possible manner, the real human, environmental and economic situation, in each country or territory. Such information, as thorough as possible, will make easier to find the ways and means for choosing the development path bringing sustainability or, better saying, durability for any country or community development. The critical analysis made by the IGBP, WCRP and GCOS, in 2008 (WMO/TD N° 1415) so suggests. Further, the latest developments, including the Report on Resilient People, Resilient Planet, prepared at the request of the UN Secretary General, the Report on the State of the Planet, etc, etc, make more and more evident the need for integrated efforts to achieve the dreamed sustainability. This means closer action among the different task groups, panels, etc. This is why, in view of the necessary climate change integration into the wider objectives of the critical global environmental change, and the urgency to show how near is the Society to reach the limits to growth, enhancement of appropriate cross-cutting issues is more than a need. (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	We agree fully with this comment and have added a new figure on this very theme (Figure 1-7).
34	52745	1	0	0	0	0	Perhaps the concept of maladaptation should be introduced more prominently given its significance in later chapters (from those that I have had chance to read). (Tim Rayner, University of East Anglia, Tyndall Centre for Climate Change Research)	Agreed, we present the concept of maladaptation in our revisions to Section 1.1.4, as well as the Glossary.
35	52814	1	0	0	0	0	This chapter is very ease to read. It's a good synopsis of the report. Only minor observations could be made. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	Thank you for the positive comment.
36	52893	1	0	0	0	0	The chapter provides a very helpful perspective and introduction to the WGII report. (Kristie L. Ebi, IPCC WGII TSU)	Thank you for the positive comment.
37	52894	1	0	0	0	0	There is some repetition between section 1.1.4 and section 1.4. Perhaps these could be harmonized with section 1.1.4 reinforcing the key themes identified in section 1.4, adding richness and context to the themes. (Kristie L. Ebi, IPCC WGII TSU)	We agree that these two sections of text were somewhat repetitive. We have deleted section 1.4.
38	52895	1	0	0	0	0	There aren't really IPCC regions; the regions used in IPCC reports differs in different reports. The AR4 and AR5 assessment cycles are using the WMO world regions. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, changed to "geographic region".
39	52896	1	0	0	0	0	The chapter uses several abbreviations and acronyms that are undefined (such as GtC) that should be defined. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, all acronyms are fully spelled out the first time they are used. Some abbreviations do not require an explanation. Some are presented in full form in the Glossary.
40	54394	1	0	0	0	0	GENERAL COMMENTS: I would like to thank the authors for a very interesting and enjoyable FOD. Various general and specific comments follow. When considering the expert review comments received on your chapter and the next round of revisions, I suggest several overall priorities. (1) Keep in mind that the preparation of the SOD is the time to ensure that each section of the chapter presents a comprehensive treatment of relevant literature, and that the Executive Summary presents findings that capture the key insights that arise from the chapter assessment. (2) This is also the time to focus on distilling the chapter text, not just fine-tuning wording but editing with a critical eye to improving quality by making discussions succinct and synthetic, while still being comprehensive. (3) Cross-chapter coordination is also important at this stage, as it should now be possible to identify topics that overlap with other chapters and to coordinate with other chapter teams to minimize that overlap. (4) Cross-Working Group coordination is important as well, and relevant chapter sections should cross-reference chapters from the other Working Groups, particularly in the case of statements about changes in mean or extreme climate conditions that are assessed in the contribution of Working Group I. (5) Continue to look for opportunities for the creation of figures that synthesize across results from the literature. (Michael Mastrandrea, IPCC WGII TSU)	Accepted - we have reorganized the chapter and distilled the most important points in our executive summary. Numerous cross chapter references have been added. Also we have worked with the adaptation chapters on a replacement for figure 1-7.

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41	54395	1	0	0	0	0	GENERAL COMMENTS PART 2: In addition to the overall priorities, there are two further general comments I would like to highlight at the outset. First, regarding the treatment of multiple stressors in 1.1.2.1, Figure 1-3 provides examples of multiple stressors that interact with climate change, and there is potential for this discussion to be expanded slightly to more comprehensively introduce the stressors that are highlighted across other chapters of the report. A clear introduction of important stressors in the text and of global trends visually in Figure 1-3, drawing from other chapters, would be an excellent addition to this point of departure. Second, regarding the treatment of RCPs and SSPs in 1.1.3, several other chapters are developing boxes or other text on the Representative Concentration Pathways and the Shared Socioeconomic Pathways. These include Chapter 2, Chapter 19, Chapter 20, and Chapter 21. It would be very useful to coordinate with them regarding descriptions of these pathways. (Michael Mastrandrea, IPCC WGII TSU)	Accepted. New figure (1-7) and text has been added to illustrate how multiple stressors affect resilience. Also we have added some text about SSPs to Section 1.1.3, "Scenarios used as Inputs to Working Group II Assessments".
42	54863	1	0	0	0	0	The author team may wish to add a section discussing the types and nature of evidence that have been assessed in the report (and their strengths and weaknesses). Moreover, the author team could also add a figure explaining how these different types of evidence inform different aspects of the broader picture. (Monalisa Chatterjee, IPCC WGII TSU)	This is more the responsibility of the sectoral and regional chapters and an overview is in the SPM. It is not appropriate (or enough space) for this in the introductory chapter, nor is there data to support such an evaluation.
43	54864	1	0	0	0	0	The author team should update the reference list and remove citation inconsistencies between in text citations and full citations given in the reference list. Please see supplementary document named WG2AR5-Chap1_Reference Checks.pdf at https://ipcc-wg2.gov/AR5/author/FOD/SuppMat (Monalisa Chatterjee, IPCC WGII TSU)	Accepted, references and citations have been edited for consistency.
44	36900	1	1	0	45	0	Please homogenize the use of the terms FAR vs AR4, TAR vs AR3, etc (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	The basis for these terms in the literature cannot be changed. The use of numerical terms (as opposed to alphabetic) did not begin until the fourth assessment report. Perhaps if the IPCC had known there would be 5 or more in the series, it would not have called the First Assessment Report the "FAR".
45	36966	1	1	1	30	37	You try to give too many numbers, too many details. This chapter is meant as an overview and introduction and does not need to contain e. g. projected sea level rises for all RCPs resulting from AR5 - WG I. (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	We assume that this comment refers primarily to the summary of the WGI report that is in our chapter. We feel that this physical climate science summary is important context for the WGII report.
46	41562	1	2	0	0	0	Which socio-economic scenarios are used in AR5? (Martin Parry, Imperial College)	The methodologies for both the SRES and RCP scenarios are related to specific integrated assessment models, and there is some effort in Chapter 21 to explain the underlying socio-economic scenarios. But otherwise all we can do is to point to the RCP and SSP publications.
47	41999	1	2	0	3	0	Executive summary: surprised to see no reference to resilience (Liette Vasseur, Brock University)	Resilience is discussed in section 1.1.4 but not a focus of the executive summary. Also see our new Figure 1-7 about resilience.
48	49916	1	2	5	0	0	Executive Summary -- In further development of the executive summary, the author team might consider also presenting key findings from sections 1.2-1.4. (Katharine Mach, IPCC WGII TSU)	Section 1.2 and 1.3 are highlights of other IPCC reports and not new findings. We deleted section 1.4.
49	49834	1	2	7	2	7	Cosmetic, I know, but the Working Groups are Roman: I, II and III. (Timothy Carter, Finnish Environment Institute)	Accepted, Roman numerals only.
50	42278	1	2	7	2	17	Why not use "Working Group II" instead of "Working Group 2", should keep consistent. Applied for 1 and 3 (Luhui Yan, Tanzuji)	Accepted, Roman numerals only.
51	38571	1	2	12	0	0	Define SRES here - see p9, 31-37 (Richard Wright, Retired, U.S. National Institute of Standards and Technology)	We define the SRES acronym and summarize its purpose effort and in Section 1.1.3.
52	46428	1	2	16	2	16	In place of "Advance Climate Change Adaptation (IPCC, 2012), the and the IPCC Working Group 1 (Physical Climate Science)", I propose the following: "Advance Climate Change Adaptation (IPCC, 2012) and the IPCC Working Group I (The Physical Science Basis)", since "...the and the..." is not correct and the name in () of the IPCC Working Group I (not 1) was informed to me (since I was also an Expert Reviewer of this Working Group Report) as: "The Physical Science Basis", not "Physical Climate Science". See IPCC web page (http://www.ipcc.ch), the Fifth Assessment Report web page. (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Accepted, we now use only Roman numerals. The sentence in question was moved to the first paragraph in section 1.1, and we removed the extra "the". We also corrected the title change for the WGI report as suggested.
53	42277	1	2	16	2	16	remove "the" after "(IPCC,2012)," (Luhui Yan, Tanzuji)	The sentence in question was moved to the first paragraph in section 1.1, and we removed the extra "the".
54	38235	1	2	19	2	20	Executive Summary. "The literature available for assessing climate change impacts, adaptation and vulnerability has more than doubled since 2005 (high confidence)." My question deals with global warming and climate change skepticism. Do you have any idea on how the rate of global warming skeptics has evolved over time? Is there any relationship between the amount of such available literature on climate change and the amount of those skeptics? Can we assume that the number of skeptics has decreased? (Abdalah Mokssit, Direction de la Météorologie Nationale (DMN))	There is no way to query the bibliographic databases and to answer this question in a credible manner.
55	52897	1	2	19	2	20	It would be helpful to have estimated numbers of publications. (Kristie L. Ebi, IPCC WGII TSU)	The numbers of publications are presented in Figure 1-1.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
56	43685	1	2	19	2	20	Use of language to cover uncertainties in science should not be over-emphasised. To say that you only have high confidence that this field of literature has doubled since 2005 implies you are not really sure about anything. This applies to some other general statements that are made further down as well and where it would be better to avoid using specific uncertainty terminology. (Martin Manning, Victoria University of Wellington)	Accepted. The confidence statements for the literature review and two other key messages have been changed to "Very High Confidence".
57	49917	1	2	22	2	22	Given the reference here to evidence, the author team might consider presenting summary terms for evidence (and/or agreement), per the uncertainties guidance for authors. (Katharine Mach, IPCC WGII TSU)	Accepted, "Very High Confidence" was inserted before the phrase about "evidence".
58	43686	1	2	24	2	25	Suggest this sentence should be rephrased into the present tense - ie. "... is also challenging the presentation of a balanced view ..." (Martin Manning, Victoria University of Wellington)	Accepted, this phrase has been reworded as suggested.
59	54113	1	2	24	2	25	The point being made in this sentence could be clarified further. Is it intended that the author team is who has been challenged in presenting a balanced view of the impacts of climate change? And how is "balanced" being defined? Equal space for all topics and regions? Further specification would be helpful. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, this phrase has been reworded along the lines suggested.
60	52898	1	2	25	2	25	It is unclear what is meant by a "balanced view of the impacts of climate change." Do you mean valid, good geographical coverage, or something else? (Kristie L. Ebi, IPCC WGII TSU)	Accepted, this phrase has been reworded.
61	49918	1	2	25	2	25	It would be helpful to further clarify what is meant in the 2nd half of the sentence. In particular, a bit further specificity regarding the intended meanings of "challenged," "presentation," and "balanced" in the context of the sentence would make it clearer for the reader. (Katharine Mach, IPCC WGII TSU)	Accepted, this phrase has been reworded.
62	47174	1	2	25	2	25	REPLACE WITH - continues to be a challenge for the presentation of a balanced view ... balanced representation is not a new challenge for the AR5 but rather one that has existed from the FAR and is perhaps gradually being redressed] (Douglas Nakashima, UNESCO)	Accepted, this phrase has been reworded.
63	54117	1	2	27	2	40	Regarding the traceable account for this statement, there is clear support in 1.1.2 and 1.3 for most of the points made. The traceable account for the bullet on thresholds and tipping points in societal and natural systems, however, is not clear, as this is not discussed in this context in the chapter text. (Michael Mastrandrea, IPCC WGII TSU)	The text in question about thresholds and tipping points has been removed.
64	49919	1	2	29	2	29	The author team may wish to consider if this 1st point is sufficiently supported by evaluation of evidence and agreement--by its traceable account--in the chapter. (Katharine Mach, IPCC WGII TSU)	The boldfaced bullet in question was removed from the Executive Summary.
65	49836	1	2	31	2	32	An additional dimension of "societal" impacts and responses that has received much greater coverage, is the perception of climate change in the public discourse. This is not a question of impacts on society, but how society perceives or "values" the issue in the first place or may wish to project the issue for political purposes. It hence encompasses "denialists", as well as others holding varied subjective standpoints. It is well articulated in Mike Hulme's book which I see is referenced, but could be stressed more in the ES because it is an important development. Values are raised in line 31, but not really expanded on here. (Timothy Carter, Finnish Environment Institute)	The phrase in question has been clarified to include: Institutional, social, cultural, and value-related issues.
66	49835	1	2	32	2	32	Is the term "societal" used here to encompass economics (which also features much more in this assessment)? (Timothy Carter, Finnish Environment Institute)	The phrase in question has been clarified to include: Institutional, social, cultural, and value-related issues and our new figure 1-7 helps convey the multiple facets of societal impacts and stressors.
67	42000	1	2	33	0	0	You mentioned societal impacts: not cultural? (Liette Vasseur, Brock University)	Accepted. The phrase in question has been clarified to include: Institutional, social, cultural, and value-related issues
68	52899	1	2	33	2	33	SREX should be defined. (Kristie L. Ebi, IPCC WGII TSU)	The reference to the SREX was removed from this finding.
69	44371	1	2	38	0	40	Would it be appropriate to include something more explicit on responses to climate change, for example "ii) an increasing focus on human beings, their role in managing resources and natural systems, and the societal impacts of AND RESPONSES TO climate change" (Linda Sygna, University of Oslo)	Accepted, we have increased the text about "responses", particularly adaptation. And we added a new bullet to our executive summary on this subject.
70	52900	1	2	38	2	39	I think you mean risk management. As written, the statement is about managing resources and natural systems but not within the context of the possible impacts on and responses to avoid, prepare for, and recover from impacts. (Kristie L. Ebi, IPCC WGII TSU)	Yes, we added "including "risk management".
71	54118	1	2	42	2	51	Regarding the traceable account for the statement, there is some support in 1.1.2, but section 1.4 should also be cited. (Michael Mastrandrea, IPCC WGII TSU)	Due to numerous comments on the First- Order draft, Section 1.4 was deleted along with the 3rd boldfaced findings and bulleted list in the executive summary.
72	41567	1	2	45	0	0	It would be useful to have summarised here (and presented more fully later in Ch1) a statistical/numerical breakdown of the provenance of the impacts literature assessed in AR5. eg some will be based on CMIP 5 (but I suspect less than 10%?); and my guess that most is based on SRES climate and s-e scenarios; and some will be based on scenarios that are pre-SRES ; and some will be derived from sensitivity studies, eg +1, +2 deg C. I have made a separate suggestion about describing the methods for synthesising such differing material. (Martin Parry, Imperial College)	This is a good idea but not possible to do with confidence since the other chapters do not use the same methods for describing the impacts literature.
73	43687	1	2	46	2	46	This use of "including" does not make sense here because "extremes" are not a driver for the change, but they are a critical factor for determining vulnerability to the change. (Martin Manning, Victoria University of Wellington)	We disagree. Extreme climatic events are a driver of change.
74	40480	1	2	51	0	0	Good policy decision' -- Normative. How is a 'good' policy decision defined? (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Accepted, the set of bullets with the term "good" was removed.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
75	52656	1	2	51	0	0	Should item 7) include reference on the risks the society is facing now, due to the reduction of natural resources and services 'availability? Since climate change already affects the availability of certain typical foodstuff, like rice, "to support good policy decisions" AR5 should include the risks deriving from the loss of vegetable and animal productivity, including reference on some natural resources potential exhaustion. In connection with the IPCC- SRREN, reference on the risks due to the depletion of energy resources might be also added. The limits to Growth (1972). Conditions for survival (The Asahi Glass Foundation (2010). State of the Planet. London March 2012. UNEP GEAS, June 2012. IPCC SRREN (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	This set of 7 bullets was removed.
76	49837	1	2	53	3	23	There are signs that more attention is finally being paid to the robustness of the IAV tools (primarily models) that are being applied in IAV assessments. Uncertainties in impacts are often inadequately represented by the IAV community, relying too much on scenarios of climate and socio-economic futures to define the range of outcomes, while often neglecting the range of parameter and structural uncertainties implicit in models used to predict outcomes under such scenarios. Multi-model ensemble approaches are used by climatologists to embrace such uncertainties in climate models. We are only now starting to see renewed attempts (such work was emphasised in the early years of IGBP, but then shelved due to policy demands for model outputs rather than model development!) at intercomparison, parameter testing, experimentation and other techniques, including ensemble impact modelling, for evaluating impact model uncertainties. I think this chapter or chapter 2 could cover this trend in general; specific sectoral and regional chapters may take this up more specifically. A few references to illustrate: Multi-model ensembles: New, M., Lopez, A., Dessai, S., and Wilby, R.: Challenges in using probabilistic climate change information for impact assessments: an example from the water sector, Philos. T. Roy. Soc. A, 365, 2117–2131, 2007; general issues for crop modelling, but valid generally as well: Rötter, R.P., Carter, T.R., Olesen, J.E. and Porter, J.R. 2011. Crop–climate models need an overhaul. Nature Climate Change 1: 175–177; two examples for climate envelope modelling (for species mapping and for permafrost mapping): Heikkinen, R. K., Luoto, M., Araujo, M. B., Virkkala, R., Thuiller, W., and Sykes, M. T. 2006. Methods and uncertainties in bioclimatic envelope modelling under climate change, Prog. Phys. Geog., 30, 751–777; Fronzek, S., Carter, T.R. and Luoto, M. 2011. Evaluating sources of uncertainty in modelling the impact of probabilistic climate change on sub-arctic palsa mires. Nat. Hazards Earth Syst. Sci. 11, 2981–2995. Note, finally, that a more complete representation of uncertainty may offer opportunities to undertake probabilistic assessments of impacts, and hence allow us to begin to express impacts in terms of quantified risk (albeit conditional on given scenarios, which by definition are not amenable to probabilistic description). (Timothy Carter, Finnish Environment Institute)	We agree generally with these statements but they do not call for a change in our text. There is not enough space in Chapter 1 to go into this level of detail about impacts modeling.
77	40958	1	3	10	0	0	Add "Coupled Model Intercomparison Project" (CMIP) to the glossary. I recognize that this is described on page 9 lines 39-43 but this is the first time in this package that the term shows up and adding to the glossary will aid readers. Much as was done for "RCPs" (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Good suggestion, taken to the Glossary editors (and added by them to the glossary).
78	49838	1	3	10	3	12	I suspect that if a survey is done of all the chapters reporting IAV studies assessed for AR5, there will be a substantial proportion of studies that use neither of these sets of scenarios. We did such a review for Chapter 2 in AR4 and found great variations between chapters. I don't know if you have done this yet, but I suggest sending out a simple questionnaire to colleagues to verify that this ES conclusion is indeed borne out by the chapter assessments. (Timothy Carter, Finnish Environment Institute)	This is a good idea but not possible to do with confidence because the chapters in the report do not use the same methods for describing the modeling bases for all of the impacts literature that they review.
79	42463	1	3	10	3	13	Not clear, seems something is missing from the sentence "The RCPs more than cover the range of SRES scenarios for long-lived greenhouse gases..." (Shahbaz Mushtaq, University of Southern Queensland)	Yes, we delete "more than".
80	40322	1	3	10	3	15	Would check on use of acronyms and spelling them out fully on first use – I believe that SRES and SREX were not provided in full form? (VICTORIA EDGE, PUBLIC HEALTH AGENCY OF CANADA)	Accepted, we now provide these terms in full forms the first time they are used.
81	39371	1	3	10	3	23	It would be useful to restructure this paragraph to clarify the difference between RCPs (concentrations) from SRES (emissions) and add a brief statement on the rationale for the change. Line 18 and 19 give the essential information, but are buried in the middle of the paragraph, while the bold sentences at the start are not exactly 'key message' stuff. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, a slightly expanded rationale for producing the RCPs has been added.
82	54116	1	3	10	3	23	The traceable account for this finding could be improved. There is no real explanation of the finding in the chapter text, and as noted in a separate comment, the executive summary text is somewhat in conflict with the chapter text regarding ozone precursor emissions. The author team may also wish to include explanation of the reasons for "medium confidence" regarding the final statement (i.e., what leads the authors to have less than high confidence?). Finally, the support listed should be 1.1.3, rather than 1.1.4. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, corrected to be consistent with chapter 1 sections and ES, and also with the new SOD of WGI Chapter 11.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
83	49839	1	3	10	3	23	This focuses only on the climate system scenarios that are used in IAV analysis. What about the socioeconomic scenarios often applied alongside the climate and air quality scenarios, and frequently the source of much greater uncertainties in socioeconomic IAV outcomes than the climate system scenarios. SRES have been used for this purpose in some studies; as yet there are no community socioeconomic scenarios available for application alongside the RCP-based climate scenarios. These Shared Socioeconomic Pathways (SSPs) are only just being made available as storylines and scenarios, and will only appear in a few fast track published IAV studies (if that). This means that RCPs, if they are being applied, will probably assume SRES-based socioeconomic futures (cf. Chapter 2 AR4), though guidance on the mixing and matching of these scenarios has not yet been released by the research community, and so any applications in the literature are likely to be pretty ad hoc. Note in addition that the RCP 8.5 doesn't assume GHG mitigation policy, but the other three RCPs seemingly require some level of mitigation to achieve the 2100 radiative forcing levels specified (using IAM models). (Timothy Carter, Finnish Environment Institute)	Accepted, a description of the SSPs has been added.
84	43688	1	3	10	3	23	This paragraph sets up a very limited context for the wide range of issues that have to be covered below by overemphasising the relevance of RCPs and scenarios. It is covering material from section 1.1.3 but not 1.1.4 or 1.2, which are actually more important. A key point that should be made clearer in this chapter can be seen in a lot of peer reviewed literature addressing resilience in social and economic structures which shows that scenarios are often irrelevant when considering adaptive capacity. A classic example of the need to develop anticipatory responses that are independent of any scenario would be: [Kwadijk, J.C.J., et al., 2010: Using adaptation tipping points to prepare for climate change and sea level rise: a case study in the Netherlands. Wiley Interdisciplinary Reviews: Climate Change, 1(5), 729-740]. Our research in NZ also shows that communication about change is not well supported by discussing the details that come from specific scenarios but rather just by focussing on the ranges for potential future change and the rates at which these might occur. Another reason why scenarios can actually be misleading comes from several recent analyses showing that the changes in extreme events so far have been significantly more than was predicted by climate models - e.g [Min, S.-K., Zhang, X., Zwiers, F.W., and Hegerl, G.C., 2011: Human contribution to more-intense precipitation extremes. Nature, 470, 378-381]. So I would strongly suggest that the start of this paragraph be modified to make it clear that scenarios are not the basis for assessing the extent to which adaptation is required, but rather just one component for setting the context of that. A concluding paragraph for this section could then introduce the points being made in section 1.1.4 and 1.2 and they should also raise other aspects such as known unknowns and the potential for surprises. As an aside, that was highlighted in the SPM of the WG1 SAR in 1995, and could now be what is seen in the so far unexplained spatial correlations occurring between extreme events over very wide areas in recent years. (Martin Manning, Victoria University of Wellington)	The reference to the subsection (1.1.4) has been corrected. We also slightly rephrased the beginning of the sentence to state that "Impacts assessed in this report" are based on a combination of SRES and RCP scenarios. The extremes paper is interesting and being evaluated in WGI, but is not relevant for the scenario discussion, but is for extreme events under any scenario. We do not imply that scenarios are the only basis for adaptation.
