#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	35176	24	0	0	0	0	Based on my recollection of the previous zero-order version, and the numerous comments I made on that, the current version appears to be improved considerably. There stll remains a realtive shortfall in the amount of data from tropical Asia, but that seems to refelcet a genuine gap in our knowledge rather than a lack of authorial attention to that part of the region. My main concern here is the difficulty of producing a coherent synthesis of the effects of climate change on such a large and diverse region; see for example 24.4.3.1 where the discussion ranges from coral reefs to polar bears on pack ice. It would have been far nore sensible to separate the region into northern and southern and eastern and western components since each has a distinctive climate and biodiversity that would respond differently to drivers of change. (David Dudgeon, University of Hong Kong)	Yes, producing a coherent synthesis is very difficult. We have discussed this, but it cannot be done as easily and consistently as suggested. Different topics would need different divisions.
2	35646	24	0	0	0	0	The very negative perception of migration as a response to climate change in this chapter is not consistent with the rest of the report, which takes a more balanced approach in which migration can also be adaptative (e.g., "These impacts may lead to global mass migration and related conflicts", p30, line 43). (Clark Gray, University of North Carolina at Chapel Hill)	Migration is a comprehensive issue, Asia has own characteristics as indicated in the literature reviewed.
3	35894	24	0	0	0	0	Overall, I feel the chapter has greatly improved from the zeroth order review, with clear and concise projections relating to various climate impact and adaptation issues. However, I feel that a key topic regarding glacial evolution in the Himalayas is missing from this discussion, and in doing will open the question of AR5's validity and integrity in the press. While glacial evolution in this region is uncertain, with limited modelling work having been performed, I feel it is important to at least mention this uncertainty so as to not appear that we as scientists are shying away from our previous mistakes. It would be very helpful to have a section on Karakoram/NW Himalayan glaciers, similar to section 24.9.3, which summarizes observations of mass balance, temperature and precipitation, as well as what