85	42279	1	3	12	3	12	remove "than" after "more" (Luhui Yan, Tanzuji)	Accepted, this grammatical problem has been corrected.
86	52901	1	3	12	3	12	Technically, you mean the RCP emission scenarios. People are confusing the emission scenarios with the climate model runs. (Kristie L. Ebi, IPCC WGII TSU)	In our revisions we have tried to clarify the RCPs vs. CMIP5 and ACCMIP runs.
87	54114	1	3	13	3	14	The characterization here of emissions of ozone and aerosol precursors and related pollutants needs to be reconciled with the text in section 1.1.3. Here, the text states that all the RCPs fall outside of and well below the SRES range for these emissions, but in the text it states that they resemble the B1 scenario. This needs reconciliation. In addition, it is not clear why this statement requires a confidence assignment, if it is a factual comparison of trajectories. The next point on maximum feasible reductions does warrant a confidence assignment. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, the RCPs fall below B1 for NOx emissions as in Fig 1.6. All of these are published (MFR is a published number, who knows what the true MFR is). We will clarify when a judgment is made vs. just a comparison of published numbers.
88	49018	1	3	14	3	15	The sentence "...and represent more closely the maximum feasible reduction in these pollutants rather the range of possible futures (medium confidence)." lacks one or more words to make it meaningful. (Oyvind Christophersen, Climate and Pollution Agency)	Accepted, we have re-worked this sentence and point to publications (in chapter text) that define MFR.
89	42280	1	3	15	3	15	add "than" after "rather" (Luhui Yan, Tanzuji)	Accepted, change has been made. Thanks.
90	49019	1	3	15	3	15	Insert "than" in between "rather" and "the" (Oyvind Christophersen, Climate and Pollution Agency)	Accepted, change has been made. Thanks
91	40481	1	3	16	0	0	The IPCC has created . . . scenarios' -- The IPCC no longer 'creates' scenarios. This statement in the first sentence is wrong, even though it is qualified in the second sentence. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Accepted in part. The scenarios up through the SRES were refined and developed for the IPCC, under the IPCC guidance and review. We explain that the RCPs were developed differently.
92	52902	1	3	18	3	18	Please delete "group" (Kristie L. Ebi, IPCC WGII TSU)	Accepted, the word "group" was dropped.
93	52903	1	3	19	3	19	Please delete "mean" (Kristie L. Ebi, IPCC WGII TSU)	Accepted, 'mean' was deleted when this sentence was changed.
94	54115	1	3	19	3	21	This statement is not correct. The RCPs may or may not assume any level of mitigation and different assumptions about mitigation are not directly correlated with the resulting level of radiative forcing. Even a higher radiative forcing pathway may incorporate a higher level of mitigation than a lower one, depending on the assumed baseline. I suggest reframing to communicate that, unlike the SRES, the RCPs can include mitigation policy. (Michael Mastrandrea, IPCC WGII TSU)	Good point, we have tried to explain this better in our revision.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
95	45553	1	3	28	3	39	The expanded multidisciplinary approach to the IPCC WGII AR5 that focus heavily on societal impacts and responses is a welcome change. Because the report presents regionally differentiated information for different sectors readers would be better able to relate to their own circumstances. In order to enhance the impact of the assessment on guiding the ongoing adaptation effort it is critically important to develop an integrative summary that will illustrate the diversity of impacts and adaptation responses for different geographical regions. (Thilak Mallawaarachchi, The University of Queensland)	Thank you for your first comment. The regional and sectorally differentiated information about societal impacts is addressed in the adaptation and regional chapters.
96	39255	1	3	33	3	34	It would be good to mention the roles of Work Group I (WGI) to Work Group III (WGIII) at their first appearance. (XIAOSHENG QIN, Nanyang Technological University)	Accepted, we inserted titles of reports of WGI and WGII to indicate roles.
97	36810	1	3	37	3	37	Replace "to increase" by "to change" (Maria Manuela Portela, Instituto Superior Tecnico (IST))	Wrong chapter
98	52820	1	3	41	0	0	Figure 1.1 Focused on Impacts, Adaptation and Vulnerability With An expanded effort on the regional scale, is a good historical overview. Note the scarcity of knowledge generated in the Neotropics. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	Thanks you for the positive comment, and yes it does reveal regional scarcities.
99	54865	1	3	41	0	0	Figure 1.1 The author team may wish to reduce some text from the figure and increase the font to make it more legible. (Monalisa Chatterjee, IPCC WGII TSU)	Accepted, the final figure will be redrafted by the TSU.
100	49840	1	3	45	3	45	Sounds like a punishment - mitigation was sent to WG III! (Timothy Carter, Finnish Environment Institute)	Accepted, wording has been changed to explain that Working Group III has "assessed options for mitigating climate change".
101	48714	1	3	50	4	11	Documents an increase in the number of articles published, but doesn't address how much of this is original research rather than rehashing and synthesizing previous work. (Jennifer Hoffman, EcoAdapt)	There is no way to query the bibliographic databases and assess what is original versus synthesis.
102	47459	1	3	50	4	54	The discussion of how the climate change literature has expanded geographically and in terms of languages should include a discussion and evaluation of how well the IPCC process manages to include this breadth in its assessment. Are particular measures used to include peripheric regions? Have attempts been made to include non-English publications? It appears that the vast majority of citations are to works in english; does this skew the assessment in particular ways? (Håvard Haarstad, University of Bergen)	Yes, we have added results of literature searches in five languages.
103	46429	1	3	53	4	3	Please, verify the numbers included in the sentences: "A bibliometric analysis of reports produced with two bibliographic search tools (Scopus and ISI Web of Knowledge) indicates that fewer than 1,000 articles in journals, books, and conference proceedings were published in English on the topic of "climate change" between 1970 and 1989. Since 1989 the literature published on the topic increased almost 10,000-fold, with a total of 73,039 articles published from 1990 through 2010". To say that "fewer than 1,000 articles in journals, books, and conference proceedings were published in English on the topic of "climate change" between 1970 and 1989", implies that they are in the range: 950-999. Asuming that 950 is a representative value, an increase of "almost 10,000-fold" will give a final number of publications several orders of magnitude greater than "73,039 articles". (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Accepted, we added "fewer than 800" articles published between 1970 and 1989 and corrected to read "almost 100-fold".
104	48456	1	3	53	4	11	Qualitatively, this section makes sense. Quantitatively, I'm unconvinced by this methodology. Only 1000 papers on climate change between 1970 and 1989? That seems low. How likely is it that "climate change" was used less as a keyword for papers involving climate before the IPCC was founded. I think this section needs caveats about the methodology. (Marcus Sarofim, US EPA)	Accepted, we added "fewer than 800" articles published between 1970 and 1989 and corrected to read "almost 100-fold".
105	43126	1	3	54	4	3	Not clear where the "10,000-fold" comes from. It does not follow from the increase in publications from fewer than 1,000 to 73,039. (Adrian HAYES, Australian National University)	Accepted, we added "fewer than 800" articles published between 1970 and 1989 and corrected to read "almost 100-fold".
106	39243	1	3	54	4	3	the number of published literature increased by a factor of 73, not by 10.000 (Thomas Voigt, Umweltbundesamt / Federal Environment Agency)	Accepted, we added "fewer than 800" articles published between 1970 and 1989 and corrected to read "almost 100-fold".
107	36960	1	4	1	4	2	The literature increased 73-fold, not 10,000-fold. This would have meant 1,000 * 10,000 = 10,000,000 papers had been published. (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	Accepted, we added "fewer than 800" articles published between 1970 and 1989 and corrected to read "almost 100-fold".
108	43083	1	4	2	4	2	Indicate that the published literature increased more than 7000 fold instead of almost 10000 (Andreas Meyer-Aurich, Leibniz-Institute for Agricultural Engineering Potsdam-Bornim)	Accepted, we added "fewer than 800" articles published between 1970 and 1989 and corrected to read "almost 100-fold".
109	52904	1	4	2	4	2	The figure seems to have a greater number of publications than 73,039 (Kristie L. Ebi, IPCC WGII TSU)	The final figure and caption explains that a publication can count more than once if it has authors from more than one region or if it has a title or key words for more than one region.
110	49920	1	4	3	4	4	It would be helpful to further clarify the trend being described in this statement. (Katharine Mach, IPCC WGII TSU)	We presume that the reviewer is referring to 10,000 fold increase in the literature from 1990 through 2010. This was an error. We corrected it to read "almost 100-fold".
111	42281	1	4	4	4	4	not sure should change "Australasia" to be "Australia" (Luhui Yan, Tanzuji)	In this instance, we do mean "Australasia".

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112	49841	1	4	4	4	4	Somewhat Euro-American centric! The WG II First Assessment Report was actually published in Australia (not by CUP), and there was already quite a lot of IAV work proceeding in Australasia and parts of Asia in the 1970s/1980s. Many of our current crop of IPCC authors are from that era and those regions, as well as others already retired or even sadly no longer with us. In fact, looking at Table 1-1 and Figure 1-2, I simply cannot believe these numbers, especially in Figure 1-2, which suggests that there were just a few tens of papers published in our field in each IPCC region during the whole 1980s. This must be a function of relying on bibliographic databases that do not extend backwards in time comprehensively across all relevant journals. As I repeatedly urge younger colleagues, there are facilities (though gradually being phased out) known as libraries, which reliably house printed volumes of journals containing numerous papers on climate (or climatic) change. There was a time when researchers ventured into these cavernous spaces and consulted dusty and not so dusty volumes. Nowadays, we tend to assume that everything produced back then is now contained in online databases. I really don't think that is necessarily the case, so that earlier articles are actually under-represented in literature surveys as a result. Moreover (though this is a tangential issue), the quality of many of these earlier papers, each of which frequently represented many person-years of accumulated effort and thought, is often much higher than the commonly shallow offerings produced today, based on copious quantities of computational power but somewhat less application of little grey cells. End of tirade! (Timothy Carter, Finnish Environment Institute)	Agreed, in part. The fact is that Europe was (and continues to be) the region with the most publications for which citations can be found in electronic format. Also please note that the primary database that we used has over 50 million bibliographic records (about 29 million from 1995 forward and about 21 million from 1823-1996). There were over a thousand papers published about "climate change" in the 1980s. It is not feasible for the Chapter 1 authors to evaluate the quality of publication in the 1980s with those of the 1990s and beyond.
113	54119	1	4	4	4	6	Does this refer to 6% of the literature in English? I believe this is implied, but it might be clearest to specify this explicitly in this sentence as well. (Michael Mastrandrea, IPCC WGII TSU)	Yes, the second sentence in this paragraph introducing the literature survey states that this refers to papers were "published in English". We inventory papers published in 4 other languages later in the section and in new Figure 1-d.
114	52815	1	4	5	0	0	"... Affiliated with Institutions in Africa and Central and South America approximately 6% Comprised of the literature ..." Should clarify that this assessment applies only to literature published in English. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	Accepted, the first paragraph introducing the literature survey states that this refers to papers in English. We inventory papers published in 4 other languages Spanish later in the section and in new Figure 1-d.
115	52905	1	4	7	4	7	Please see previous comment re IPCC regions (Kristie L. Ebi, IPCC WGII TSU)	Accepted, removed reference to "IPCC" regions
116	52821	1	4	13	0	0	Figure 1.2 Displays easily the deficiency of scientific papers produced in Central and South America and Africa. It is also evident lack of material referred to adaptation to climate change worldwide and the assessment of the costs of CC. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	Accepted, we agree with the comment.
117	52816	1	4	14	0	0	The report should justify why they used the Bibliographic Database Scopus and not something more complete. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	In the first paragraph of Section 1.1.1 the authors present summary results from two commonly used bibliographic databases - ISI Web of Knowledge and Scopus.
118	35341	1	4	25	4	27	The current text is a bit tortuous. I suggest replacing it by the following, more direct text: 'The unequal distribution of literature – geographically and topically – has unavoidably resulted in the presentation of an unbalanced view of the impacts of climate change.' This is a way to highlight the lack of concern for doing climate change research in some regions of the globe. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, we added the following: "The unequal distribution of literature, however, presents a challenge to the development of a comprehensive and balanced assessment of the global impacts of climate change. The geographical and topical distribution of literature is influenced by factors such as the availability of funding for scientific research, level of capacity building, regional experience with climate-related disasters, and the availability of long-term observational records."
119	52906	1	4	26	4	26	Please see previous comment re "a balanced view" (Kristie L. Ebi, IPCC WGII TSU)	Accepted, see response to comment #115 immediately above
120	54120	1	4	26	4	27	See comment on similar text in the Executive Summary. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, see response to comment #115
121	49921	1	4	31	4	35	Where the word "topic" is used in these sentences, it may be clearest to indicate further that the author team is referring to the search word used in each analysis. (Katharine Mach, IPCC WGII TSU)	We put quotation marks around each search word (in both the text and the revised figure).
122	52907	1	4	35	4	35	"has not changed" (Kristie L. Ebi, IPCC WGII TSU)	Correction, word is now "changed"
123	45999	1	4	35	4	38	This is as expected since engineering needs very detailed, precise and site specific information which the "climate change" output has not been able to provide yet (for example see Chapter 21, page 5, lines 34-36 and page 11, lines 40-42). (Luis E. Garcia, World Bank)	Disagree, we think the words "climate change" are appropriate in our searches.
124	52657	1	4	38	0	0	It is evident that there are still some shortcomings concerning information on the interconnections between climate change and the other environmental stresses. Therefore, an addition to line 38 is necessary. It should emphasize that AR5 will face limitations to provide a reliable picture on the development paths towards sustainability, due to reduced/ poor integrated impact analysis information.. Reference: Future Climate Change Research and Observations. WMO/TD N° 1418 (2008) Conditions for Survival. The Asahi Glass Foundation, 2010. The State of the Planet. London 2012. ISDR Publications (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	We do not see how the proposed addition about development paths fits here. We do have material about stressors and development paths in a subsequent section (1.1.4).

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
125	37086	1	4	40	4	54	How to calculate those numbers of publication? Table 1-1 might only provide some information and trends. (ZONG-CI ZHAO, National Climate Center)	The numbers were produced from literature survey using search engines for the other languages (Chinese, French, Spanish and Russian).
126	39372	1	4	46	4	48	internationalism = Also Leta, J. (2011) REVISTA USP, São Paulo, n.89, p. 62-77, for ~40 year trend on english in scientific research in [brazilian] portuguese institutions, and literature review of size of scientific output and effects of scientometrics. (Sarah Cornell, Stockholm Resilience Centre)	This additional publication is relevant but not necessary.
127	49842	1	4	50	4	53	Useful survey - WG II should do more of these in as comprehensive a manner as possible. (Timothy Carter, Finnish Environment Institute)	Thank you for the supportive comment.
128	37578	1	5	2	9	19	Section 1.1.2 should be moved before section 1.1.1 for a more logical continuity of thought (Jon Rosales, St. Lawrence University)	We disagree. First we talk about the information and then we describe how the IPCC assessments have evolved based on that information.
129	39136	1	5	4	5	7	Your opening paragraph uses the word "uncertainty" twice. From that an uninformed reader must take it that the content of the report is uncertain, that climate science is unreliable just as the climate change deniers claim. Leave those technicalities for a discussion later in the report, or put them in an appendix. Or if you must speak about it, speak about it in terms of 'degrees of certainty' rather than in the negative.. (Thomas Reuter, University of Melbourne)	The paragraph has been revised substantially and now it mentions uncertainty only in reference to development pathways.
130	47619	1	5	7	5	8	As of 1971, On the third floor of the Graduate School of Management of Northwestern University (today Kellogg) there is a department called MEDS : "Managerial Economics and Decision Science" (personal testimony as I was a doctoral student there). Roger Myerson, Nobel Prize ,has been later professor in this department. At the Harvard Business school, in the late sixties, Robert Schleiffer and Howard Raiffa produce books and papers on decision under uncertainty". (Raiffa H. 1968, Decision analysis : introductory lectures on decision under uncertainty, Reading, MA, Addison-Wesley). In France, in May 1959, The CNRS (Centre National de la Recherche Scientifique) holds an international colloquium called "La decision". Actually, "institutional" interest for decision sciences stems back to the development of "operation research" after world war II and to the growing interest of economist for game theory after the celebrated book of Von-Neuman and Morgenstern (Pierre BATTEAU, Aix Marseille UNiversité)	Decision sciences predate the IPCC. The focus of our section on dealing with uncertainty, however, is the communication of uncertainties in the historical and current context of IPCC assessments.
131	45554	1	5	12	5	25	The benefits of the effort to include institutional, social and cultural issues in the report are immense. It provides a useful basis to move away from the focus on vulnerability assessment to promote adaptive management (Chapter 20). Fostering an adaptive management focus is particularly instructive given the uncertainty attached to the assessments and the role of new information in updating those uncertainties as our understanding of the interactions between the climate system and the human society evolves. (Thilak Mallawaarachchi, The University of Queensland)	Accepted (but we also crossreferenced a few chapters)
132	36901	1	5	12	6	19	This section can be substantially shortened. Changes from SAR, TAR and FAR towards this report are enough. (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Accepted, this section has been shortened by roughly 25%
133	52908	1	5	15	5	15	Please see previous comment that, as written, the statement is not about managing resources and natural systems in the context of climate change. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, the phrase with the word "managing" has been inserted as an example in parentheses.
134	52658	1	5	18	0	0	The end of the phrase, in this line shall include a reference on the cross cutting issues installed in the IPCC WG2 in the preparation of the AR3 report. Maybe this could be done by means of a figure, such like the one attached to this review exercise. (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	We have reduced the text about prior IPCC reports and do not have space for another figure relating to the prior assessments.
135	35342	1	5	18	5	18	Editorial: Substitute ecological for ecosystem (close to the beginning of the line) to avoid repeating ecosystem and systems in '...physical, ecosystem, and economic systems...' (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, changed to "ecological"
136	52909	1	5	20	5	20	This would be a good place to bring in the multi-stressor context that is being used in the WGII report. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, we bring in the multisector stresses with the new figure 1-7 and new text in Section 1.1.4.
137	52910	1	5	25	5	25	In many cases, climate projections are not particularly relevant to stakeholders. It would be better to focus on how exposure, hazard, and vulnerability each have uncertainty. And it is not just the likelihood of certain development paths, but how those pathways unfold over time, etc. You might delete "in climate predictions" as this would solve many of the objections. (Kristie L. Ebi, IPCC WGII TSU)	We changed climate predictions to "projections".
138	36811	1	5	26	5	26	The following additional reference (to include at the end of line 26) is suggested "However, additional indicators, besides the rainfall amount, need to be considered when trying to understand the role of the climate. In fact, regional studies evidenced that changes in the intra annual pattern of the rainfall with statistical meaning may occur under unchanged amounts of rain, Portela and al., 2010". The complete reference is Portela, M.M.; Santos, J.F.; Quintela, A.C.; Vaz, C.; Martins, C., 2010, "About the trend detection in Portuguese long hydrologic time series and the climate change". Regional Rainfall 2010, Regional Expert Meeting on Rainfall-Runoff analysis and Climate Change at the Balkans, Faculty of Civil Engineering, University of Belgrade. Serbia and Montenegro. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	An interesting point, but this is either misplaced or far too detailed for this opening paragraph.
139	39244	1	5	27	5	28	only 5 major sectors are mentioned, not 6 (Thomas Voigt, Umweltbundesamt / Federal Environment Agency)	Good point, the "&"s are confusing and will be deleted. (Note: in the final copy edits we will correct the number of sectors)

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
140	38042	1	5	27	5	52	The framing for this discussion is fuzzy. Make clear the distinction between equilibrium and transient climate model results. 2xCO2 equilibrium is very different from 2xCO2 tranient. (Ronald Stouffer, Geophysical Fluid Dynamics Laboratory/NOAA)	This should be the steady-state, 2xCO2 for the FAR. We are using no hard numbers for of this discussion, rather it describes the simple approach taken. Consitent with that approach, we also dropped the phrase "assuming no mitigation or adaptation".
141	39373	1	5	27	5	52	The tense changes from past to present and back in the descriptions of FAR and SAR. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, past tense should be used in the discussion of the prior IPCC reports.
142	38043	1	5	29	5	29	These results were 2xCO2 equilibrium. (Ronald Stouffer, Geophysical Fluid Dynamics Laboratory/NOAA)	Agreed, Thanks.
143	49922	1	5	32	5	33	Are these statements presented parenthetically quotes from the FAR? It would be helpful to clarify how they should be interpreted. (Katharine Mach, IPCC WGII TSU)	They are not quotes, but rather a summary of what was presented.
144	49843	1	5	40	5	52	The IPCC Special Report: The Regional Impacts of Climate Change: An Assessment of Vulnerability (1998) could usefully be reported here as it was based on content from the SAR. (Timothy Carter, Finnish Environment Institute)	RICC was not an IPCC Assessment Report and this was primarily a review of the major ARs, not all the special reports.
145	38044	1	5	45	5	46	SAR - FAR comparison - One is transient and one is equilibrium. The transient range (1-3C) is lower than the equilibrium range (1.5-4.5C) (Ronald Stouffer, Geophysical Fluid Dynamics Laboratory/NOAA)	Accepted, it is noted that the SAR moved on to transient scenarios
146	36812	1	5	46	5	46	The sentence "... long-term records of soil moisture content ..." is ambiguous and imprecise . Perhaps it should be replaced by "... long-term records of soil moisture content in natural conditions are mostly..." (Maria Manuela Portela, Instituto Superior Tecnico (IST))	This comment is out of place, not sure where it goes.
147	38045	1	5	46	5	46	Vegetation models used 2xCO2 - I am not sure which (transient or equilibrium) is in view here. (Ronald Stouffer, Geophysical Fluid Dynamics Laboratory/NOAA)	We have conferred with our WGI colleagues and feel that the wording is simple, but correct.
148	52659	1	6	0	0	0	Reading only this paragraph, it seems that we are missing the implications of the other components of the global environmental change. If an example serves for clarification, dengue infection does not depend only of higher temperature and humidity. Deforestation is another primary cause because it destroys the habitat of mosquito ´ s depredators. Other examples can show that a simple phrase under this paragraph will be useful (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	What paragraph on page 6? It is not clear that these comments pertain to this section. They seem to refer to the chapter on human health.
149	39374	1	6	1	6	11	This paragraph is very different in tone from previous ones - more informal, eg, the sentence including 'we had seen the impacts', and with some ambiguous/idiomatic phrasing: ' could not tie this to... ' (Sarah Cornell, Stockholm Resilience Centre)	Accepted in part, the paragraph has been tightened and some informal language removed, but we retained the "tied to " phrase.
150	49844	1	6	3	6	3	Regional chapters were ontroduced in the main report for the first time, following requests from governments and probably due to the success of the 1998 Special Report on regional impacts. (Timothy Carter, Finnish Environment Institute)	Agreed, the point was included about the "eight regional chapters" and this is also shown as in the evolution of the WGII outlines in Figure 1-2. We do not feel that furhter expanation is needed in this brief chronicle.
151	49923	1	6	5	6	5	It would be beneficial to clarify further what is meant by "conclusion that we had seen the impacts." Is the author team referring to detection of impacts, their attribution to changing climate, etc.? (Katharine Mach, IPCC WGII TSU)	Accepted, informal language has been removed."
152	52911	1	6	5	6	5	You might clarify who is "we" (Kristie L. Ebi, IPCC WGII TSU)	Accepted, informal language has been removed."
153	40482	1	6	13	6	19	Present tense is awkward. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Accepted, tense was revised for consistency.
154	49924	1	6	14	6	14	"likely" -- Given conventions used in this report, it would be clearest to italicize this calibrated uncertainty term. (Katharine Mach, IPCC WGII TSU)	We cannot change a quote and we note that we have explained the terms used to convey uncertainty in the IPCC reports in the very next section. The word "likely" was not italicized in the AR4 line that we quote here.
155	39375	1	6	15	0	0	Odd comma 'Many, more specific' - perhaps 'More specific examples of many...' would be better (Sarah Cornell, Stockholm Resilience Centre)	We feel that the existing wording is clear.
156	46000	1	6	18	6	19	Does the state of the science now for WGI and WGII improves this situation? Maybe a comment about this would be useful. (Luis E. Garcia, World Bank)	Yes, but we address the WGI advancements later. Also note that this is a review of the contents of the IPCC Assessment Reports - not the specifics of how the science advanced between the reports.
157	53884	1	6	23	0	0	Do you mean Figure 1-3? (Yuka Estrada, IPCC WGII TSU)	It should have been Figure 1-3, and this has been corrected.
158	40959	1	6	23	0	0	Figure 1-2 provides insight into the source of literature- not stressors. I think you are referring to 1-3 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	It should have been Figure 1-3, and this has been corrected.
159	42617	1	6	23	0	0	Reads Figure 1-2, should read Figure 1-3 (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	It should have been Figure 1-3, and this has been corrected.
160	49925	1	6	23	6	23	As a minor point, presumably figure 1-3 is intended here. (Katharine Mach, IPCC WGII TSU)	It should have been Figure 1-3, and this has been corrected.
161	36961	1	6	23	6	23	Figure 1-3, not 1-2. (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	It should have been Figure 1-3, and this has been corrected.
162	35343	1	6	23	6	25	This sentence is abruptly interrupted by a note in square brackets, which perturbs the smooth reading of the sentence without adding any meaningful content to it. If the note were relevant, the text should be modified to make the note clearly meaningful. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Very good point. We will drop brackets and reference to the MGD.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
163	54121	1	6	23	6	28	Following on my general comment on the chapter, this is where additional non-climate stressors could be introduced both in the text and in Figure 1-3. (Michael Mastrandrea, IPCC WGII TSU)	Agreed, we specifically introduce multiple stressors here in this part of the text and its accompanying figure (1-3). We have worked the concept of non-climate stressors into the text (section 1.1.4) and the revisions of figure 1-7.
164	39376	1	6	24	0	0	The note doesn't clarify so much as create confusion. Is the issue 'direct coupling' or are the MDGs seen as stressors?? The phrase 'as opposed to' is problematic - even if nothing else is changed in this section, I suggest 'as distinct from...' would be a better form. (Sarah Cornell, Stockholm Resilience Centre)	Very good point. We will drop brackets and reference to the MGD.
165	45555	1	6	24	6	25	When presenting projections it may be useful to provide the range of estimates with their likely probability rather than the mean alone. That could provide useful information to develop impact estimates for different states of nature and thereby highlight the benefits of adaptation and the institutional innovations to support adaptation. (Thilak Mallawaarachchi, The University of Queensland)	Some of us agree, but this is not possible within the IPCC assessments. When considering the range of climate scenarios, we have been told in WGI that this is merely a range of projections, not a probability of predictions.
166	52822	1	6	30	0	0	Figure 1.3 is an excellent visual summary of the expected changes for this century. My question is: is it appropriate to present a synthesis of this type, especially in 1-3 c) 1-3 d) and 1-3 e), knowing that there are vast areas with low information content (eg South America and Africa)? Possibly appropriate place in the figure, or reference, a score for different areas (USA, Australia, Asia ... etc.) who mentions the degree of confidence in this forecast. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	These figures do have problems as noted, but they are IPCC published ones for the most part and a full scientific discussion should be in the later chapters.
167	54866	1	6	30	0	0	Figure 1.3 The author team may wish to add other stressors like poverty, access to water, living standards, etc., (Monalisa Chatterjee, IPCC WGII TSU)	Agreed, but have incorporated these other into a subsequent figure in this section (figure 1-7).
168	37085	1	6	30	6	41	Figure 1-3 should provide "change" for a, d and e. So, it is easy to compare with b and c. (ZONG-CI ZHAO, National Climate Center)	Disagree, all stressors do not need to be described in terms of "change". We illustrate just a few stressors in figure 1-3 and also in new figure 1-7.
169	39377	1	6	31	6	54	Caption Fig 1-3 (**note line 23 actually indicates Fig 1-2) 'stresses impacting impacts' is inelegant. This is where something like a pressure-state-response framing would have been really helpful in representing the bi-directional and iterative interactions between the biophysical and socioeconomic 'components' of the system. The opening text of section 1.1.2.2 actually deals quite well with this and explains the focus on multiple stressors better, so perhaps it should be reshaped to fit before the section break (after all, CCAV is more than adaptation). (Sarah Cornell, Stockholm Resilience Centre)	Accepted, the caption has been reworded and the reference to the figure number has been corrected in the text. And we edited the inelegant phrase.
170	39256	1	6	35	6	36	The citation of www.fao.org... is inappropriate. The original source should be CIESIN & CIAT. (XIAOSHENG QIN, Nanyang Technological University)	Accepted, the reference to CIESIN has been added and fao.org was dropped.
171	42001	1	6	49	6	52	This sentence not only has grammar issues but also does not make a lot of sense. Are you talking about natural climatic variation versus climate change triggered by human activities? (Liette Vasseur, Brock University)	Accepted, the sentence was removed.
172	49926	1	6	50	6	52	It would be helpful to further clarify the point intended in the sentence. (Katharine Mach, IPCC WGII TSU)	Accepted, this sentence was removed.
173	49845	1	6	51	6	51	Grammar needs attention here. CC was included in the acronym to distinguish impacts/adaptation with respect to climate change as distinct from all other stresses, even if those may also be important or even dominant in determining vulnerability. (Timothy Carter, Finnish Environment Institute)	Accepted, this sentence was removed.
174	42879	1	7	0	0	0	Figure 1-4: It describes the trend of Latin America and Caribbean region only. Other regions, in particular about the Asian region (mentioned in the text), should be provided in the table as well. (Mariko Fujimori, Pacific Consultants Co., Ltd.)	Agreed, but this analysis is simply an example from one region. There is not space (or need) to present an analysis for all countries, particularly with the 2006 reference that provides such a global analysis.
175	39378	1	7	2	7	20	Very simplistic treatment of quantitative text analysis - there's a lot of it in this opening section of the chapter, but this is the most egregious case of blunt instrument for complex analysis. Really for the arguments needed here, there is no substitute for reading the text. The 3% of the text of national adaptation could actually be very specific and precise cross-references to existing policy. It makes sense that where policies need to be new (as in mitigation), these would need to be expressed in more complete and comprehensive ways. If the academic judgment really is that adaptation policy is lagging seriously, this should be highlighted in AR5, but it absolutely NEEDS to be demonstrated by content not word count. (Sarah Cornell, Stockholm Resilience Centre)	We disagree, this type of analysis has been conducted and published by other researchers (Gagnon et al., for example) and we simply illustrate here that the National Communication reports focus largely on mitigation.
176	49927	1	7	3	7	6	The construction of these statements implies that there is a difference between the "impacts" mentioned on lines 4 and 6. However, the nature of this difference is not completely clear. It would be helpful to clarify this distinction further. (Katharine Mach, IPCC WGII TSU)	Accepted, a couple of introductory sentences have been added to the paragraph for clarification and context. Also we have moved this paragraph (as amended) to section 1.1.4 for better context.
177	39245	1	7	7	7	8	please delete 'National Communications' in line 8, it is already mentioned in line 7 (Thomas Voigt, Umweltbundesamt / Federal Environment Agency)	Accepted, but this change will be made in the subsequent draft.
178	54122	1	7	13	7	15	The phrases "treated as a single entity" and "handled side-by-side" are unclear here. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, "treated as a single entity" and "handled side by side" have been deleted
179	49928	1	7	14	7	14	It would be helpful to clarify further what is meant by "treated as a single entity" and "handled side by side" on this line. (Katharine Mach, IPCC WGII TSU)	Accepted, "treated as a single entity" and "handled side by side" have been deleted
180	36902	1	7	29	9	17	This history chapter is not necessary. Important is how uncertainty is addressed in this report. A brief chapter is sufficient (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Accepted to some degree, we have shortened the section text and removed the table with the history of the uncertainty language. We must, however, present the terms used in AR5.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
181	43689	1	7	31	7	40	This summary of the development of methods to describe uncertainty in the IPCC process is skipping over what was done for the AR4. The report that came from the first interdisciplinary IPCC workshop on the subject was: [Manning, M., Petit, M., Easterling, D., Murphy, J., Patwardhan, A., Rogner, H.-H., Swart, R., and Yohe, G., 2004: IPCC Workshop on Describing Scientific Uncertainties in Climate Change to Support Analysis of Risk and of Options: Workshop Report. IPCC 138 pp. http://www.ipcc.ch/pdf/supporting-material/ipcc-workshop-2004-may.pdf]. That then led to a 12-month discussion among LAs that produced a clearer separation between likelihood and confidence as given in the Guidance Note for the AR4. The follow up that has now been done for the AR5, and summarised in Mastrandrea et al, clarifies things further and has led to more convergence across the WGs. But I think it is misleading for this short review of the history to overlook what was actually developed as part of the AR4 process and is now being followed again in the AR5. (Martin Manning, Victoria University of Wellington)	Not accepted, we do not have space to provide this level of historical detail. We have eliminated some of the historical text and removed the table with the history of the uncertainty language.
182	36813	1	7	34	7	34	The following additional reference (to include in line 34 after the period finishing in "processes.") is suggested "Another study for the South-western Europe also showed a decrease in the frequency of the flood events since the 1960's as well as a close connection between the occurrence of such events and the cyclic behaviour of the winter NOA indices, Silva et al., 2012". The complete reference is Silva, A. T., Portela, M. M., and Naghettini, M., 2012, "Nonstationarities in the occurrence rates of flood events in Portuguese watersheds", Hydrol. Earth Syst. Sci., 16, 241-254, doi:10.5194/hess-16-241-2012. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	This comment does not correspond to text in Chapter 1.
183	48715	1	8	0	0	0	Box 1.1: important to note that this approach to uncertainty is relevant primarily to modeled or experimental or quantitative issues. It is less useful for describing uncertainties related to values, human behavior in the future, etc. (Jennifer Hoffman, EcoAdapt)	While this can be argued for the probabilistic language, the qualitative language and the evaluation of available evidence and agreement is intended to be equally applicable to such uncertainties. Evidence is defined very broadly in this context to encompass relevant knowledge.
184	49807	1	8	17	9	17	There is no evidence so everything is uncertain. The people who are paid to do the work make the decisions on the supposed level of uncertainty. They are disqualified by conflict of interest. No independent assessors are permitted (Vincent Gray, Climate Consultant)	Please see the websites of the IPCC for further information on the rules and procedures guiding development of the reports, which include two expert reviews and a policy on disclosure of relevant interests.
185	47609	1	8	30	0	0	Poverty trap' is a term popular with many economists but it is not an enlightening phrase, being, however unintended, demeaning, as well as masking the fact that may make the economic definition of poverty all-encompassing to broader notions of well-being. In my research among the poor, many people may have low incomes from year to year, falling below the absolute poverty line, but if they have access to sufficient food, and they possess generally good health, they do not necessarily see themselves 'trapped' in a totalizing condition of poverty. Another danger with the notion of 'poverty trap' is that it becomes yet another way of saying that the poor lack agency. (A. Peter Castro, Maxwell School, Syracuse University)	Wrong chapter. We do not use the term "poverty trap" in this chapter. We do not use the words "trap" or "trapped" in this chapter.
186	53888	1	9	4	9	11	The information here may be presented more effectively as table (Yuka Estrada, IPCC WGII TSU)	This information is already in tabular form.
187	54124	1	9	20	0	0	Section 1.1.3: As mentioned in my general comment on the chapter, several other chapters are developing boxes or other text on the Representative Concentration Pathways and the Shared Socioeconomic Pathways. These include Chapter 2, Chapter 19, Chapter 20, and Chapter 21. It would be very useful to coordinate with them regarding descriptions of these pathways. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, the chapter now has a brief description of the history of the SRES, RCP and SSP scenarios.
188	49808	1	9	20	10	25	The SRES Scenarios are all obsolete. The assumptions of GDP growth are now completely different. The west is floundering and the east is progressing. Temperature records are unchanging for over ten years Methane levels are constant. The whole lot need to be changed. All the "projections" in this report are wrong (Vincent Gray, Climate Consultant)	Comment is not relevant to the discussion.
189	49020	1	9	29	9	30	In the part sentence....."emphasizing large-scale measures such as global mean temperature....." the word meaning of "measure" seems to be unclear. Consider another word. (Oyvind Christophersen, Climate and Pollution Agency)	Accepted, sentence was rewritten not to use the word "measures".
190	52912	1	9	32	9	32	Please check the accuracy of the statement that only four integrated assessment models were used to create all SRES scenarios. (Kristie L. Ebi, IPCC WGII TSU)	Yes, we have checked and only four were used for the marker scenarios.
191	46001	1	9	35	9	37	With new advances (Chapter 1, section 3.1, pag 17, line 42 on), what effect does this have on the conclusions of this report? Maybe a comment about this would be useful. (Luis E. Garcia, World Bank)	This is not the place for conclusions but for explaining what was done. See later chapters.
192	49846	1	9	39	9	43	Note that CMIP5 was so labelled to match the sequence of IPCC assessments referring to it (i.e. AR5). This meant moving from CMIP3 to CMIP5 and skipping CMIP4, an intercomparison project that never took place! (Timothy Carter, Finnish Environment Institute)	We agree with the statement but this is not the place to critique the acronyms developed by others.
193	52913	1	9	45	9	54	It might be helpful to describe the matrix architecture approach, which incorporates the RCPs. The current text is not very clear on new scenario development. Also, the scenarios are not being developed just for the IPCC; it is a process being led by the scientific community for a range of users, including the IPCC. The RCPs were chosen to span a broader range than the SRES scenarios. (Kristie L. Ebi, IPCC WGII TSU)	Agreed, we have added text to indicate that the RCPs were developed by an ad-hoc community of experts.
194	40483	1	9	45	10	20	Discuss further the use of the RCPs for VIA research. Also, mismatch of timing of RCPs and CMIP5 is unfortunate. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Agreed, but the specific uses of RCPs in VIA research is explained in the chapters.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
195	54123	1	9	48	9	51	This statement is not correct. The RCPs were chosen because of the characteristics of their associated radiative forcing pathways. Even though each RCP has an associated socioeconomic pathway from the IAM that generated it, these socioeconomic pathways are not part of the RCPs. Instead, Shared Socioeconomic Pathways (SSPs) are being developed separately so that different combinations of socioeconomic pathways and climate trajectories can be considered. These important features of the RCP/SSP framework could be described more clearly here. (Michael Mastrandrea, IPCC WGII TSU)	We think the statement is correct, since the RCPs generated many pathways, and only 4 were chosen as representative (same as for SRE markers). Note that we have added a new subsection on the SSPs.
196	49929	1	9	50	9	51	This characterization of the RCP development process requires revision; they were chosen based on radiative forcing, rather than being built from defined socio-economic pathways. (Katharine Mach, IPCC WGII TSU)	Accepted, this text has been broadened to explain more about how the RCPs were developed. And we added a short section summarizing the development of SSPs.
197	40960	1	9	51	0	0	Add "IAMs" to the glossary- "Integrated Assessment Model". The term is used earlier on line 33 but I would suggest putting the abbreviation in brackets after the first use of the term to aid readers as was done on line 50 page 9 with "RCPs" (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We have suggested this to the glossary team.
198	36962	1	9	52	9	52	IAMs are not explained (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	ibid (glossary should define IAM), but also we introduce the IAMs in the first paragraph in section 1.1.3.
199	35344	1	9	53	9	54	Does this sentence mean that previous climate change scenarios required governmental agreement? Does it refer to approval by the IPCC? Would you clarify the meaning of this suggestively cryptic sentence?. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, this section about RCPs and the IPCC role has been revised and simplified to some degree.
200	49930	1	9	54	9	54	It would be preferable to provide a more nuanced explanation of the advantages of the RCP process, aside from the mention of governmental approval. (Katharine Mach, IPCC WGII TSU)	Accepted, the authors have attempted to convey both the advantages and the disadvantages.
201	41563	1	10	0	0	0	Recommend there be a parallel section to summary statement on CC scenarios (which is in the draft) , but on socio-economic scenarios in AR5 (which is currently missing here?): eg what assumptions are made about: pop, income, techn,...and the regionalisation of these? More importantly, where can the reader find a more complete description of the global climate and non-climate scenarios used in AR5 WG2...I could not find them elsewhere. If they are not elsewhere, can they be in Ch1? NB I recognise that the regional CC scenarios are in Ch21 (but NB also that the regional NON-climate scenarios are not there). (Martin Parry, Imperial College)	Good suggestion. We have added a new subsection on shared socioeconomic pathways.
202	39380	1	10	5	10	10	Split the paragraph at line 10, starting the new one at "The four RCP scenarios are compared..." - this comparison is a key issue to make clear to the reader. The first five lines of this paragraph really should follow on from the previous one (end of page 9 to page 10 line 3, explaining the rationale and use and WGI analyses of the RCPs. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, this section about RCPs has been revised and simplified to some degree.
203	38585	1	10	5	10	20	Since the "scenarios" have changed fundamentally with the AR5; concordance between the AR4 and AR5 scenarios warrant further explanation. In AR5, are there parallels for A1 and B2 scenarios? Since many of the following chapters (e.g., Chapter 5) of the IPCC WG II AR5 is referring to the A1B scenario of the AR4, knowing the parallel of A1B and RCP (if any) will help to ensure continuity in future research. (Susmita Dasgupta, The World Bank)	Agreed, see figure that compares radiative forcing and temperature under the RCPs and SRES scenarios. We leave the greater details to WGI where these are used and described.
204	36903	1	10	5	10	20	This paragraph is ok and understandable. But what is the message to the reader? Which scenarios are those that decision makers can or should really use? There are too many scenarios by now. No reasonable project on cc adaptation will be able to sensibly use this amount of information. A guidance on how to use these scenarios for the identification of regional adaptation strategies would be helpful (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Accepted, we have reorganized this text into a subsection, "1.1.3.1. Comparison of RCP and SRES Scenarios". It is not intended to provide guidance on how to use the scenarios, but rather to explain the two major sets of scenarios used in IPCC assessments.
205	54125	1	10	12	10	13	Which two? As three different RCPs are mentioned previously, this is confusing. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, we have deleted the phrase in question.
206	54126	1	10	17	10	18	Does the AR5 WGI report discuss the likelihood of these reductions in terms of formal calibrated likelihood language? If so, it would be useful to communicate the findings here, and perhaps to use these as the basis for the uncertainty language used to communicate this point in the Executive Summary (which currently uses medium confidence for a similar point). If "likelihood" is more casually used here, I suggest using a different term to avoid confusion. (Michael Mastrandrea, IPCC WGII TSU)	Yes, we will take what comes out of WGI Chapter 11, where the likelihood is based on other published studies.
207	54127	1	10	19	10	20	It is unclear what "compromise" means in this context. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, we have deleted this sentence rather than trying to reword.
208	49847	1	10	26	10	26	Another side of the coin is socioeconomic scenarios, not treated here at all. The development of RCPs was part of a parallel process of scenario development by the global research community to produce scenarios both of the physical climate and of the socioeconomic conditions that are drivers of emissions and precursors of vulnerability in social systems. It is important to introduce here the approaches used to represent these "non-climate" futures, if only to indicate other chapters in which they are described in more detail (e.g. Chapter 2 or 21, others?). The gradual emergence of Shared Socioeconomic Pathways (SSPs) that describe how socioeconomic conditions may develop regardless of climate change, and related Shared Policy Assumptions (SPAs) that describe how assumptions about climate policy (mitigation AND adaptation) can modify the SSPs, will need to be documented here, even if the scenarios themselves are very unlikely to be represented in the literature being assessed in WG II (except possibly in some "fast track" scenario-based studies). (Timothy Carter, Finnish Environment Institute)	Accepted, we have added a new subsection on socioeconomic pathways/SSPs.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
209	39383	1	10	28	0	0	<p>This section needs considerable attention because it includes (or should do) some vitally important conceptual framing and new thinking on the interfaces and mutual dependencies of climate change, wellbeing, sustainability and vulnerability - the structure, key messages, narrative flow and in places the grammar and syntax all need to be improved. The promised 'evolution' is not logical in the opening parts of section 1.1.4 - it starts with AR4 impacts, then goes back to TAR vulnerability... Set the scene more clearly and systematically - define development first, not at end of para 1, then explain how previous ARs have (or have not) dealt with development. Take statements that read like conclusions out of the intro (e.g. lines 41-43 on page 10) and put them where they belong (in the example I picked out, the text relates to the discussions on poverty on page 11 line 25ish and risk, line 44ish). The section opener would then clearly and simply set the context for the current research issues that are listed and outlined in the main body of the section. (And as an aside, the last sentence on page 10 is another instance of an phrase that is in the wrong place in the flow of text - either all the vulnerability text should hang together as a sensible paragraph (see next comment), or the historic 'flow' should be made clearer, from a focus on [biophysical and simplistic economic] impacts in FAR/SAR to adaptation and vulnerability in TAR/AR4, with more attention being given in the text here to describing both adaptation/adaptive capacity and vulnerability as developing concepts.) (And as another aside, the last sentence in the awkwardly structured paragraph at the top of page 11 (lines 9-11) talks about the growing literature on adaptation, vulnerability and development - but as it stands, it looks like an extra theme that is not included in the numbered list of research priorities that follows immediately after, rather than (I presume) a general statement on the body of literature that is categorised in the remaining text of that section.) In the discussion of the six themes, only a couple cross-reference to other chapters in AR5 - ideally, all should, otherwise it looks as though only 2/6 of the science has been used in the report... And a key issue is that the six main themes emerging in the literature could be set out much more clearly, and perhaps reordered in a more constructive or intuitively coherent sequence. The current order is (apparently): 1. development, adaptation and financing; 2. adaptation planning policy and ongoing development practice (with fuzzy overlaps with the first theme in the green economy discussion); 3. thinking on 'good' and 'bad' development in the climate change context; 4. a pick-and-mix theme of methodological integration and transdisciplinary working; 5. ethics and justice; and 6. the transformation discourse (with a sub-theme on conceptualisation of global sustainability). Possible narrative frames could be the sequence theory-policy-practice (eg, 4-5-3-2-1-6); or the efforts to extend from 'pure' research to better embedding of values and reflexivity (eg, 2-1-3-5-6-4). In any case, try to make the first line of each paragraph on these themes be a clear and accessible precis statement of the theme. The descriptions are rather jargony - rather than using the language of our various current schools of thought, this would be a good place to give a more critical and synthetic perspective on where the thought itself is aligning. (Sarah Cornell, Stockholm Resilience Centre)</p>	<p>Accepted, excellent suggestions. This section has been redrafted and merged with what was formerly 1.1.2.2, "An Increasing Emphasis on Adaptation". Two new contributing authors were brought in to help draft the new merged section. Also note that section 1.4 with the 6 themes has been eliminated.</p>
210	47458	1	10	28	12	42	<p>In listing the advances in knowledge on climate change and sustainable development, the authors should consider whether there are important synergies that can be drawn out between debates on climate science and sustainable development on one hand, and the resource curse on the other. The resource curse literature does not address climate change specifically, but as I noted in a comment to chapter 16, the resource curse literature has a lot to say about how economic resource dependence in developing countries (on extractive resources in particular) influences political systems, how it constrains political and economic change, and how constrains equitable, sustainable development. This debate is now moving from a focus on national-level econometrics to a concern for the socio-political conditions under which institutions are shaped (see Stevens and Dietche. 2008. Resource curse: An analysis of causes, experiences, and possible ways forward. Energy Policy, 36(1), 56-65). One suggestion is to include a point about advances in knowledge on resource use/governance and political systems, for example, which links that debate to adaptation and sustainable development. As a general comment relevant to this section, it is important to avoid separating "climate science" (research addressing climate change specifically) from other areas of social science, since the latter can offer a lot of insight on social systems, institutions and the conditions for social change. It is understandable that some delimitations have to be made of course, but ideally climate science should be able to draw on social research generally and development research specifically. So I think it would be appropriate for this section to refer to more relevant debates that are not climate-specific. (Håvard Haarstad, University of Bergen)</p>	<p>We agree fully with the first comment though we do not use the term "resource curse". We deleted the first two sentences and the last four in this paragraph. We have added several paragraphs about the social constraints that influence resilience (and a new figure 1-7). We have added text and definitions pertaining to societal vulnerability, sustainable development and transformation.</p>
211	47243	1	10	28	12	42	<p>This section is good and needs to be used a lense to bring the development dimension into other sections and into the SPM (Juan Hoffmaister, Third World Network)</p>	<p>Thank you for the positive comment. We have expanded the text about relations with development (also see response to comment above).</p>

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
212	36169	1	10	31	10	43	The concept of "sustainable development" as presented in the report Brundlandt Comission has been challenged for the attempt of giving the same weight to all three pillars. It would be useful to at least mention this discussion and the potential impacts on the framework for understanding adaptation. See the following refereces:Jackson T. (2009). Prosperity without growth. Economics for a finite planet. Earthscan, UK and USA.; as well as the references from Amartya Sen on Ecomomis and development including i.a. Development: Which Way Now? (1983) The Economic Journal, Vol. 93, No. 372. (Dec., 1983), pp. 745-762.; Development as Freedom (1999) There are attempts tointroduce the discussion on a more appropriate understanding of sustainable development in p. 11 line17-18, in p. 12 line 24 - 42 but this sections failure to intorduce the main concerns as presented in new research results. Check for consistency with CH 3 and 4 in WG III (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	We have removed the reference to the Brundtland Commission. We have added several paragraphs about the social constraints that influence resilience (and a new figure 1-7). We have added text and definitions pertaining to societal vulnerability, sustainable development and transformation.
213	39381	1	10	32	0	0	quotation marks in wrong place - should be before reference. (Sarah Cornell, Stockholm Resilience Centre)	sentence with quote has been deleted.
214	39382	1	10	38	0	0	**And in Footnote - Brundtland spelled incorrectly. (Sarah Cornell, Stockholm Resilience Centre)	Sentence with the reference to the Brundtland Commission has been deleted
215	38719	1	10	40	0	0	The Bruntland report was not the unique option for sustainability. The difficulties to practical balance between the three legs sustained in the Bruntland report as well as the idea of Earth carryng capacity with physical limits, in my opinion needs a reformulation for sustainability concept. I suggest to introduce this new views and cite [Fischer, J. M. Manning, A.D. Steffen, W. Rose, D.B. Daniell, K. Felton, A. Garnett, S. Gilna, B. Heinsohn, R. Lindenmayer, D.B. MacDonald, B. Mills, F.Newell, B.Reid, J. Robin, L. Sherrren, K. Wade, A. 2007 Mind the sustainability gap. Trends in Ecology and Evolution 22 (12): 621-624]. In my opinion also is interesting the point of view peresented in the UNEP Report 2012: Inclusive Wealth Report. Measuring progress toward sustainability[UNU-IHDP and UNEP (2012). Inclusive Wealth Report 2012. Measuring progress toward sustainability. Cambridge: Cambridge University Press] because introduce a new and more compresive definition of sustainability in the same way that the previous reference: Definition 1. By sustainable development we mean a pattern of societal development along which (inter-generational) well-being does not decline. This definition of Sustainability was more clear and precise that proposed in the "Our Common Future" lided by Ms. Bruntland. (Ricardo Anadon, University of Oviedo)	Sentence with the reference to the Brundtland Commission has been deleted.
216	54129	1	10	41	10	43	These points require referencing to supporting literature and/or assessment within this chapter or other chapters. (Michael Mastrandrea, IPCC WGII TSU)	We have added five references for the sentence that ends on line 42 (see p. 10, lines 8-12 in the SOD).
217	52914	1	10	42	10	42	A reference is needed. (Kristie L. Ebi, IPCC WGII TSU)	We have added five references for the sentence that ends on line 42 (see p. 10, lines 8-12 in the SOD).
218	39379	1	10	45	11	3	It would be helpful to explain briefly why the shift to the concentration pathways was particularly desirable, both from the perspective of driving climate models for assessments like AR5 WGI, and allowing for the various socioeconomic 'configurations' to be explored (the stuff of WGII and III). **Start the paragraph with the sentence of line 48 'For AR5, fundamentally new scenarios...' rather than putting this key fact into the middle of a paragraph. (Sarah Cornell, Stockholm Resilience Centre)	This comment appears to refer to page 9 not page 10. We like the new opening. We start the paragraph in our SOD as follows: "With the AR5, the scenarios fundamentally changed..."
219	44372	1	10	48	0	0	is sound very reactive. Would not unavoidable climate change impacts be sea level rise, glacial melting etc, whereas many of the natural and social impacts treated in a WGII context be avoidable and that is what motivates adaptation (and mitigation). I see this wording in other chapters to and I guess that is how it is framed, society act on impacts. (Linda Sygna, University of Oslo)	Sentence with the word "unavoidable" has been moved to serve as more of an introductory statement for context in the section that focuses on societal understanding and response to climate change.
220	49809	1	10	48	10	53	Greenhouse gases have no harmful influence on the climate and temperatures are not rising (Vincent Gray, Climate Consultant)	This is a general comment for Working Group I, which evaluates the effects of greenhouse gases on the climate.
221	42002	1	10	51	10	52	This sentence seems a little out of context. There seems to be missing a couple of sentences to link adaptation and vulnerability and then move to the next paragraph. (Liette Vasseur, Brock University)	Accepted, this section has been rewritten and the sentence in question was deleted.
222	39384	1	10	51	11	6	It is not clear what the first paragraph on page 11 is actually trying to explain. It seems to be seeking to emphasise that social science research insights are now more prominent in thinking about vulnerability relative to earlier ARs, setting the scene for the main body of the section, but it is rather garbled. Vulnerability always has been defined in a multi-dimensional way - it must embed the notion 'of something to something' - so the closing lines of the previous paragraph (51-52 page 10) display a very odd and narrow climate-scientistic perspective of what the term purportedly used to mean. "The physical causes and their effects are an explicit aspect of vulnerability while the social context is encompassed by the notions of sensitivity and adaptive capacity (SREX, 2012)" is a problematic phrase - is the issue that the authors want to highlight that the word 'physical' is explicit while 'social' is embedded/invisible? Or that the concepts of 'sensitivity' and 'adaptive capacity' are not explicitly social enough for their liking? Or that these concepts do not capture enough of 'the social' to relate to development theory and/or practice/policy? Of course the TAR definition (based on the widely accepted IHDP-debated framing described in Turner et al) would have been much better if it had actually used risk language and concepts consistently, and included the missing word 'hazard' in place of 'the physical causes and their [physical? biological?] effects', but this phrasing does not equate to an emphasis on the physical aspect of vulnerability and it does not mean that the term did not capture the social aspects back in 2001. The line "there is high confidence that adaptive capacity influences the vulnerability" is also problematic - for much research, vulnerability has been defined as a function of it, so at the very least this is a tautology. (Sarah Cornell, Stockholm Resilience Centre)	This section has been redrafted and merged with what was formerly 1.1.2.2, "An Increasing Emphasis on Adaptation". Two new contributing authors were brought in to help draft the new merged section. We have added several paragraphs about the social constraints that influence resilience (and a new figure 1-7). We have added text and definitions pertaining to societal vulnerability, sustainable development and transformation.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
223	52915	1	11	1	11	8	It could be helpful to explain that sector definitions of vulnerability also vary in terms of when vulnerability is determined. For some sectors, vulnerability is viewed as the future residual after actions are taken to address the risk. For others, vulnerability is a property of the current state, before actions are taken. (Kristie L. Ebi, IPCC WGII TSU)	Agreed, we are also coordinating with adaptation chapters and their usage of vulnerability as well as drawing from glossary definition. (also see SOD p. 10, lines 4-7 about the complexity and multidimensionality of "vulnerability")
224	43127	1	11	1	11	11	"The is high confidence that adaptive capacity influences the vulnerability of communities and people ..." The reader needs to be reminded at this point of the definition of adaptive capacity too. Otherwise s/he may worry that adaptive capacity is identified in operational terms as anything which reduces vulnerability, in which case the quoted statement is tautological. (Adrian HAYES, Australian National University)	The edits to this section address the topic of adaptive capacity. The term "adaptive capacity" is also defined in the glossary.
225	52916	1	11	1	11	42	This section overlaps significantly with 1.4. You might consider combining, or you could augment 1.4 with additional considerations. As with all reviewers, I have suggestions of additional issues to consider, including trying to address the UNFCCC article 2 question of what constitutes dangerous anthropogenic interference with the climate system; low probability, high consequence events; increasing coordination and collaboration across sectors; and integrating top-down with bottom-up approaches to assessment. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, this section has been redrafted and merged with what was formerly 1.1.2.2, "An Increasing Emphasis on Adaptation". Two new contributing authors were brought in to help draft the new merged section. Also note that 1.4 with the 6 themes has been eliminated.
226	49931	1	11	4	11	5	It would be preferable to also include exposure in this statement, along with vulnerability. Additionally, it would be preferable to refer to the specific chapter intended directly. (Katharine Mach, IPCC WGII TSU)	We disagree, we do not want to mix these terms before talking about risk in the subsequent section.
227	54130	1	11	4	11	8	It would be useful to introduce exposure explicitly in this discussion as well. (Michael Mastrandrea, IPCC WGII TSU)	We disagree, we do not want to mix these terms before talking about risk in the subsequent section.
228	44374	1	11	8	11	11	After reading this part on adaptive capacity one gets the impression that this adaptive capacity only lies with people. Maybe broaden it to also mention that communities, society or organizations have different capacities to respond to climate change (importance of leadership, trust, networks etc). (Linda Sygna, University of Oslo)	Accepted, this text about adaptive capacity has been broadened as suggested. And the term "adaptive capacity" is now in the glossary.
229	49932	1	11	8	11	11	Given that this statement includes a confidence assignment (which should be italicized), it seems to be presented as a finding, yet without supporting citations or indication of where the traceable account supporting it can be found. However, since the level of confidence is applied to a statement that is largely definitional, it may be preferable to present it as such. (Katharine Mach, IPCC WGII TSU)	Accepted, this sentence was removed.
230	48716	1	11	13	12	42	The conservation/natural resource perspective is noticeably lacking in this list of theoretical/methodological scholarship; the focus is squarely on development. Some of these areas of scholarship could easily be expanded to include/address some of the exciting work being done in the conservation/natural resource management field. (Jennifer Hoffman, EcoAdapt)	The sentence about methodological scholarship, which focused on development, has been revised to focus on biophysical and social factors. The entire section has been redrafted and merged with what was formerly 1.1.2.2, "An Increasing Emphasis on Adaptation".
231	49933	1	11	14	11	15	For this statement, the author team might consider referring more substantively to chapters in the working group 2 contribution, in addition to citations provided here. (Katharine Mach, IPCC WGII TSU)	The statement was removed.
232	49934	1	11	15	11	29	For the 1st 2 topics presented, it would be helpful to further clarify the distinction between them. Generally speaking, do they represent theory versus practice? (Katharine Mach, IPCC WGII TSU)	This section has been redrafted and the two topics removed.
233	36814	1	11	17	11	18	Correct the sentence "The water balance of the surface excludes aquifers and the atmosphere, and when there are no substantial lakes, wetlands or glaciers the annual change of storage in the soil is often assumed to be zero" by "The water balance of the surface excludes aquifers (except in their direct contribution to the river flow) and the atmosphere, and when there are no substantial lakes, wetlands or glaciers the change of storage in the soil at the annual scale or at a larger period of time is often assumed to be zero". (Maria Manuela Portela, Instituto Superior Tecnico (IST))	Wrong chapter, This comment does not correspond with any text in Chapter 1.
234	35345	1	11	18	11	18	In view that there is not a globally agreed definition of 'green economy', I suggest replacing '...greener versions of...' with some other colourless adjective for 'versions'. See also page 11, lines 37 - 40. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	The sentence was revised to read as follows: "The concept of "green" growth, for example, framed the 2012 Rio + 20 Earth Summit and has led to an academic debate on the opportunities and limits of this concept. "
235	35346	1	11	19	11	21	This sentence is obscure because there is only one CDM, not many as implied in the text. Moreover, the continuation of the CDM is presently in the doldrums, so any reference to it as a mitigation and adaptation tool should be accompanied by an 'or equivalent program' just in case. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, we reworded this sentence as follows so that CDM is just an example: "Key instruments in this area are market-based mechanisms aiming to achieve synergies between mitigation and adaptation efforts, development financing and planning, the development of appropriate measurement and monitoring tools and links to energy needs, such as the "Clean Development Mechanism".
236	52917	1	11	20	11	22	Also, incorporating climate change into the MDGs. (Kristie L. Ebi, IPCC WGII TSU)	The sentence in question has been deleted.
237	52746	1	11	23	11	24	There is another excellent paper which speaks to the importance of organisations and institutions: Dovers, S.R., Hezri, A.A. (2010). Institutions and policy processes: the means to the ends of adaptation. WIREs Climate Change 1: 212-231. (Tim Rayner, University of East Anglia, Tyndall Centre for Climate Change Research)	We do not feel that additional literature is needed to support this text, but we appreciate the reference.
238	42282	1	11	24	11	24	such as for example? Remove one? (Luhui Yan, Tanzujij)	We have the removed the sentence with the two terms.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
239	53887	1	11	29	11	31	I do not think that this statement is supported by Figure 1-4 since it only shows the % of pages devoted to Adaptation, Impacts and Vulnerability, and not the amount of literature. (Yuka Estrada, IPCC WGII TSU)	Accepted, we removed the statement.
240	42772	1	11	29	11	31	NAPAs and LAPAS are not, for most cases, considered "ongoing development efforts". In most countries, they have not been effectively linked to development plans, policies or budgets. I recommend that the authors instead refer to National Development Plans, budgets and sectoral policies (Sofia Bettencourt, World Bank)	Accepted, we removed the statement.
241	40484	1	11	29	11	40	Include role of cities in adaptation planning and development. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Agreed, but we leave this specific aspect to the other more relevant chapters.
242	45473	1	11	33	11	34	We suggest including a reference to WFP's concept note on climate change to illustrate how traditionally humanitarian organisations are also addressing climate impacts on the most vulnerable. Suggested reference: WFP (2011) Climate Change and Hunger: Towards a WFP Policy on Climate Change. Rome: WFP. (Carlo Scaramella, World Food Programme)	Our revised SOD text addresses how some humanitarian organizations have become involved in reducing impacts on the most vulnerable. But we do not call out the World Food Programme specifically.
243	47200	1	11	34	11	34	Additional recent UNESCO publications with a direct climate change focus: UNESCO. 2009. Ocean Acidification: A Summary for Policy-Makers from the second Symposium on the Ocean in a High-CO2 World. UNESCO-IOC/SCOR/IGBP/IAEA, Paris. UNESCO. 2010. The Ethical Implications of Global Climate Change. UNESCO, Paris. 38 pp. UNESCO. 2010. Sandwatch: Adapting to Climate Change and Educating for Sustainable Development. UNESCO, Paris. 136 pp. UNESCO. 2011. Migration and Climate Change: an overview. UNESCO Publishing/Cambridge University Press, Paris and Cambridge, 576 pp. UNESCO. 2012. Managing Water under Uncertainty and Risk. The United Nations World Water Development Report 4. UNESCO, Paris, 904 pp. UNESCO. 2012. Weathering Uncertainty: Traditional knowledge for climate change assessment and adaptation. UNESCO /UNU, Paris and Darwin, 120 pp. (Douglas Nakashima, UNESCO)	Thanks for the references, but we have had to shorten text and these references are peripheral to the revised text.
244	52918	1	11	36	11	37	Who is the UN Environmental Protection Agency? Do you mean UNEP? (Kristie L. Ebi, IPCC WGII TSU)	The reference has been deleted.
245	35498	1	11	42	11	52	Often the notion of 'sustainable development' is posited as 'good development' but in reality the term (Hans Baer, University of Melbourne)	The phrase in question was removed
246	35499	1	11	42	11	52	'sustainable development' has become rather nebulous and used in various ways on the part of environmentalists, environmental agencies, and corporations. It is a concept that implies the complementarity of economic expansion or growth and environmental sustainability. In contrast to mainstream environmentalists, radical environmentalists, such as Vandana Shiva (2005), have come to reject the notion of sustainable development because of its close association with ecological modernisation, an approach that emphasises technological innovations such as renewable energy sources, energy efficiency, etc, but which tends to ignore social equity or social justice issues. According to anthropologists Alf Hornborg (2001:9), "As long as the concept of development continues to hinge on growth, the notion of 'sustainable development' remains an oxymoron." (Hans Baer, University of Melbourne)	Accepted to some degree. We have rewritten this section and have tried to removed any nebulous language. We do not agree, however, that "sustainable development" has become a nebulous concept.
247	40485	1	11	43	0	0	'Good development' -- Again, this is normative, even if you put it in quotes. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Accepted, we have removed the phrase in question.
248	46002	1	11	47	11	53	Maybe a reference to appropriate sections and/or paragraphs in Chapter 20 would be useful. Although valid, this general statement may tempt to go into exhaustive discussions about what "good development" should be, as a pre-requisite for climate change adaptation, leading to paralysis. (Luis E. Garcia, World Bank)	Accepted, we have removed the phrase in question.
249	52660	1	12	0	0	0	Under Observed Impacts, it is pitiful to emphasize once again the skewness of the data distribution, in the different Regions, as shown by the figures obtained, regarding the attribution of physical and biological/ phenological observed changes to climate change. As remarked in the IGBP, WCRP, GCOS 'Report, this is due to the well known gap between developed and developing regions, severely affecting the phrase in lines 49 to 51. Compare with the expression on page 13, lines 10 to 14. Reference: WMO / TD N° 1418, 2008 (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	Wrong chapter, this does not relate to the text in our chapter.
250	52919	1	12	2	12	2	This is not really a methods challenge. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, this sentence has been deleted.
251	44845	1	12	3	0	4	Other literature that should be reviewed and added, includes key authors in transdisciplinary research [see (1) Pohl, C. (2011). What is progress in transdisciplinary research? Futures 43: 618-626; and (2) Pohl, C. (2008). From science to policy through transdisciplinary research. Environmental Science and Policy 11, 46-53]. (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	Accepted, Pohl 2011 was added.
252	44375	1	12	4	0	0	Co-productio of knowledge is essential so maybe take out "even". (Linda Sygna, University of Oslo)	Accepted, change made.
253	44846	1	12	4	0	10	Other literature that should be reviewed and cited includes reflexivity in transdisciplinarity [see (1) Pohl, C., Rist, S., Zimmermann, A., Fry, P., Gurung, G.S., Schneider, F., Ifejika S., Chinwee, K.B., Boillat, S., Serrano, E., Hirsch Hadorn, G. and 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]. (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	Accepted, the references have been evaluated but not added. We did add a reference, however, to similar work by Pohl (2011).
254	35347	1	12	4	12	4	'...co-production of knowledge.' Co-production with whom? Does it mean collaborative work between XX and YY? (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, we have broadend and clarified the sentence about co-production of knowledge.
255	37579	1	12	7	0	0	"all points to co-producing knowledge..." statement is unclear (Jon Rosales, St. Lawrence University)	Accepted, we have broadend and clarified the sentence about co-production of knowledge.
256	35502	1	12	12	12	22	Gardiner, Stephen. 2011. A Perfect Storm: The Ethical Tragedy of Climate Change. Oxford University Press. (Hans Baer, University of Melbourne)	Accepted, reference has been added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
257	35501	1	12	12	12	22	References for above comments: (Hans Baer, University of Melbourne)	Accepted. We have reviewed each of the suggested references.
258	35504	1	12	12	12	22	Roberts, J. Timmons and Bradley C. Parks. 2007. A Climate of Justice: Global Inequality, North-South Politics, and Climate Policy. Cambridge, MA: MIT Press. (Hans Baer, University of Melbourne)	Parks and Roberts (2010) has been added.
259	35505	1	12	12	12	22	Shiva, Vandana. 2005. Earth Democracy: Justice, Sustainability, and Peace. London: Zed Books. (Hans Baer, University of Melbourne)	Accepted, Shiva reference has been added.
260	35500	1	12	12	12	22	With respect to the relationship between ethics and climate justice, other important sources to consider include Roberts and Parks (2007) and Gardiner (2011). (Hans Baer, University of Melbourne)	Accepted, Gardiner reference has been added.
261	48505	1	12	13	12	14	It is mentioned that ethics and justice become more prominent. Given this, it would seem appropriate that more of those who are actually trained as theorists of justice and ethics are cited besides empirical theorists, in particular people like Stephen Gardiner, Dale Jamieson, Henry Shue, Lukas Meyer, John Broome, Konrad Ott, etc. (Dominic Roser, University of Zurich, University of Graz)	Accepted, we have added several additional references by theorists in justice and ethics, including S. Gardiner.
262	42773	1	12	17	12	22	The UNDP HDR citation is a general statement which does not provide a good example of the need for better governance and social justice. Suggest using a different example (Sofia Bettencourt, World Bank)	Accepted, HDR reference has been deleted.
263	36815	1	12	19	12	19	Replace evaporation by evapotranspiration (María Manuela Portela, Instituto Superior Tecnico (IST))	Wrong chapter, query does not correspond to text.
264	44377	1	12	24	0	0	Is this more a natural development from focusing on adaptation as a technical solution, to adaptation as a social process and now the discussions have moved more in direction of questioning the development paths that we are on that is essentially the source of climate change, vulnerabilities, inequalities etc. So it is not so much about replacing adaptation but seeing deliberate transformation as process that changes some of the characteristics of these systems, and in this transformational adaptation, vulnerability reduction and mitigation will be important parts. (Linda Sygna, University of Oslo)	Accepted, very good distinction. We have clarified the difference between transformative adaptation and social transformation. We developed a new graphic (figure 1-7) illustrating how other stresses and development pathways determine outcomes.
265	49935	1	12	24	12	25	Given that some communities consider transformation as not completely distinct from adaptation, the author team may wish to consider wording here. (Katharine Mach, IPCC WGII TSU)	Accepted, we have clarified the distinctions between transformative adaptation and social transformation.
266	39207	1	12	24	12	26	In chapter 20 on adaptation, transformation is considered a part of adaptation (=>transformative adaptations) and here it seems as if the two were separate concepts. => this section should be made consistent with the respective parts in the adaptation chapters. (Christopher Reyer, Potsdam Institute for Climate Impact Research)	Agreed, but there is literature that points to transformation as something different than a form of adaptation, including the SREX. Not all transformation is part of adaptation.
267	54131	1	12	24	12	26	Other chapters are distinguishing between transformational adaptation and incremental adaptation. It may be useful to consider this framing here as well. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, we have clarified distinction between transformative adaptation and incremental adaptation in our text.
268	52747	1	12	24	12	42	I would expect to see a reference to Stafford-Smith et al (2010) in this para on the subject of incremental v transformative. (Tim Rayner, University of East Anglia, Tyndall Centre for Climate Change Research)	Accepted, but we added reference to a more recent Stafford-Smith et al. reference (2011) on the same topic.
269	40486	1	12	24	12	42	Include the role of cities. Cite: Rosenzweig, C., W.D. Solecki, S.A. Hammer, and S. Mehrotra (Eds.), 2011: Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network. Cambridge University Press. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Accepted in theory but we defer to other chapters to address the role of cities.
270	39137	1	12	27	0	0	Add reference: Reuter, Thomas A. 2010. 'Anthropological Theory and the Alleviation of Anthropogenic Climate Change: Understanding the Cultural Causes of Systemic Change Resistance'. World Anthropology Network E-Journal, Issue 5, June 2010, pp 5-27. http://www.ram-wan.net/documents/05_e_Journal/journal-5/2-reuter.pdf (Thomas Reuter, University of Melbourne)	Accepted, but does not warrant an additional reference considering space limitation.
271	44376	1	12	27	0	0	O'Brien, 2011 and Pelling, 2011 are not in the reference list. (Linda Sygna, University of Oslo)	Accepted, O'Brien and Pelling references are now in lit cited section.
272	46938	1	12	27	12	27	(O'Brien, 2011; Pelling, 2011) is in the text but not the references (Mark Charlesworth, Keele University)	Accepted, O'Brien and Pelling references are now in lit cited section.
273	44378	1	12	28	0	0	Transformation will involve questioning and changing existing paradigms and development pathways. (Linda Sygna, University of Oslo)	Agreed. We make this point in a slightly different way in SOD, page 12, lines 6-37.
274	44379	1	12	28	0	42	With the increased focus on transformation (this was also an important topic in the SREX report in chapter 8) would it would be interesting to have a more broader presentation of what transformation can mean in an WGII context. This would bridge WGII with WGIII on responses to climate change. (Linda Sygna, University of Oslo)	Accepted, we have added material about transformation and what it means.
275	35348	1	12	28	12	29	This is a long sentence which I, as a non-speaker of English, find difficult to understand. Perhaps if you cut it in two fragments by putting a colon after 'adaptation' (line 29) you would facilitate understanding of this long sentence. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted. We reworded the sentence so it is easier to follow.
276	49936	1	12	32	12	32	If possible, it would be preferable to provide a reference to specific sections of Chapter 20. (Katharine Mach, IPCC WGII TSU)	The discussion of resilient pathways appears in several parts of Chapter 20.
277	54132	1	12	32	12	36	It would be very useful to clearly distinguish between definitions of sustainability and sustainable development here and in the related discussion on page 10. It is unclear currently how the dynamic process definition of sustainable development presented here compares to the presentation of sustainability as a dynamic process on page 10. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, we have deleted the lines in question that include the UN (2012) quote about sustainable development.
278	54133	1	12	39	12	42	Does this mean that such research has not been done in relationship to climate change? This point could be made clearer if so. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, this section has been substantially edited and broadened.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
279	43128	1	12	39	12	42	There are indeed gaps in this literature, but a major reference on the sort of reframing of global environmental change research envisioned is still Paul Raskin, Tariq Banuri, Gilberto Gallopin, Pablo Gutman, Al Hammond, Robert Kates, and Rob Swart, 'Great Transition: The Promise and Lure of the Times Ahead'. Boston: Stockholm Environment Institute, 2002. (Adrian HAYES, Australian National University)	Accepted, very good suggestion but we prefer to cite here a more recent (2012) reference on the topic.
280	49810	1	12	39	13	8	Temperatures are not changing so all this stuff is unnecessary (Vincent Gray, Climate Consultant)	We refer the reviewer to the Working Group I report.
281	38720	1	12	40	0	0	With the same idea in mind and before the good paper of Rockstrom et al, I suggest to introduce the above idea and reference because suggest ideas to organize sustainability from One Planet with physical limits, societies of Humans and economies to sustain our activity (Ricardo Anadon, University of Oviedo)	Accepted, we have added some text (see SOD, p. 12, lines 14-37) and a new figure that builds on this concept of a planet and a society with limits.
282	46939	1	12	42	12	42	(Hackmann and St. Clair, 2012) is in the text but not the references. Charlesworth M & Okereke C (2010, Policy responses to rapid climate change: An epistemological critique of dominant approaches, Global Environ. Change, 20:121-129, doi:10.1016/j.gloenvcha.2009.09.001) may be relevant to the point being made but the point is not clear without the reference. (Mark Charlesworth, Keele University)	We have added the Hackmann and St. Clair paper to the references, which we feel is sufficient.
283	54134	1	12	47	0	0	Section 1.2.1: Eventually, it would be useful to cross-reference AR5 chapters with similar updated findings if possible. (Michael Mastrandrea, IPCC WGII TSU)	Perhaps we can do this for the final chapter. We do not have access the the other chapter SODs.
284	40487	1	13	6	13	8	Cite positive rather than negative statement from AR4 Chapter 1 (as on Pg.6, lines 14 and 15) (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	We feel that this is an important and relevant conclusion of AR4. We do not understand the reviewer's objection to this boldfaced quote from AR4.
285	46003	1	13	6	13	8	This and other statemens from AR4 are highlighted in bold font. This is impoportant. But equally important would be to also highlight some of the new conclusions that are coming out now, such as those in the SREX report (for example in Chapter 1, page 19, lines 10-12, or the last paragraph in page 11 of the SREX Summary for Policymakers). (Luis E. Garcia, World Bank)	The addition of SREX findings is not practical here since the section is devoted to Major Conclusinoss of AR4. The SREX is summarized in section 1.3.1.
286	49937	1	13	11	13	11	"medium confidence" -- This phrase, as calibrated uncertainty language, should be italicized for clarity. (Katharine Mach, IPCC WGII TSU)	Accepted. We have check the quotation and the confidence language was italicized.
287	52920	1	13	27	13	29	Please double-check this statement before the SOD as there is consideration of an errata on the African yields statement in the AR4 Synthesis Report. (Kristie L. Ebi, IPCC WGII TSU)	We have conducted this check of the errata for the AR4 synthesis report and the correction to the AR4 SPM table does not affect this statement in our chapter. But we have condensed the conclusion to the following phrase in a list of examples: "in the Sahelian region of Africa warmer and drier conditions had detrimental effects on some crops"
288	40488	1	13	28	0	0	Add 'some' before 'crops'. This became disputed text after publication. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Accepted, "some" has been inserted as suggested.
289	42283	1	13	44	13	44	"decisionmaking" to be "decision making"? (Luhui Yan, Tanzuji)	The word in question has been removed.
290	36816	1	13	45	13	46	The sentence which starts line 45 must clarify if its content is based on scenarios or if it results from real observations. In this last case the regions to which the sentence applies need to be identified. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	This comment must refer to lines 47-48. We cannot change this AR4 conclusion about scenario information being increasingly developed at a finer scale. And we disagree that it needs to be applied to specific regions. It's a broad characterization of the advancements in climate science. For conciseness however, we rephrased the point as follows in the SOD list of advances: "the increase in spatial and temporal resolution of scenario information".
291	45570	1	13	47	13	48	Note also advances in temporal resolution - as critical as geospatial capabilities, in capturing the occurrence, dynamics, and impacts of diverse phenomena, at their respective (inherently variable) time scales. (Yanna Antypas, U.S. Energy Information Administration (Department of Energy))	Accepted, this change has been made
292	39385	1	14	1	14	12	Vulnerability in the opening sentences is being used to refer to biophysical impacts, not in line with the TAR or SREX definition. Line 10 - 'appear to be more VULNERABLE' not 'more vulnerability' (Sarah Cornell, Stockholm Resilience Centre)	The sentence in question has been removed
293	47622	1	14	1	14	42	the possibility of a "run-away" greenhouse effect through positive feedbacks is alluded to here. This possibility is a crucial aspect of the problem & needs to be addressed more directly & openly. Earlier assessments raised the possibility but how much uncertainty surrounds the issue (tipping-points, rates before & after the threshold is passed, what happens beyond that - further thresholds & tipping-points or does the net +ve feedback lose its steam? How have earlier reports dealt specifically with this issue & how has our thinking changed over time regarding it. I look for the last chapter to discuss where we are now on it - even if only to say sppecifically that too much uncertainty still surrounds the concept to say anything definitive - but presumably we are narrowing the uncertainty? (richard arthur fleming, canadian forest service)	Perhaps this is true, but this chapter and section is not the place to address this.

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294	36904	1	14	1	14	42	This paragraph is not fully correct. At least one of the "reasons for concern", the impact of climate change on extreme events, remains theoretical (see SREX and overall comment above). Please see also page 26 of this chapter. Why is AR3 quoted here to such extent? This lengthens the AR5 without providing substantial input. (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	The lengthy footnote has been removed and the text condensed.
295	42003	1	14	3	14	12	This paragraph may need some work. I would move sentence on line 9 (Natural systems...) before the sentence on line 5 (Marine, freshwater,...). I believe that it is vulnerable on line 10 instead of vulnerability. Some contradiction: natural or physical systems are more affected: there need to make a decision. (Liette Vasseur, Brock University)	Thank you for catching the error in the sentence with the word "vulnerability", which has been moved to the next page, but the specific change requested will be made in the final draft. We feel that the points about natural systems, then agricultural systems then a discussion of managed versus natural systems is the best order.
296	52921	1	14	8	14	9	Please double-check this statement with the Executive Summary of the Health chapter in the AR4. The language does not accurately reflect the findings. (Kristie L. Ebi, IPCC WGII TSU)	The sentence in question has checked against the AR4 health chapter for accuracy.
297	42952	1	14	9	0	0	The statement that natural systems are generally considered more affected than natural systems needs a reference. I would think it would be the other way round. The diversity of natural systems should convey more resilience to an established ecosystem than the less-diverse managed systems that may be monocultures. (Paul J. Hanson, Oak Ridge National Laboratory)	This statement is based on AR4 conclusions. The reference is AR4.
298	39257	1	14	10	14	10	"to be more vulnerability..." should be "to be more vulnerable...". (XIAOSHENG QIN, Nanyang Technological University)	This was missed in the SOD and will be corrected in final draft.
299	52817	1	14	27	14	42	It sums up well the concern about rising temperatures, focusing the description in an average increase of 2 ° C and in the modification of important ecological processes (items 1 to 5). You can comment here, on something referred to altering the frequency and duration of these events success (ie: ENSO, in line 40) on the current situation?. It's developed after in Theme 2 – Trends in Disaster Losses but, a short mention here will be help to reader. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	Accepted. We have inserted a bullet from the AR4 SPM about risks associated with extreme weather events.
300	39138	1	14	35	14	36	You say that with an "increase in global mean temperature of up to 2°C above 1990 levels, aggregate market sector impacts would be plus or minus a few percent of gross world product.". To some readers this will suggest that up to 2 degrees warming may be neutral or even good for business, globally. So why worry about climate change if it has no clear negative impact on the economy (GDP)? (Thomas Reuter, University of Melbourne)	Accepted, the footnote and the point in question have been deleted.
301	37580	1	14	39	0	0	"Large-scale singularities..." The term singularity should not be used here. In mathematical terms, singularity means undefinable or infinite. The language used in TAR, from where this section is quoting, is "singular events," not singularities. Singular events is more accurate and should be used here. Smith et al. (2009) use the even more appropriate "large-scale discontinuities" to describe this class of impacts. Citation: Smith, B.; Schneider, H.; Oppenheimer, M.; Yohe, W.; Hare, W.; Mastrandrea, D.; Patwardhan, A.; Burton, I. et al. (Mar 2009). "Assessing dangerous climate change through an update of the Intergovernmental Panel on Climate Change (IPCC) "reasons for concern"". Proceedings of the National Academy of Sciences of the United States of America 106 (11): 4133–4137. (Jon Rosales, St. Lawrence University)	Accepted, the footnote and the point in question have been deleted at this spot in the text. The term "singularity" will not appear in the final chapter.
302	52922	1	14	41	14	41	Please define WAIS. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, the footnote and the acronym in question have been deleted.
303	45556	1	14	45	15	20	Adopting a risk management approach that collectively consider adaptation and mitigation is most welcome. At the individual level, the achievement of mitigation outcomes involves behavioural responses amounting to adaptation to new policy variables. Incorporating sectoral, regional and temporal diversity of impacts and adaptation options will be facilitated by the adoption of the state-contingent approach to uncertainty (Chambers and Quiggin 2000). Application of this approach to Australia's Murray-Darling Basin has shown significant promise in highlighting trade-offs and identifying the feasible region for adaptation under different states of nature (Adamson, Mallawaarachchi and Quiggin 2007, 2009). (Thilak Mallawaarachchi, The University of Queensland)	Accepted, but we are highlighting the key messages from AR4 here and we cannot insert these other publications here.
304	46005	1	14	50	15	3	Perhaps a cross reference to Chapter 2, section 2.2.1.2 line 22 and 2.2.1.3 line 45 of page 7 as well as section 2.2.3.3 line 15 of page 20 would be useful here. (Luis E. Garcia, World Bank)	Need to crosscheck in final Ch 2 draft
305	52923	1	14	51	14	51	Readers will not understand what was Topic 5, so suggest rephrasing. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, the reference to Topic 5 was not removed in the SOD but it will be removed in the final chapter.
306	39386	1	15	1	0	0	Risk certainly is understood and expressed that way in the technical/scientific/engineering context - while social science understandings of risk are often expressed rather differently, and bring other issues into the frame. (Beck, anyone??) WGII addresses these elsewhere in AR5 - it might be worth mentioning them in this section, to better bridge the leap from risk language back to 'impacts' (taken as equivalent to consequences??) (Sarah Cornell, Stockholm Resilience Centre)	Yes, we agree with the reviewer's first point. We have attempted to introduce the societal context of risk in section 1.2.4.
307	37078	1	15	1	0	0	Risk is not strictly mathematically speaking the PRODUCT of likelihood and consequences - This formulation may be wrongly understood (Christophe Cudennec, Agrocampus Ouest)	We disagree, this is generally the way people view risk.
308	52924	1	15	6	15	6	Temperatures rise in more than Chapter 20 ;-) (Kristie L. Ebi, IPCC WGII TSU)	This was missed in the SOD and will be corrected in final draft.
309	52925	1	15	10	15	10	Please delete "alternative" (Kristie L. Ebi, IPCC WGII TSU)	We disagree. The word alternative is a good choice when describing this particular scenario.
310	54135	1	15	16	15	19	Please consider the wording here in comparison to the framing of similar points in bullet number seven of section 1.4. My sense is that the framing in section 1.4 is clearer than the framing here. (Michael Mastrandrea, IPCC WGII TSU)	Section 1.4 has been deleted, so we keep this text in Section 1.2.4.

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311	49938	1	15	18	15	18	It may be preferable to provide a bit more detail in place of the phrase "will have to add." For example, it could be beneficial to specify the author teams are assessing the overall body of scientific understanding and communicating key vulnerabilities-- including those with lower confidence--to enable full information in informing a risk-management-based perspective. (Katharine Mach, IPCC WGII TSU)	Good point. This was missed in the SOD and will be corrected in final draft.
312	35349	1	15	18	15	19	What does ‘...authors will have to add conclusions to which lower confidence has been assigned if they relate to "key vulnerabilities" mean? This piece is difficult to understand; ‘add conclusions’ is a real stumbling-stone for fully understanding the text. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Good point. This was missed in the SOD and will be corrected in final draft.
313	52661	1	15	20	0	0	Climate Change Hazards and Risks are also dealt with by UN ISDR. A host of international and regional activities have been developed under the ISADR’s umbrella. The Hyogo Plan of Action is an important tool in dealing with monitoring, geophysical watch, advices and early warning systems. Recent ISDR regional activities would enable ready advice to governments and institutions. The urbanization of the world population has been considered by this UN body that with UN-Habitat are developing material of interest to this introduction to the AR5 WG 2’s chapters. Therefore, a paragraph on these issues should be added in section of the report and repeated where necessary. Reference: Hyogo Framework Action Plan (period 2005-2015) (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	Agreed, but we do not have space to go into this level of detail about the UN approach.
314	47244	1	15	23	0	0	This section should also speak about the 'residual' costs of neither adopting sufficient adaptation or mitigation: the losses and damage that societies can be possibly confronted with. In the context of the Convention, I suggest looking at FCCC/TP/2008/9. "Mechanisms to manage financial risks from direct impacts of climate change in developing countries" as well as some of the work generated by the Work Programme on Loss and Damage in the matter. Consider Vergara W. 2007. Visualizing Future Climate in Latin America: Results from the application of the Earth Simulator. Available at < http://siteresources.worldbank.org/INTLAC/Resources/SDWP_Future_Climate.pdf >, as well as Francou, B., D. Fabre, B. Pouyau, V. Jomelli, and Y. Arnaud, 1999: Symptoms of degradation in a tropical rock glacier, bolivian andes. Permafrost and Periglacial Processes, 10(1), 91-100 (Juan Hoffmaister, Third World Network)	Agreed, but we do not have space to go into this level of detail and we want to focus here on the key messages from AR4.
315	36905	1	15	23	17	39	These subchapters could be shortened substantially. The paragraph is still to expand... (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Accepted, we deleted the last paragraph of this section in our SOD.
316	52748	1	15	25	16	26	Much of this section seems to be off the topic promised in the section heading: interaction of adaptation and mitigation. The quote from AR4 that adaptation and mitigation can complement each other is not explained/ elaborated. I suggest referring to an excellent recent treatment of the issues: Moser, S. (2012). Adaptation, mitigation, and their disharmonious discontents. Climatic Change. 111 (2): 165-175. (Tim Rayner, University of East Anglia, Tyndall Centre for Climate Change Research)	Accepted, but in this "Point of Departure" section about key messages from AR4, we do not want to update with more recent literature. That will come in the subsequent chapters of AR5.
317	49939	1	15	31	15	31	"high confidence" -- This phrase, as calibrated uncertainty language, should be italicized for clarity. (Katharine Mach, IPCC WGII TSU)	We cannot alter a quote in which the words were not italicised.
318	49940	1	15	48	15	48	It would be preferable to indicate explicitly which chapters are meant here by "a collection of chapters." (Katharine Mach, IPCC WGII TSU)	Accepted, will be addressed in the final draft wherein we will cross reference chapters 16, 17, 19, and 20.
319	42284	1	15	50	15	50	"IPCC Working Groups II, II and III" to be "IPCC Working Groups I, II and III" (Luhui Yan, Tanzuji)	Accepted, correction will be made in the final draft.
320	40961	1	16	3	16	4	other physical and biological processes such as seismic activity etc. I realize that this wasn't a key finding of AR4 but I have made note of it here to ensure the idea isn't lost for AR5 somewhere- ie the need to develop strategies that are more wholistic (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Accepted, we attempt to illustrate the other processes and stressors in our new figure 1-7. But in this particular sentence, as the reviewer acknowledges, we are highlighting the finding in AR4.
321	49941	1	16	17	16	17	It would be helpful to specify further what is meant by "this list." Is the chapter team referring to the sentence on lines 13-14? (Katharine Mach, IPCC WGII TSU)	Accepted, the paragraph in question was deleted.
322	49952	1	16	19	16	26	It seems that the page number provided for this quote from the synthesis report (?) may be incorrect. Additionally, it would be helpful to clarify the entry in the reference list for IPCC to indicate that it refers to the synthesis report. (Katharine Mach, IPCC WGII TSU)	Accepted, the quote in question was deleted.
323	36817	1	16	28	16	28	The acronym PET is used for the first time without previous explanation of what it represents. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	This is a misplaced comment. We did not use the acronym PET in the Chapter 1 FOD.
324	52662	1	16	32	0	0	The IPCC Synthesis Reports was developed only after the AR3. Therefore the first phrase in this paragraph needs amendment (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	Accepted, the word "synthesis" was removed.
325	36818	1	16	33	16	34	Correct the sentence "This uncertainty is several times that (20 to 40%) of observed between these methods over the baseline period (1961-1990)". (Maria Manuela Portela, Instituto Superior Tecnico (IST))	This is a misplaced comment, does not relate to text.
326	40489	1	16	36	0	0	Add 's' to 'effect'. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Effect is intended here in a broad, cumulative sense. Not necessary to change to "effects".
327	38721	1	16	36	0	37	This sentence in my opinion is non sense because the first problem to understand regional climate changes must be the lack of regional climate analysis and projections to the future in most of the World regions (Ricardo Anadon, University of Oviedo)	We disagree, but the sentence (based on the AR4 SPM text) was edited for clarification to include thresholds and tipping points.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
328	41564	1	16	45	0	0	"Most AR4 studies of future climate change were based on a small number of studies using SRES scenarios, especially the A2 and B2 families. This allowed some limited, but incomplete, characterisation..." Taking this statement of the acknowledged limitations of AR4 WGII assessment and noting also an objective of AR5 WGII to be "Assessing a broader range of impacts of climate change in the context of other well documented stresses. Many of the challenging regional impacts of climate change emerge from interacting stresses on people, societies, infrastructure, industry, and ecosystems. These stresses can be consequences of climate change or factors independent of climate change, such as economic development, geopolitical setting, population pressure, and land use change. In some cases, effective adaptation may involve addressing stressors (page 28 line 30)"...I would recommend that quite a lot more needs to be made clear about a) how socio-economic scenarios are used in this Assessment (ie pop, incom, technology, governance; including at regional as well as global levels); b) how these s-e scenarios are devised, and c) how complex an issue it can be to achieve consistency between these and the CC scenarios. In AR4 these were covered in Ch2. In your current structure they may be better covered in Ch1 (?). (Martin Parry, Imperial College)	This finding is taken directly from AR4 Ts. We do, however, introduce the SSPs in our revised text.
329	52663	1	17	7	0	0	Health should be also included. In fact, it was AR3 WG 3 which dealt with the benefits of mitigation, by reducing impacts on health produced by gases (i.e. O3, particulates and fumes). Reference: AR3-WG 3 Chapter 8 Ancillary Benefits, para 8.2.4.1 & Table 8.6 (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	This is more appropriately addressed in the health chapter.
330	42004	1	17	24	17	25	missing "of" between understanding and regional and unclear "lack of sea level rise scenarios beyond 2100": most coastal communities are having hard time to understand for 2040-2050. There is some denial also. I was also surprised nothing about ocean acidification. (Liette Vasseur, Brock University)	Accepted, bullet has been reworded to take care of this problem.
331	40962	1	17	30	17	31	and other areas historically protected by seasonal sea ice or biological communities such as coral reefs or mangroves - I realize that this wasn't a key finding of AR4 but I have made note of it here to ensure the idea isn't lost for AR5- (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We do not disagree, but we do not feel comfortable adding this point here since it was not a key message from AR4.
332	54136	1	17	35	17	35	Section 1.1.3 should be 1.3.1 here. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, correction made
333	52926	1	17	35	17	37	WGI has done more than advance understanding of sea level risk and ice sheet dynamics. (Kristie L. Ebi, IPCC WGII TSU)	We agree, but here we are referring to progress on the topics (such as sea level rise projections) listed immediately above in the bullets.
334	45998	1	17	42	0	0	Section 3.1: I find section 1.3 of this Chapter very useful because it reflects the latest thinking in IPCC. Although frequent reference is made to the SREX (section 1.3.1), it is not clear to what extent these and other results (sections 1.3.2 to 1.3.4) were able to be taken into account in other chapters. It may be useful to add a comment or caveat as to the weight given to these vis a vis that given to the literature reviewed in each chapter. It seems that there is a natural gap between IPCC latest findings and what is reported in the literature, which mostly seems based on past findings up to AR4 (see for example Chapter 1, page 10, lines 8-10 and Chapter 21, page 4, lines 11-16). (Luis E. Garcia, World Bank)	Accepted, we have tried to group these points accordingly
335	43690	1	17	42	28	5	Section 1.3 is too long and this can confuse some readers by making it look like the subject matter for this WG2 report is based on the physical sciences rather than on adaptive capacity. (Martin Manning, Victoria University of Wellington)	Accepted, this section has been shortened by roughly 25%.
336	39258	1	17	45	17	45	Better add "(SRREN)" after "Special Report on Renewable Energy Sources and Climate Change Mitigation". (XIAOSHENG QIN, Nanyang Technological University)	Accepted, acronym inserted.
337	52927	1	17	47	17	48	The assessments were staggered so WGII could include regional information from WGI. WGIII will be approved in April 2014. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, we have a sentence about the benefits and purpose of staggering of the three WG reports at the beginning of the chapter in section "1.1 The Setting". We do not want to repeat this again here.
338	36170	1	18	1	20	6	The summary of the SREX is very poor and doesn't present any significant findings. The chapter presents the findings of the SREX in a too simplistic manner and focus on rather obvious conclusions and not on scientific findings. It is a fact that the IPCC 5AR should be readable for the non-scientific community, but oversimplification is certainly not recommendable (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	We disagree about the section not containing significant findings from the SREX. We have, however, tightened this section up substantially so the major SREX findings are clearly presented with very little extra narrative on our part.
339	44881	1	18	7	18	8	Please add the definition of "extreme climate event" or give at least an example. E.g.: An extreme climate event is an average of a number of weather events over a certain period of time, an average which is itself extreme (e.g. rainfall over a season). (Sabine Wurzler, LANUV NRW)	We agree. We have inserted a new table (1-1) listing specific types of extremes and trends. We cite the SREX report findings.
340	54137	1	18	28	0	0	Section 1.3.1.1: This section uses findings from the SREX fact sheet, rather than the directly from the Summary for Policymakers (SPM). Statements here should use the SPM wording rather than that from the fact sheet. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, we edited this to refer to the SREX SPM
341	44380	1	18	28	20	6	Consider having key finding from SREX presented in one box limited to one page, and extract the most important findings in a WGII context. (Linda Sygna, University of Oslo)	Accepted, this section has been shortened by about 50%
342	36906	1	18	29	18	36	This paragraph does not reflect the uncertainties identified in SREX correctly. The paragraph could therefore also start with a sentence stating that so far there is little evidence of climate change on extreme events, manifested only in extreme temperatures and few local examples of changing trends of some extreme events, with high uncertainties. (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	We do not agree fully with this comment. We have taken our SREX findings directly from SREX SPM.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
343	52928	1	18	31	18	33	It would be important to discuss the SREX findings on damage and loss from extreme weather and climate events, and the extent to which they can be attributed to climate change. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, a new first bullet in this section of our SOD addresses trends in losses, but we do not discuss attribution.
344	46004	1	18	43	18	44	One example in the USA could be the Fort Collins, Colorado flood of July 28, 1997 (Nolan and McKee 2012, NCAR 2012) (Luis E. Garcia, World Bank)	We are confining examples to the SREX text.
345	49942	1	18	50	18	50	"very likely" -- This phrase, as calibrated uncertainty language, should be italicized for clarity. The additional description given for this term is not present in the SPM version of the statement and should preferably be deleted. (Katharine Mach, IPCC WGII TSU)	Accepted, calibrated uncertainty language should all be italicized unless from a direct quote.
346	52664	1	18	53	0	0	Why do we mention only two local names for tropical cyclones. Either the denominations willy-willy, baguio, etc should be included or should replace "also known as" REFERENCE: AMS glossary (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	Good point. Text in question was deleted.
347	42953	1	19	0	5	7	This is a very important statement that might warrant further discussion. The definition of drought is very important and highly variable. Drought is clearly associated with the absence of precipitation, but the significance drought for stream and river flow, agricultural crops, gardens, native grasses or deep rooted perennial plants are very different if only based on rainfall statistics. To better capture drought in a risk assessment context the water balance for the target natural or anthropogenic system (e.g., hydropower) must be considered. (Paul J. Hanson, Oak Ridge National Laboratory)	We have deleted this bullet about drought.
348	49943	1	19	1	19	1	"likely" -- This phrase, as calibrated uncertainty language, should be italicized for clarity. The additional description for this term is not present in the SPM version of the statement and should preferably be deleted. (Katharine Mach, IPCC WGII TSU)	Accepted, calibrated uncertainty language should all be italicized unless from a direct quote in which the language is not italicised.
349	52929	1	19	1	19	1	Likely and other terms were defined earlier. (Kristie L. Ebi, IPCC WGII TSU)	Agreed, and no further explanation is required here
350	52665	1	19	3	0	7	Why to exclude the drought-prone regions, in South America, which due to glacier 's melting would suffer severe droughts in the Andean valleys and along the western coast of the subcontinent, between parallels 4° S and 40° S, as well as on the northwest and central west Argentina. REFERENCE: AR4 TS and Chapter 3 Note: Although TS 4, in current knowledge refers only the regions shown in page 9, the figure 3,2 clearly shows the additions as heavy water stress (Drought areas) (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	We have deleted this bullet about drought.
351	48457	1	19	8	19	9	grammar issue? (Marcus Sarofim, US EPA)	Accepted, but we have deleted this bullet about drought.
352	36907	1	19	16	19	26	The last bullet point (line 25) is scientifically proven. It should be shifted up as the first bullet point because human vulnerabilities are indeed the main driver for trends in disaster losses. (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Accepted, change has been made.
353	52930	1	19	20	19	21	It would be helpful to add the findings re middle income countries. (Kristie L. Ebi, IPCC WGII TSU)	It would be helpful, but we have quoted directly from the SREX SPM in our revised bullet about losses in developed and developing countries.
354	44381	1	19	29	20	6	The findings on theme 3 should also refer back directly to the SPM and not via the Fact Sheet. (Linda Sygna, University of Oslo)	Accepted, in our SOD the findings from this theme are based on the SPM and the related sections of the underlying chapters.
355	42774	1	19	29	21	3	It would be important to mention here the findings of the latest Global Assessment Report on Disaster Risk Reduction (GAR 2011) as many of the findings mirror those of SREX (this would also recognize the increasing reapproachment of the CCA and DRR communities of experts) Ref: United Nations (2011) GAR11: Revealing Risk Redefining Development. United Nations Global Assessment Report on Disaster Risk Reduction 2011. Coordinated by UNISDR. http://www.preventionweb.net/english/hyogo/gar/2011/en/home/executive.html (Sofia Bettencourt, World Bank)	Not accepted. The section summarizes the SREX it does not review disaster risk literature.
356	49944	1	19	33	19	33	Throughout this section and the sections for the previous themes, all findings should be taken from the SPM of the special report on extremes, not from the fact sheet. (Katharine Mach, IPCC WGII TSU)	Accepted, the SOD bullets all refer to the SPM.
357	44382	1	19	35	0	37	According to the SPM (page 15) this should be: "An iterative process of monitoring, research, evaluation, learning, and innovation can reduce disaster risk and promote adaptive management in the context of climate extremes". As it is now it is not according to the fact sheet or the SPM. (Linda Sygna, University of Oslo)	Accepted, the SOD bullets all refer to the SPM.
358	35350	1	19	35	19	37	The sentence is not clearly written. Let me suggest substituting 'as' (following 'risks') for 'is' in line 35, and presto! The sentence becomes beautiful. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, the introduction to the bulleted list was changed to "are presented below:"
359	52931	1	19	35	19	54	You could put the confidence language in italics. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, change made.
360	49945	1	19	35	20	5	All calibrated uncertainty language presented on these lines (summary terms for evidence and agreement and levels of confidence) should be italicized for clarity. (Katharine Mach, IPCC WGII TSU)	Accepted, change made.
361	36908	1	19	35	20	50	These paragraphs could be shortened substantially. (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Accepted, this whole section was reduced by about 50%
362	42954	1	20	0	29	30	This definition suggests that vulnerability depends on an evaluation of adverse affects. Who determines what is adverse? I did not see a discussion of this point within the document. One person's adverse affect might be another's benefit. (Paul J. Hanson, Oak Ridge National Laboratory)	Accepted, but we talk about societal tradeoffs in section 1.1.4 in the SOD. This SREX section was reduced by about 50% and definition of vulnerability from the SREX was deleted.
363	42005	1	20	1	0	0	Are we talking about local ecological or traditional or cultural knowledge. There are various ones. Are they all included here? (Liette Vasseur, Brock University)	We are talking about "local knowledge" as described in the SREX.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
364	41145	1	20	9	0	0	Section 1.3.1.2 Pg 20 line 9: this section summarizes the conceptual framing of the “problem space” offered by the SREX IPCC report, but fails to adequately emphasize the importance or recognition of social-ecological systems as an intimate part of this conceptualization. The SREX explicitly states “risk management decisions are made within social-ecological systems (a term referring to social systems intimately tied to and dependent on environmental resources and conditions)” (pg53), thus indicating it is an integral part of defining, understanding and framing the “problem space” and necessary context for subsequent chapters on adaptation. While this section does eluded to the need to take social and ecological considerations into account, it does not make explicit their inter-dependence and as currently written provides the perception that while both social and ecological systems need to be assessed, it is appropriate to do so in isolation of each other. However, as stated in the SREX report, there is mounting evidence that these two systems are inter-dependant and thus should be viewed as a coupled integrated system with contributing feedbacks when assessing risk, vulnerability and subsequent adaptation options. In addition, the emphasis on social-ecological systems in subsequent chapters (especially Ch 19 and 20), necessitates that this framing be articulated clearly in this introductory chapter. This chapter would also benefit from a short description of the link between ecological function, ecosystem services, and human well-being – well functioning ecosystems can reduce risk of communities to climate change impacts thus increasing their effective preparedness and ability to respond. This relationship was articulated well in the answer to FAQ 1.3 (pg 30 line 29-34), but does not appear throughout the body of the text for this chapter. (Susan Evans, WWF-Canada)	Accepted, we have created a new figure that specifically addresses this point (Figure 1.7). The figure does not belong in the SREX summary since it was developed by our chapter team for AR5.
365	39387	1	20	18	20	22	Just a long sentence with lots of subordinate clauses. And missing an 'and' in the last line. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, the sentence in question was deleted.
366	36171	1	20	24	20	34	In the SREX "vulnerability" is defined as: The propensity or predisposition to be adversely affected. Is the WG II going to work with this definition or will it make a specification of what is vulnerability to climate change? The concept as defined in the SREX is extremely open and reduces the possibility to sharpened the risks that human societies and ecosystems are facing/ will face due to increasing (and human induced) changes in the climatic system. That can have advantages for an integrative approach towards adaptation but certainly will reduce the sense of urgency for mitigating climate change. Is that what the IPCC wants? (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	We have deleted the definition of vulnerability here. AR5 has a glossary that uniformly defines key terms across all reports.
367	39388	1	20	24	20	34	This paragraph and the next are 'definitional' and a bit repetitive of (but much better than) the problematic concept development text on page 10. Restructure something somewhere. SREX has defined vulnerability in a way that is almost identical to 'sensitivity', with a splash of adaptive capacity thrown in, but I'd argue that the phrasing in line 34 'independent of physical events' is too emphatic - the definition tacitly embeds something to be adversely affected by (in this sense, vulnerability is a transitive concept). The magnitude of vulnerability (assuming it can be measured in spoonfuls) has a complex relationship to the hazard, not a simple/linear one, nor none at all. It will likely end up being just as conceptually problematic in thinking of climate change risks to take this decoupling/independence line too far as it was when TAR embedded hazard too deeply in the vulnerability framing. Suggest either end that sentence after 'social context', or change the last section to something like, 'social context, seeking to improve the 'predictive value' of a vulnerability assessment regardless of the nature of the physical events.' (Sarah Cornell, Stockholm Resilience Centre)	We have brought these ideas to the glossary team and deleted the definition of vulnerability here.
368	39259	1	20	29	20	30	"Resilience" is normally defined as "a capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment."; this has been popularly discussed as a concept that may be contrary to "Vulnerability". Maybe it is worthwhile to mention this somewhere in order not to cause confusion for readers in different sectors. (XIAOSHENG QIN, Nanyang Technological University)	Accepted. We have added new text and a figure (1-7) illustrating the concept of resilience.
369	48717	1	20	29	20	34	The definition of vulnerability discussed here seems to completely avoid the issue of exposure, which is a critical component of vulnerability. Also, focusing more on human beings may limit its utility for natural systems or combined natural/human systems. Again, there seems to be a bias towards focusing on development- or human-related literature and topics and ignoring conservation- or natural resource-related topics and scholarship. (Jennifer Hoffman, EcoAdapt)	We disagree; but we have delted the definition of vulnerability from the SREX.
370	49946	1	20	32	20	32	A more specific citation should be provided indicating the recommended citation for the relevant part of the report. (Katharine Mach, IPCC WGII TSU)	Accepted, sentence in question was deleted.
371	42618	1	20	36	20	46	This paragraph is repetitive; the quote on lines 43-46 isn't necessary. (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	Accepted, this section has been reduced by more than 1/2 and sentence in question was deleted.
372	42006	1	20	36	20	50	This paragraph may cause quite a lot of discussion especially with evolutionary ecologists as adaptation has a very strict meaning on biology and often in environment. Adaptation also leads to increase fitness for oindividuals in the future which is the goal also of human adaptations, although we do not use the same "processes". (Liette Vasseur, Brock University)	Accepted, sentence in question was deleted.
373	48249	1	20	43	20	46	"exploit beneficial opportunities" has to be reworded as "explore and include beneficial opportunities" (Malini Nair, Indian Institute of Science)	Accepted, sentence in question was deleted.
374	49953	1	20	46	20	46	It would be helpful to clarify that the SREX glossary is meant here, with the reference within parentheses, in addition to the introduction provided on line 43. (Katharine Mach, IPCC WGII TSU)	Definition from the SREX was deleted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
375	39389	1	20	46	20	50	This 'last' point actually relates much more closely to the discussion earlier on, following from line 22. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, we have merged text as suggested into one paragraph under 1.3.1.2.
376	44383	1	20	49	0	50	Instead of saying "conflicting and contradictory values" would it be better to say "...and that there are many DIFFERENT AND SOMETIMES contradictory values at play". Stressing that people value different things and this is important when addressing risks. (Linda Sygna, University of Oslo)	We feel that the current wording is clear.
377	49954	1	20	52	20	52	It would be clearest to refer to this figure as "Figure SPM.1 of the SREX SPM." (Katharine Mach, IPCC WGII TSU)	Accepted, in the final draft we will refer now to SPM 1-1 of the SREX SPM.
378	35351	1	20	52	20	54	Metaphoric language does not help understanding the text. A case in point is the use of algebra jargon like 'problem space' and 'solution space'. The reader would surely appreciate a less discombobulating text in each of the sentences object of the current comment. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Disagree, problem space and solution space are terms used in many chapters of the AR5 WGII report and common in the social science literature relating to climate change and also in the SREX.
379	44384	1	21	1	0	3	This sentence would be more clear if it said something about what is meant by transformational changes, suggest therefore the use of the wording in SREX, ch 8, page 439: "Actions that range from incremental steps to transformational changes are essential for reducing risk from weather and climate extremes (high agreement, robust evidence). [8.6. 8.7] Incremental steps aim to improve efficiency within existing technological, governance, and value systems, whereas transformation may involve alterations of fundamental attributes of those systems." (Linda Sygna, University of Oslo)	Accepted, but we address and define transformational change in a prior section of our SOD.
380	49947	1	21	1	21	1	The summary terms for evidence and agreement presented on this line should be italicized for clarity. (Katharine Mach, IPCC WGII TSU)	Agreed, this statement covers the whole WGI summary: "All summary statements below have high confidence attached to them in the WGI AR5 and are likely or higher if quantified uncertainty is given."
381	49948	1	21	3	21	3	The author team should cite the SPM rather than the fact sheet of the special report on extremes. (Katharine Mach, IPCC WGII TSU)	Accepted, all bulleted messages in the SOD are taken from the SPM and underlying chapters are also referenced.
382	40789	1	21	10	21	18	This summary of SRREN is biased. The quoted results are the reporting on published scenarios that the SRREN does not endorse. Moreover, the development of REN faces serious problems. See SRREN Chapter 8 executive summary which starts with "To achieve higher renewable energy (RE) shares than the low levels typically found in present energy supply systems will require additional integration efforts starting now and continuing over the longer term. These include improved understanding of the RE resource characteristics and availability, investments in enabling infrastructure and research, development and demonstrations (RD&D), modifications to institutional and governance frameworks, innovative thinking, attention to social aspects, markets and planning, and capacity building in anticipation of RE growth." (Michel Petit, CGIET rue de Bercy)	Accepted, this whole section has been edited and expanded slightly by TSU staff who worked on the SRREN report.
383	46432	1	21	11	21	13	Please, verify the sentence: "It describes the six most important renewable energy technologies: bioenergy, direct solar energy, geothermal energy, hydropower and ocean energy.", since there are only five (not six) named renewable energy technologies. (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Accepted, all 6 are now listed.
384	41871	1	21	11	21	13	Wind energy, which was actually reported in the SRREN, IPCC, is missed in this sentence. Only five renewable energy is shown here. (Hiroaki Kondo, National Institute of Advanced Industrial Science and Technology (AIST))	Accepted, all 6 are now listed.
385	36963	1	21	11	21	13	You name only five of the six "most important renewable energy technologies". (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	Accepted, all 6 are now listed.
386	39208	1	21	12	21	13	Only five most important renewable energy technologies are named here ==> six of five? (Christopher Reyer, Potsdam Institute for Climate Impact Research)	Accepted, all 6 are now listed.
387	35352	1	21	12	21	13	Six? Only 5 are mentioned. (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, all 6 are now listed.
388	35353	1	21	23	21	25	In line 24, '...which has inferences...' What do you really mean? (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, the word "implications" was added to the table.
389	39390	1	21	24	0	0	I know it's a placeholder, but land cover impacts on climate change don't have inferences, they have implications for mitigation potential. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, the word "implications" was added to the table.
390	40323	1	21	26	21	53	So, regarding climate models – the implication is that climate models are locally relevant but not necessarily generalizable ? (VICTORIA EDGE, PUBLIC HEALTH AGENCY OF CANADA)	Just reporting the WGI FOD conclusions. This section will be updated with the WGI SOD.
391	40490	1	21	31	0	0	Add attribution statement from AR5 WGI here. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	Just reporting the WGI FOD conclusions. This section will be updated with the WGI SOD.
392	40790	1	21	31	0	0	Section 1,3,3 : Delete this section : reopening a discussion of WG I report, a few months after its approval must be avoided. (Michel Petit, CGIET rue de Bercy)	Just reporting the WGI FOD conclusions. This section will be updated with the WGI SOD.
393	39391	1	21	38	0	0	Can the different kinds of model be described in bullets? Take out "'climate'" from line 38 - it looks like climate is a pretend issue... Just say ' AR5 uses output from various kinds of model, including: AOGCMs, ESMs, etc... Remove the quotation marks from Earth System model. If possible, explain that AOGCMs are physical models, so the contrast with the biogeochem aspects of ESMs is evident. Also - ideally avoid using the acronym RCM - just call them regional climate models. The similarity causes confusion with the meaning of GCMs - general circulation models (*not* global climate models). Many IPCC documents actually use the disambiguating 'RegCM', recognising that RCM can mean various different things in different sub-communities of the global change research/policy world. And put EMICs after ESMs - a nicer sequence. (Sarah Cornell, Stockholm Resilience Centre)	Not accepted, here we are mainly referring to "climate" models, but models like ESMs that are needed for various aspects of climate system modeling are also mentioned. We will look at suggested sequence, but we are providing this as a placeholder until the WGI SOD is completed, and ultimately we will use the WGI SPM.
394	39209	1	21	38	21	53	would it not be beneficial to also name here remaining and newly discovered uncertainties? (Christopher Reyer, Potsdam Institute for Climate Impact Research)	Just reporting the WGI conclusions. This section will be updated now with the WGI SOD.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
395	39392	1	22	1	22	14	This paragraph is poorly written, yet very important to get right. Explain what the 'results' of CMIP3 and CMIP5 actually are, and what 'near term' means. 'Approximately analogue' means nothing sensible. Explain sentence 3 much more simply: the new forcing scenarios (in CMIP5) show very similar patterns of change to the CMIP3 multi-model runs - so luckily, AR5 science appears to be congruent and coherent with the science reported in AR4... Check spaces in units. (Sarah Cornell, Stockholm Resilience Centre)	Just reporting the WGI FOD conclusions. This section will be updated with the WGI SOD.
396	54138	1	22	10	22	13	It seems as if there should be uncertainty ranges around these percentages (20% to 60% by 2020 and 2050), related to the cumulative emissions mentioned in the next sentence. In addition, please italicize "likely" in line 11. (Michael Mastrandrea, IPCC WGII TSU)	Agreed, but this statement at the beginning of the WGI summary covers this comment: "All summary statements below have high confidence attached to them in the WGI AR5 and are likely or higher if quantified uncertainty is given. "
397	41445	1	22	13	22	14	ir is likely that it should read 1000-1300 Gt CO2eq, and not only GtC, since this would through a conversion factor of more than 3 result in much higher emissions allowed for the carbon budget, please check with e.g. WBGU report on the carbon budget (Sven Harmeling, Germanwatch)	We have verified units from WGI SOD of Chapter 12.
398	52932	1	22	13	22	14	Please define GtC and GtCO eq (Kristie L. Ebi, IPCC WGII TSU)	We will try not to mix in one paragraph and define on first usage, thanks.
399	42007	1	22	23	0	0	The sentence "can be attributed, ..." attributed to what? (Liette Vasseur, Brock University)	Yes, to GHG forcing.
400	49774	1	22	23	22	23	..."can be attributed..." Attributed to what? (Ryan Rykaczewski, Princeton University)	ibid
401	39393	1	22	23	22	31	Attributed *to what*? Also - move sentence: 'Global average sea surface temperatures have increased since the beginning of the Twentieth Century [WGI-2]' to line 19, and follow it with the last sentence (lines 29-31) - keep the physical information together, then the more interpretative and model information together. (Sarah Cornell, Stockholm Resilience Centre)	ibid
402	46433	1	22	24	22	26	In the sentence: "Across all RCP scenarios, the multi-model global mean warming over the period 2016–2035 relative to the reference period 1986–2005 lies in a narrow range of 0.65x°C to 0.7xx°C [WGI-11].", please complete the "x" and "xx". (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Will check units in WGI SOD, Chapters 11/12.
403	54139	1	22	28	22	29	Can further specificity be provided beyond "may or may not achieve"? (Michael Mastrandrea, IPCC WGII TSU)	Yes, we will probably give a likelihood that it will not, depending on the WGI SOD conclusions.
404	39394	1	22	33	0	0	This precip paragraph is excellent - use it as an exemplar for the other ones on this page. [The relative humidity section is atypically short here - perhaps link it to precip or hydrology?] (Sarah Cornell, Stockholm Resilience Centre)	thanks.
405	52933	1	22	47	22	47	Please define K (Kristie L. Ebi, IPCC WGII TSU)	Yes, we need to have an IPCC ruling for both WGI and II on degrees C or K, and whether it needs the degree sign.
406	35354	1	22	47	22	47	The 'K' in '2% K-1' means degree Kelvin? If it does, why not using degree centigrade, which is more commonly used in the report? (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	ibid
407	54140	1	23	1	23	3	Timeframes for the observed and projected statements here should be added. (Michael Mastrandrea, IPCC WGII TSU)	Yes, this will be done based on the WGI SOD and, ultimately on the WGI final report.
408	36172	1	23	5	23	14	Look at the following two statements in the paragraph: Line 8-9 "The most recent and most comprehensive analyses of river runoff do not support the AR4 conclusion that global runoff has increased during the 20th Century" Line 11-12 "The CMIP5 models project consistent increases in high latitude runoff, as with AR4 [WGI-12]." If there is agreement on the changes in high latitude runoff, please clarify what causes the disagreement with the conclusions of the AR4 at the global level (e.g. clarifying in which regions other trends or changes have been modelled/observed (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
409	39395	1	23	16	23	51	Quite a lot of content on sea level relative to other aspects - past, components and future. Components also links to thermal change in oceans and the sea-ice sections. Can these be rationalised better? (Sarah Cornell, Stockholm Resilience Centre)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
410	49811	1	23	16	24	4	Sea Level is not rising if you ignore past unreliable past measurements and only consider those where GPS levelling has been applied (Vincent Gray, Climate Consultant)	We disagree, this review comment does not agree with most of the published literature.
411	36909	1	23	26	23	26	"...can be several larger" please add "or lower" (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
412	40324	1	23	32	23	33	sentence does not make sense (VICTORIA EDGE, PUBLIC HEALTH AGENCY OF CANADA)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
413	39246	1	23	35	23	38	suggest to add some quantitative results of satellite observations (as given in WGI-13) (Thomas Voigt, Umweltbundesamt / Federal Environment Agency)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
414	35451	1	23	36	0	0	I think that several of these cites should be to WGI Chapter 4, rather than 13. (Ch4 deals with current observations of change, Ch13 largely with projection). (David Vaughan, British Antarctic Survey)	Yes, the references should go directly to the WGI chapter ES.
415	36819	1	23	40	23	40	Replace the acronym DJF by its meaning (December, January and February?) (Maria Manuela Portela, Instituto Superior Tecnico (IST))	Agreed, this will be corrected with the WGI SOD.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
416	38586	1	23	40	23	51	For future projection of sea-level rise, has the AR5 considered potential catastrophic changes in the Greenland Ice Sheet in any of its scenarios? (Susmita Dasgupta, The World Bank)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
417	49775	1	23	41	1	43	"Over the next few decades, regional sea-level changes will be dominated by interannual to decadal sea-level variability..." This is an important point to make, but it should be made in a much more general fashion. This statement about the dominance of interannual to decadal modes of variability on regional scales can likely be applied to all of the factors discussed; not just sea level. The WGI report overall would benefit from a discussion focused on low-frequency variability vs secular trends associated with anthropogenic global warming. (Ryan Rykaczewski, Princeton University)	Yes, we have shortened the SLR summary somewhat, but this will be updated based on the WGI report.
418	52934	1	23	46	23	46	Which two ice sheets? Something was deleted in editing. (Kristie L. Ebi, IPCC WGII TSU)	Agreed, we will fix this when we reference the approved WGI SPM.
419	38545	1	23	54	24	2	Some of the apparent increase in wave heights may be due to changes in instrumentation. Once these biases have been corrected for, both increases and decreases in wave heights are observed in the North Pacific, depending on location. See Gemmrich, J., B. Thomas, and R. Bouchard. 2011. Observational changes and trends in northeast Pacific wave records. Geophysical Research Letters 38, L22601, doi:10.1029/2011GL049518. Projected changes in northern Europe also include both increases and decreases in wave height, depending on location and season (Zacharioudaki, A., S. Q. Pan, D. Simmonds, V. Magar, and D. E. Reeve. 2011. Future wave climate over the west-European shelf seas. Ocean Dynamics 61:807-827.) (Christopher Harley, University of British Columbia)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
420	49812	1	24	6	24	17	Some parts of the ocean are saturated with carbon dioxide. A little more will slightly increase these regions but do no harm (Vincent Gray, Climate Consultant)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
421	54141	1	24	8	23	8	Can the large decreases in pH be quantified? (Michael Mastrandrea, IPCC WGII TSU)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
422	38546	1	24	9	24	11	Near-future, near-surface undersaturation of aragonite is also predicted for the California current upwelling system (see Nicolas Gruber, Claudine Hauri, Zouhair Lachkar, Damian Loher, Thomas L. Frölicher, Gian-Kasper Plattner. Rapid Progression of Ocean Acidification in the California Current System. Scienceexpress 14 June 2012 / Page 1 / 10.1126/science.1216773). In general, the North Pacific (like the polar seas) will experience undersaturation sooner than other ocean basins. (Christopher Harley, University of British Columbia)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
423	54142	1	24	11	24	12	Can the magnitude of the influence on the level of ocean acidification be quantified? (Michael Mastrandrea, IPCC WGII TSU)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
424	40963	1	24	19	24	31	Ice Free Arctic- there is considerable comment in the scientific literature re this topic as I am sure you are aware. The sentence on lines 28-29 when read carefully seems to suggest that almost all models (90%) agree with an ice free arctic by 2100. There is no suggestion of the range of prediction. For instance Zhang's work suggests (Tellus Series a-Dynamic Meteorology and Oceanography 62A, 220-227 2010 and reported in Bjornæs & Prestrud's State of the Poles: Climate Lessons from the International Polar Year 2012 pg 27) sometime between 2037 & 2065. And we have all seen even earlier numbers. It seems to me that the context of this number and the range of projections needs a bit more coverage since these estimates seem to be reported every month or so- generally originating from credible sources. See also Chapter 28 Page 5 Lines 17-18 ice free summer mid century & page 6 lines 11-13 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and, ultimately the final WGI report, and many of these comments will be corrected or made moot.
425	48459	1	24	26	24	28	how do CMIP5 models so with Antarctic sea ice trends? (Marcus Sarofim, US EPA)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and many of these comments will be corrected or made moot.
426	54143	1	24	29	24	29	"Most likely" is not a calibrated term. Please revise wording. (Michael Mastrandrea, IPCC WGII TSU)	Yes, will use agreed upon uncertainty language.
427	48458	1	24	30	24	30	"nearly ice-free Arctic Ocean" - please specify if this is September, summer, or annual. (I presume the first) (Marcus Sarofim, US EPA)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD.
428	35425	1	24	35	0	0	Also WGI-4 (David Vaughan, British Antarctic Survey)	Yes, will check the chapter ES of the WGI SOD and final reports.
429	40325	1	24	36	24	36	Title- Ozone, PM - should spell out Particulate Matter (VICTORIA EDGE, PUBLIC HEALTH AGENCY OF CANADA)	Accepted, this is just a placeholder and we will not use the abbreviation PM in our final summary of the WGI report.
430	52935	1	24	41	24	42	Please explain the polar amplification factor. (Kristie L. Ebi, IPCC WGII TSU)	Just reporting the WGI conclusions from early drafts. This may be expanded after we edit this section based on the WGI report, but space is a limitation.
431	35426	1	24	42	0	0	There is evidence of rapid warming in Antarctica, but only in a limited area (Antarctic Peninsula) (David Vaughan, British Antarctic Survey)	Just reporting the WGI conclusions from early drafts. This will be updated with the WGI SOD.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
432	40964	1	25	7	25	14	I always review the IPCC documents not only for the scientific reader but also the average reader. It seems to me that this is an opportunity for a bit of interpretation- it seems to demonstrate the success of some air pollution measures in certain regions and the industrialization and to date short commings in pollution control in others (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD.
433	39260	1	25	9	25	9	Please put "(AOD)" after "Aerosol Optical Depth". (XIAOSHENG QIN, Nanyang Technological University)	Yes, but this is just a placeholder and we will only use the abbreviation PM if we keep this point in our final summary of the WGI report.
434	46434	1	25	9	25	11	Please, verify the sentence: "Satellite datasets indicate a continuing decrease of Aerosol Optical Depth in the US, Europe, and Japan, and a continuing increase of AOD over Eastern and Southern Asia since the 1980s, which is consistent with long term surface aerosol observations over North America and Europe [WGI-2]". The "long term surface aerosol observations over North America and Europe" will not give information about the situation in Asia (Japan and Eastern and Southern Asia). Consequently, I suggest the following sentence: "Satellite datasets indicate a continuing decrease of Aerosol Optical Depth in the US, Europe, and Japan, and a continuing increase of AOD over Eastern and Southern Asia since the 1980s, which is consistent with long term surface aerosol observations over North America, Europe and Asia [WGI-2]." Note: if it is an exact transcription of the sentences included in WGI-2, please inform to the corresponding Lead authors. (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD.
435	54144	1	25	16	24	18	124±59 is "less" than 151 ± 51, so is this statement correct that accumulation of carbon in terrestrial ecosystems has more than compensated for cumulative carbon losses from land-use change since 1750? (Michael Mastrandrea, IPCC WGII TSU)	Will proof and recheck with the WGI report
436	49776	1	25	16	25	19	At first glance, that sentence does not seem to make sense. If deforestation and land use changes have released 151 PgC, how has the accumulation of 124 PgC during the same period "more than compensated" for the cumulative carbon losses from land use changes and deforestation? (Ryan Rykaczewski, Princeton University)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD. Will proof and recheck.
437	36964	1	25	16	25	20	If deforestation and LUC emitted 151 PgC this cannot have been "more than compensated" by an uptake of 124 PgC. (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	Agreed, we will correct this based on the WGI SOD and, ultimately, on the approved WGI SPM.
438	35355	1	25	16	25	20	If deforestation and other LUC released 151 PgC in 1750-2010, and terrestrial ecosystems accumulated 124 PgC (i.e. 74 PgC less) how come the terrestrial ecosystems accumulated C 'more than compensating' the carbon released by deforestation and other LUC in that period? (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Agreed, we will correct this based on the WGI SOD and, ultimately, on the approved WGI SPM.
439	48460	1	25	16	25	20	I'm confused: first, you say that land-use & deforestation is 151 Pg, and that terrestrial ecosystem uptake is 124 Pg (clearly less than 151): but then you say that terrestrial ecosystem uptake "more than compensates" land-use change. If 124 is less than 151, that is not "more than compensating". (Marcus Sarofim, US EPA)	Agreed, we will correct this based on the WGI SOD and, ultimately, on the approved WGI SPM.
440	39396	1	25	16	25	34	All of this section relates to CO2. Other ghg? Or change the subheading (Sarah Cornell, Stockholm Resilience Centre)	Agreed, we will correct this based on the WGI SOD and, ultimately, on the approved WGI SPM.
441	49848	1	25	16	25	34	It would be useful to express these historical changes and projections in terms of abundances, so that impact modellers who use CO2 concentrations as an input to their models can judge the magnitudes and range of uncertainties involved. Information analogous to the CO2 abundance data contained in the WG I, Annex II Table would be helpful. (Timothy Carter, Finnish Environment Institute)	OK, we will look at using numbers from Annex II.
442	40965	1	25	17	35	20	The numbers for land use change and deforestation are inconsistent with the sentence- 124 is less- not more than 151. They may be just reversed in the sentence (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Good point. Just reporting the WGI conclusions from early drafts. This will be updated with the SOD. Will proof and recheck.
443	54145	1	25	29	25	30	Can this source of uncertainty be quantified in any way? (Michael Mastrandrea, IPCC WGII TSU)	This depends on what the WGI chapters put forward.
444	54146	1	25	46	25	46	It would be useful to include explanation of why RCP 8.5 is not included in this statement. (Michael Mastrandrea, IPCC WGII TSU)	Yes, 8.5 goes the other way because of the large CH4 increases. We will correct this based on the WGI SOD and, ultimately, based on the approved WGI SPM.
445	39397	1	25	49	26	7	Some of this overlaps with content in hydrology, precip etc (storms) and extreme weather. (Sarah Cornell, Stockholm Resilience Centre)	We have consolidated this section to focus on circulation patterns.
446	49849	1	26	9	26	21	How do these results compare with those reported in SREX? How does this summary relate to the SREX summary on P.18-19 of this chapter? (Timothy Carter, Finnish Environment Institute)	We do not attempt here to compare the WGI results with the SREX.
447	39210	1	26	16	26	17	Here it would be interesting to explain very briefly why the new results are different and if they are more robust now. (Christopher Reyer, Potsdam Institute for Climate Impact Research)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD.
448	36173	1	26	23	26	38	Comparisons in projections should include at least 2 RCPs. Including only one is highly misleading (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	Just reporting the WGI conclusions from early drafts. This will be updated with the SOD and final versions of the WGI report.
449	39398	1	26	24	0	0	ENSEMBLES should probably be regarded as a regional climate change study - in next sub-section. (Sarah Cornell, Stockholm Resilience Centre)	Possibly, but the conclusions here are for extremes.
450	41872	1	26	40	26	50	"Regional Climate Change" is one of the most important baselines for the IPCC WGII AR5. In the present paragraph, it seems that the reported things are only case studies. Concise, comprehensive and well-organized report for all over the globe should be written here. (Hiroaki Kondo, National Institute of Advanced Industrial Science and Technology (AIST))	It would be be great to cover all regions, but we depend on what WGI Ch14 comes up with. We are highlighting some broad regional examples here and will refer the reader to the WGI chapter that has the complete regional analyses.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
451	45970	1	26	40	26	50	Section on Regional Climate Change: I am not familiar with WGI-14 but the geographical coverage in this section is out of balance. If possible, provide a more complete overview of all continents, including Africa, Europe and the polar regions (Rutger Dankers, Met Office Hadley Centre)	It would be great to cover all regions, but we depend on what WGI Ch14 comes up with. We are highlighting some broad regional examples here and will refer the reader to the WGI chapter that has the complete regional analyses.
452	49850	1	26	40	26	50	This regional summary is highly selective and superficial. Chapter 21 is undertaking a much more comprehensive review of regional climate changes observed and projected, for each of the IPCC world regions. Liaison with Chapter 21 would be most desirable on this section and on other subsections reporting new climate information. (Timothy Carter, Finnish Environment Institute)	It would be great to cover all regions, but we depend on what WGI Ch14 comes up with. We are highlighting some broad regional examples here and will refer the reader to the WGI chapter that has the complete regional analyses.
453	39211	1	26	40	26	50	Why are some regions left out? Would be good to provide an introductory sentence in the beginning of this paragraph. (Christopher Reyer, Potsdam Institute for Climate Impact Research)	It would be great to cover all regions, but we depend on what WGI Ch14 comes up with. We are highlighting some broad regional examples here and will refer the reader to the WGI chapter that has the complete regional analyses.
454	39261	1	26	46	26	46	"Indian Monson" should be "Indian Monsoon" (XIAOSHENG QIN, Nanyang Technological University)	Accepted, but we will correct this in the Final chapter.
455	41873	1	26	46	26	46	Indian Monson --> Indian Monsoon (Hiroaki Kondo, National Institute of Advanced Industrial Science and Technology (AIST))	ibid
456	40791	1	27	1	0	0	Section 1,3,3 : Delete this section : how could the plenary of WG II accept a summary of WG III report not yet discussed ? (Michel Petit, CGIET rue de Bercy)	This section has been rewritten by leaders of the WGIII report and substantially updated with the WGIII SOD.
457	42775	1	27	1	28	5	This section is confusing to readers because it presents the organization of WGIII report, rather than its findings (as summarized for WGI). It should focus mostly on summarizing finding allowing a quick transition to Section 1.4 (para 8 of page 28) (Sofia Bettencourt, World Bank)	Accepted, this section has substantially edited and updated with findings in the WGIII SOD.
458	49851	1	27	1	28	5	This section might be one candidate for describing the Shared Socioeconomic Pathways (SSPs), because these will be described in WG III, once they are published. (Timothy Carter, Finnish Environment Institute)	Accepted, but we have added a new subsection earlier in the chapter about the SSPs.
459	36965	1	27	1	28	5	This sub-chapter could be shortened if AR5-WG III was treated more like a reference than an "object d'art". Instead of phrasings like "chapter X contains ..." I suggest to write the content and just add a reference like you did with AR5-WG I. (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	Accepted, this section has substantially edited and updated with findings in the WGIII SOD.
460	35356	1	27	3	27	4	'solution space' is metaphoric language (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	The words "solution space" have been eliminated here.
461	46940	1	27	3	27	4	The WGII appears to make a very strong normative decision in favour of economic utilitarian ethics at the exclusion of other consequential ethics, deontological/rights based ethics or virtue schemes when it concurs with 'The Working Group III contribution to the IPCC's Fifth Assessment Report aims to explore the whole solution space of mitigation options and evaluate their costs, risks and opportunities.' Given the difficulties that economics has making rational decisions when the costs of any policy are fundamentally unpredictable in the light of 1000s of years of climate commitment and unimagined tipping points in the earth system this is an unwarranted assumption. Charlesworth and Okereke above explore this issue somewhat. Indeed there is evidence that the assumption does not reflect the ethical starting point of a majority of the current global population - the assumption is undemocratic as well as irrational. (Mark Charlesworth, Keele University)	Accepted, this section has substantially edited by leaders of the WGIII report and updated with findings in the WGIII SOD. The words "solution space" have been eliminated here.
462	39399	1	27	3	27	13	The phrase "solution space" is jolly confident... Also - "It aims to present a series of self-consistent pathways" - there are plenty of inconsistencies or profoundly simplifying embedded assumptions if you look. And given that earlier in the chapter the 'rescoping' of science is identified as a major research theme being explored in the literature, the phrase 'outside the scope of science' is perhaps blunter than desirable. Suggest something like: 'Science has an important part to play in informing these priorities, but many other factors and processes are involved in resolving the value dissent underlying ...' Similarly, some of the 'uncertainties' are absolutely not 'reducible' by science - (not 'might not be') - that's the whole point of recognising the role of values in the debates. Again, consistency with the developing theoretical treatment of uncertainty that has been described earlier in the chapter is needed. (Sarah Cornell, Stockholm Resilience Centre)	This section has been substantially edited and now contains no reference to "solution space". But we note that problem space and solution space are terms used in many chapters of the AR5 WGII report and common in the social science literature relating to climate change.
463	52666	1	27	7	0	0	Group should read Groups (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	Accepted, the sentence with the word "group" has been eliminated.
464	35357	1	27	10	27	11	'...there is no scientific resolution of value dissent underlying the climate change discourse...' Wow! This is a piece which meaning surely is difficult to crack. Do you not have something clearer? (Hector Ginzo, Academia Argentina de Ciencias Ambientales)	Accepted, this section has substantially edited and the sentence in question has been deleted.
465	46941	1	27	13	27	13	Charlesworth and Okereke (2010) could usefully be added to the list of references. (Mark Charlesworth, Keele University)	This section has been substantially edited by leaders of the WGIII effort. We cannot independently insert new references in their text.
466	39400	1	27	21	0	0	"In the social sciences facts and values cannot be neatly separated" is a very weak sentence - an impressive mess of generalisation, apparent condescension, epistemology and ontology! In the social sciences, there are some 'actual' facts - and there are some positivist fields of social research. The key issues is that in the social sciences, researchers seek to remain aware that facts and values might not be neatly separable because in many contexts they influence each other in real ways. (Sarah Cornell, Stockholm Resilience Centre)	Accepted, this section has substantially edited and updated with findings in the WGIII SOD. The sentence in question has been deleted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
467	39401	1	27	23	27	24	It would be useful briefly to compare and contrast WGII and WGIII's treatment of how climate change relates to sustainable development. (Sarah Cornell, Stockholm Resilience Centre)	Considering the timing of the WGIII report, it would be difficult to do this unless the topic of sustainable development is addressed in the summary materials provided by WGIII. WE will pass along the recommendation to the WGIII leads who are updating the WGIII summary for us.
468	52936	1	27	27	27	27	Plated? (Kristie L. Ebi, IPCC WGII TSU)	Accepted, this section has substantially edited and there is no reference to "plated".
469	36174	1	27	28	0	0	Correct the sentence "The section is based on a based on a structure that includes chapters that treat mitigation from an integrated, and typically longer-term,". Based on a is repeated (Carmenza Robledo Abad, HELVETAS Swiss Intercooperation)	Accepted, this sentence with the repetition has been removed.
470	38722	1	27	28	0	0	Repeated the words: on a based (Ricardo Anadon, University of Oviedo)	Accepted, this sentence with the repetition has been removed.
471	39262	1	27	28	27	28	Check expression "...is based on a based on..." (XIAOSHENG QIN, Nanyang Technological University)	Accepted, this sentence with the repetition has been removed.
472	52667	1	27	50	0	0	Although "adaption options" means adaptation options, why no to write so (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	Accepted, the sentence in question has been deleted.
473	39402	1	28	0	0	0	Very good set of themes, reflecting many of the key current debates in (and about) 'social-environmental system' global change research. However, here (and in FAQ 2) the example doesn't really show the best of how this integration has advanced - all the variables listed are physical... (well, biomass production might not be, strictly speaking and depending on the kind of land cover model, but it's not really clearly indicative of 'the natural system' that matters to human systems in terms of impacts) It sounds like an ESM modeller example of an advance - an IAM modeller might focus on rather different aspects of successful integration - like biodiversity changes (as in Alkemade et al's work especially in GEO5, or Reichstein's work), or consequences of future diets (Stehfest) or food/energy/water nexus (PIK work), etc etc. On the nitpicking level: A model that 'cuts across' ...??? What exactly is this meant to mean? (Sarah Cornell, Stockholm Resilience Centre)	This section has been deleted.
474	40326	1	28	5	28	6	Would be interesting to see more of an emphasis on the social sciences, human health and well-being – in particular would like to see specific mention of mental wellbeing. In remote northern communities there is an obvious impact of major environmental changes at the very least on happiness/contentedness, to major mental health issues and challenges to the collective mental wellbeing (culturally and psychologically) of the communities. (VICTORIA EDGE, PUBLIC HEALTH AGENCY OF CANADA)	This section has been deleted.
475	37087	1	28	5	28	7	suggestion is to give a summarized table to show key variables and their confidence levels provided by WGI-AR5 for WGII-AR5. Because all chapters of WGII-AR5 used the some results provided by WGI-AR5. (ZONG-CI ZHAO, National Climate Center)	This section has been deleted.
476	40491	1	28	8	0	0	Point out new emphasis on urban areas somewhere in this section. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	This section has been deleted.
477	40792	1	28	8	0	0	Section 1.4 Delete this section and transfer its content into the Summary for Policy Makers (Michel Petit, CGIET rue de Bercy)	This section has been deleted.
478	49949	1	28	8	0	0	Section 1.4. In preparing this section for the 2nd order draft, the author team should consider updating examples provided based on the assessment across chapters in the report. (Katharine Mach, IPCC WGII TSU)	This section has been deleted.
479	52937	1	28	8	28	8	Please see previous comment about combining with section 1.1.4 (Kristie L. Ebi, IPCC WGII TSU)	This section has been deleted.
480	45971	1	28	16	28	22	Coupled models potentially also enhance the consistency between impacts in different sectors. (Rutger Dankers, Met Office Hadley Centre)	This section has been deleted.
481	48461	1	28	16	28	22	I feel that this theme is a little unclear. Is the theme supposed to concentrate on impacts of climate change that are also drivers of future change? Where is the integration of human systems in the theme? For example, since wildfires was picked, I would have expected to see maybe some mention of other drivers (historical fire suppression), interaction with human system changes (eg, building in fire-prone areas, improving fire breaks and other responses), etc. (Marcus Sarofim, US EPA)	This section has been deleted.
482	36910	1	28	16	28	22	In Europe wildfires/forest fires are mainly caused (>90%) due to human intervention (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	This section has been deleted.
483	47457	1	28	16	28	22	The example of wildfires does not appear to be a very good example of advances in integrating physical climate science with human systems. Rather, it appears to me that we struggle to both exemplify and investigate the interaction between physical and human systems. The integration of physical and social (human) science remains a critical challenge for climate science (integrated science). There does not appear to be enough research trying to do this, and the institutional, disciplinary and epistemological barriers are great. This section should perhaps be more modest in this regard, and recognize that we have yet to advance with far in this area. The same comment goes for FAQ 1.2. (Håvard Haarstad, University of Bergen)	This section has been deleted.
484	49852	1	28	16	28	35	Somewhere among these three points the topics of observed impacts and attribution need to be treated. There was an IPCC Expert Meeting among WG I and WG II authors out of which a report and guidance were produced (Hegerl, G.C., O. Hoegh-Guldberg, G. Casassa, M.P. Hoerling, R.S. Kovats, C. Parmesan, D.W. Pierce, P.A. Stott, 2010: Good Practice Guidance Paper on Detection and Attribution Related to Anthropogenic Climate Change. In: Meeting Report of the Intergovernmental Panel on Climate Change Expert Meeting on Detection and Attribution of Anthropogenic Climate Change [Stocker, T.F., C.B. Field, D. Qin, V. Barros, G.-K. Plattner, M. Tignor, P.M. Midgley, and K.L. Ebi (eds.)]. IPCC Working Group I Technical Support Unit, University of Bern, Bern, Switzerland. Some of the issues raised there are priority items for Chapter 18. (Timothy Carter, Finnish Environment Institute)	This section has been deleted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
485	49950	1	28	17	28	17	It may be helpful to further clarify the statement--is the author team referring to positive feedbacks? (Katharine Mach, IPCC WGII TSU)	This section has been deleted.
486	52668	1	28	22	0	0	It is often missed the effect of terpenes as coadjutants to wildfire generation. Should this fact be mentioned here? (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	This section has been deleted.
487	54147	1	28	23	28	25	It seems that the climatic driver relevant here would be changes in extremes and their impacts, not extreme events themselves. (Michael Mastrandrea, IPCC WGII TSU)	This section has been deleted.
488	48462	1	28	23	28	29	I feel this theme is a little unclear: the heading discusses "broadening consideration of climate drivers" but the theme seems to be about broadening the consideration of climate impacts? I don't see "extremes" as a climate driver. I think of "drivers" as being external forcings: eg, GHGs, solar fluctuations, volcanic aerosols... (Marcus Sarofim, US EPA)	This section has been deleted.
489	36911	1	28	25	28	25	It may be added that the new evidence on climate related disasters is that the human factor plays a larger role than any natural factor. (PHILIPP SCHMIDT-THOMÉ, GEOLOGICAL SURVEY OF FINLAND)	This section has been deleted.
490	41566	1	28	30	0	0	"3) Assessing a broader range (than AR4) of impacts of climate change in the context of other well documented stresses." This is an acknowledged task of AR5 but it needs a clear picture of the social-econ-technology-income-governance contexts of the future...and I cannot find this in the current draft. I suggest it be in Ch1, but there are other alternatives (eg 2, 21). (Martin Parry, Imperial College)	This section has been deleted.
491	52670	1	28	33	0	0	Would it be possible to add, after economic development the wording "with exacerbated affluence" (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	This section has been deleted.
492	48718	1	28	34	28	35	I know we aren't supposed to wordsmith, but it's misleading to say adaptation may involve addressing stressors other than climate change--this is the sort of language that leads to "adaptation in name only.". It might be better to say that reducing vulnerability may involve actions that also address other stressors that affect the exposure, sensitivity, or adaptive capacity of a species, community, ecosystem, etc. to climate change. (Jennifer Hoffman, EcoAdapt)	This section has been deleted.
493	42619	1	28	36	28	46	Suggest rewriting this section; it is hard to follow. (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	This section has been deleted.
494	52938	1	28	47	28	47	Logically, this theme should go before the theme on adaptation/mitigation/sustainable development. (Kristie L. Ebi, IPCC WGII TSU)	This section has been deleted.
495	40966	1	28	53	29	6	Important to look at regions at various scales- often impacts and vulnerabilities will apply and adaptation measures will be implemented by institutions and responsible agencies functioning at different scales - all the way down to the individual. I see this theme creeping in in lines 17-20 on pae 29- This should also be reflected in Figure 1-7 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	This section has been deleted.
496	42008	1	29	1	29	15	These two points are still very weak in terms of cultural analysis, although many cultures are being affected and lost due to the impacts of climate change. (Liette Vasseur, Brock University)	This section has been deleted.
497	52939	1	29	5	29	6	Everything after "literature" is repeated elsewhere. (Kristie L. Ebi, IPCC WGII TSU)	This section has been deleted.
498	52669	1	29	7	0	0	It sounds rather incomplete to speak about this issue without mentioning the valuable work developed by the UN ISDR. During the last decade valuable information has been and continues to be distributed to governments, NGOs and decision groups. During the AR 4 development, WG 2 contacted ISDR and held a joint meeting in Geneva. However, at that time there was not the amount of information this Strategy unit has now developed, neither regional offices were available, as today. The existence of this UN task force should be mentioned here. REFERENCE: Hyogo Framework for Action (HFA- 2005/ 2015). WMO Bulletin, Volume 60 (2), 2011.(see page 117- Making cities resilient.) (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	This section has been deleted.
499	48719	1	29	12	29	13	It's not always necessary to weight by probability. Much of the scenario planning literature emphasizes that SP makes sense only if you don't know which scenario is most likely. (Jennifer Hoffman, EcoAdapt)	This section has been deleted.
500	40493	1	29	24	0	0	Needs concluding statement. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	This section has been deleted.
501	52818	1	29	28	29	40	I ask: is not suitable to indicate in what topics there is greater deficiencies of scientific literature? This would direct the research effort on key-issues. This report mentions well, the progress made by scientists on various topics (page 28: Major Themes of the WGII Contribution to AR5). I think it would be important to mention the need for studies to separate the impacts of natural climate variability, with respect to those produced by emissions. This is a defect in numerous scientific publications. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	This section has been deleted.
502	40788	1	29	33	29	36	Do the non-peer reviewed results receive a specific evaluation of their scientific value ? (Michel Petit, CGIET rue de Bercy)	This section has been deleted.
503	39403	1	29	39	0	0	"the proportion has broadened" isn't the best construct - either 'the geographical scope has broadened' or 'the proportion has grown' (Sarah Cornell, Stockholm Resilience Centre)	This section has been deleted.
504	40492	1	29	42	30	21	Complete repeat of material just mentioned in previous section. (Cynthia Rosenzweig, NASA Goddard Institute for Space Studies/Columbia University)	This section has been deleted.
505	54148	1	29	42	30	21	The cross-references to other chapter sections in the report should be included in section 1.4 as well. (Michael Mastrandrea, IPCC WGII TSU)	This section has been deleted.
506	48463	1	29	52	29	54	I think of "drivers" as being external forcings: eg, GHGs, solar fluctuations, volcanic aerosols... how is this term being used in this chapter? (Marcus Sarofim, US EPA)	This section has been deleted.
507	52940	1	30	8	30	8	Logically, this theme should go before the theme on adaptation/mitigation/sustainable development. (Kristie L. Ebi, IPCC WGII TSU)	This section has been deleted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
508	52671	1	30	21	0	0	It would be wise to add, after "climate change", a comma and then: "very particularly in regard to the increasing world urbanization rate and the many environmental, social and economic issues resulting from this trend" (Osvaldo Francisco Canziani, Academia Argentina de Ciencias Ambientales)	This section has been deleted.
509	42620	1	30	23	30	37	Suggest rephrasing the answer to this question, beginning with the positive aspects of how science CAN inform societal response (ie: begin with the information on line 32: "Scientific information informs..."), expand on this concept and then segue to the caveats. If possible, frame the caveats in a way that explains how to overcome them rather than as barriers to decision-making (ie: using risk management...). (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	We feel that the question would also need to be reworded if we implement this recommendation to state the "purpose" of the IPCC reports. This FAQ has been reworded in the SOD, however, and it will be edited again with the assistance of the communications staff at the WGII TSU.
510	52819	1	30	26	30	37	FQ3. Clearly exposed the usefulness of scientific knowledge and the need that it be spread by suitable means that political decisions conform to the predicted changes. Perhaps you could put a paragraph connector, which summarizes what is stated in the previous item FQ2. (Juan Jose Neiff, CONICET - UNIVERSIDAD NACIONAL DEL NORDESTE)	FAQ 3 was narrowed to focus solely on how we communicate uncertainty in this report.
511	52941	1	30	29	30	32	It would be important to include iterative risk management. (Kristie L. Ebi, IPCC WGII TSU)	FAQ 3 was narrowed to focus solely on how we communicate uncertainty in this report.
512	36820	1	30	52	30	52	Replace "societal" by societal (Maria Manuela Portela, Instituto Superior Tecnico (IST))	wrong chapter, we do not find this error in Chapter 1.
513	36821	1	31	3	31	3	Remove the word "dealing" (Maria Manuela Portela, Instituto Superior Tecnico (IST))	wrong chapter, we do not find this error in Chapter 1.
514	36822	1	33	7	33	7	Specify the meaning of the acronym RBMP (River Basin Management Plan?) (Maria Manuela Portela, Instituto Superior Tecnico (IST))	wrong chapter, we do not have this acronym in Chapter 1.
515	36823	1	34	18	34	18	Specify the meaning of the acronym EACC (Maria Manuela Portela, Instituto Superior Tecnico (IST))	wrong chapter, we do not have this acronym in Chapter 1.
516	42615	1	38	0	0	0	Table 1-1: Column E represents the sum of 11 years of data, while the other three columns only sum 10 years of data. This should be consistent; I recommend changing the last column to 2000-2009. The data in Arabic is missing. For consideration: the reader is left wondering how these numbers relate to the relative proportion of all publications that is published in each of these languages. (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	Accepted, we have reorganized the data for 10-year time slices as suggested. We have deleted the column for the Arabic pubs.
517	38002	1	38	0	38	0	Table 1-1: either remove commas in the table or use them consistently (Harald Pauli, Austrian Academy of Sciences)	Accepted, commas have been removed in this figure.
518	38316	1	38	0	38	0	Table 1-1: the lit. research has been restricted to six "major" languages to begin with, others are not represented. Even though it is an interesting piece of information that there are no available publications in arabic, it seems a bit confusing/irritating that there are no entries in the table. Why not delete it completely and mention, e.g. in the table caption, that research had been conducted on pub. in six languages, stating why these had been chosen and that no pub. in arabic had been reported whatsoever. (Raffael Ernst, Senckenberg Natural History Collections Dresden)	We have deleted the column for the Arabic pubs. The languages selected are those used for most often by the UN and WMO in its translations of climate change assessments.
519	53882	1	40	0	0	0	Figure 1-1: This needs to be landscape orientation; fonts are too small for portrait mode. Would it be possible to incorporate three characteristics described on page 5 (line 13-16) more clearly? (Yuka Estrada, IPCC WGII TSU)	Accepted, we will adhere to TSU specifications on font size in the final figure.
520	38317	1	40	0	40	0	Fig. 1-1: color code in 2007 & 2013 at least for point 18 and 20, respectively misleading. The theme contains mitigation, which should be coded in yellow/orange according to the legend. Since this is a combined them in the 2013 report, another coding may be necessary. (Raffael Ernst, Senckenberg Natural History Collections Dresden)	Accepted, the color coding has been adjusted.
521	44882	1	40	0	40	0	Figure 1-1 is completely unreadable without using a strong magnifying glass. (Sabine Wurzler, LANUV NRW)	Accepted, it will be printed in landscape mode.
522	36824	1	40	18	40	18	Remove the word "so" (Maria Manuela Portela, Instituto Superior Tecnico (IST))	must refer to another chapter, we only have 31 pages of text.
523	36825	1	40	18	40	19	Review the last paragraph (Maria Manuela Portela, Instituto Superior Tecnico (IST))	must refer to another chapter, we only have 31 pages of text.
524	36826	1	40	30	40	31	The paragraph "Climatic extremes of concern in water management generally recur more frequently than the typical engineering criterion of a 1% probability of annual exceedance" as nothing to do with the content under discussion. (Maria Manuela Portela, Instituto Superior Tecnico (IST))	must refer to another chapter, we have only 31 pages of text
525	49853	1	41	0	0	0	Figure 1-2. One important volume missing from this survey is the IPCC Special Report: The Regional Impacts of Climate Change: An Assessment of Vulnerability (1998), which was based on material from the SAR, but re-organised into the IPCC regions as we use them today. Note that Chapter 21 (Regional Context) has also presented a survey of all IPCC assessment reports (including Special Reports) to analyse their treatment of regions. We should try to avoid any possible overlap in our content. (Timothy Carter, Finnish Environment Institute)	The overview of the changing ARs and basic scenarios must appear in Chapter 1 as all the results - not just the Regional Context flow from it. Their domain is clearly how regional climate change has been used.
526	53883	1	41	0	0	0	Figure 1-2: (b) and (c) could be presented in a single table or figure. Unless showing the IPCC region is part of the aim here, I would think a table would be more efficient way to present the data. For a similar reason, (a) can be presented as table too. (Yuka Estrada, IPCC WGII TSU)	No, they are not the same. Panel b depicts the literature survey of author affiliation by country and panel c is by name of country -- nothing to do with author affiliation.
527	42616	1	41	0	0	0	Figure 1-2: (c) also has one more year in the third category of 2000-2010. I recommend keeping consistency by using 2000-2009. Did the literature searches used to make this figure include regional articles as well as country articles? (Erin Coughlan, Red Cross / Red Crescent Climate Centre)	Accepted, we have reorganized the data for 10-year time slices as suggested.
528	39212	1	41	0	0	0	Figure 1-2: the description of the content of figure a (human health) is not conform to the legend in figure a (climate change) (Christopher Reyer, Potsdam Institute for Climate Impact Research)	Human health column has been deleted.
529	46430	1	41	0	41	0	In Fig 1.2. a the numbers are very small. Also, the vertical bars in this Figure 1.2.a are difficult to see, in particular, "impact" (yellow), "adaptation (green)" and "cost (red)". In Fig. 1.2.b the numbers and letters in white color included in the inner part of the continents and sub-continents are also difficult to read. (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Accepted, final figure will not be a pdf cut and paste and text will be legible.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
530	47623	1	41	1	41	1	Figure 1-2 (Page#41): It will be more useful to developing countries if this figure also shows shares of GHG emissions by regions. It is clear that East Asia contributes almost half of global GHG emissions, but its literatures share only a quater. (Bundit Limmeechokchai, Sirindhorn International Institute of Technology, THAMMASAT University)	We disagree. The emissions from each region is an entirely different topic.
531	39404	1	42	0	0	0	Fig 1.3 - make things comparable (consistent timeframe - now, or change to 2081-2100); also will this (esp panel c) be updated for CMIP5 projections? (Sarah Cornell, Stockholm Resilience Centre)	We disagree. This is a perspective of IPCC/published maps of stressors. It is not meant to be updated to AR5 - that is the role of the other chapters.
532	53885	1	42	0	0	0	Figure 1-3: Please reconsider what the main message would be of this figure. Each map is too small to show the details and having such detailed maps can be counter effective or even a distraction if the main focus is just to portray different stressors. They could just look like a mosaic of random maps. Instead of just lining up global maps for different stressors that came from various sources, it would be more meaningful to portray how these factors are linked to the WGII contributions. For instance, you could have an arrow pointing out from (a) population map to Titles of AR5 chapter(s) discussing population within the context of climate change impacts, adaptation and vulnerability. Or additionally, if historical aspects are considered, even link to the chapter titles of previous volumes. Alternatively, you could develop a flow chart and make it a more conceptual figure. I am not sure how much information would be added by using an actual data map (esp they are so small) when the data itself is not the main purpose of the map. You could have polygons with different stressors interacting with various aspects of impacts, adaptation and vulnerability. (Yuka Estrada, IPCC WGII TSU)	Accepted, the new layout of this figure conveys its message much better and it is now tied better to its text.
533	46431	1	42	0	42	0	Figure 1.3.a, 1.3.b and 1.3.e have numbers in the color code and text (in this case in the last one, Figure 1.3.e) that are difficult to see. Also, the maps in a), b), d) and e) are quite small. (Rubén Piacentini, Institute of Physics Rosario (CONICET - National University of Rosario))	Maps are based on publications, incl. IPCC. They have been cleaned up for SOD and the new layout helps convey the message.
534	36967	1	42	0	42	0	Figure 1-3: Figures are too small. It would also be good to use results based on the same scenario in panels c - e. Changes are rather "anthropogenic" then "human". (Joachim Rock, Johann Heinrich von Thuenen-Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries)	We disagree. This is a perspective of IPCC/published maps of stressors. It is not meant to be updated to AR5 - that is the role of the other chapters.
535	49951	1	43	0	0	0	Figure 1-4. For each bar presented in this plot, it would be helpful to clarify further what topics account for the remaining percentage that is not plotted--physical climate change and drivers? I think it would be sufficient to present this clarification in the figure caption, without necessarily adding information to the plot itself. (Katharine Mach, IPCC WGII TSU)	Accepted, we have edited this figure to show 100% of the contents of these NCs.
536	53886	1	43	0	0	0	Figure 1-4: I would consider re-organizing this figure. First, instead of using First, Second, or Third NC, it is probably more meaningful to have the actual year of the report to readers. Then, the data can be presented by year and by country. Second, if the emphasis is on "climate change impacts and adaptation receive very limited attention relative to the discussion of greenhouse gas emissions and mitigation policies", I would add a fifth category called "Other" to make all bars 100% (e.g., right side of http://srren.ipcc-wg3.de/report/srren-figures-chapter-10/srren-figure-10.35) so that the eyes won't be distracted by the height of individual bars. (Yuka Estrada, IPCC WGII TSU)	Accepted in part, we have edited this figure to show 100% of the contents of these NCs.
537	53889	1	44	0	0	0	Figure 1-6: Abbreviation needs to be spelled out (e.g., RF). (Yuka Estrada, IPCC WGII TSU)	Accepted, The figure has been edited and "radiative forcing" is spelled out along the vertical axis.
538	48464	1	44	0	0	0	Figure 1-6: I would suggest using the same graph symbol for both SRES scenarios - color appears to match up with magnitude, but using a box, a circle, and a diamond for SRES and IS92a (rather than one symbol for SRES and a 2nd symbol for IS92a) blurs the distinction among those. (Marcus Sarofim, US EPA)	Accepted, revised figures used distinct symbols for the SRES and RCP scenarios.
539	54128	1	44	0	0	0	Figure 1-6: It is unclear why only A2 and B1 from SRES are included in this figure and not the other SRES scenarios. At minimum, it may be useful to consider including A1B, which is similar to RCP6.0 in terms of radiative forcing. (Michael Mastrandrea, IPCC WGII TSU)	Accepted, the revised figure shows 6 SRES scenarios.
540	53890	1	45	0	0	0	Figure 1-7: The visibility of this figure should be improved, especially for printing purposes. (Yuka Estrada, IPCC WGII TSU)	The figure has been deleted.
541	39213	1	45	0	0	0	Should be WG I Physical Drivers not WG II (Christopher Reyer, Potsdam Institute for Climate Impact Research)	Agreed, but this figure has been deleted.
542	41874	1	45	0	45	0	The box at lower left in Figure 1-7: Working Group II --> Working Group I (Hiroaki Kondo, National Institute of Advanced Industrial Science and Technology (AIST))	Agreed, but this figure has been deleted.
543	44373	1	50	0	0	0	Something missing in this sentence (Linda Sygna, University of Oslo)	Wrong chapter, we do not have a page 50.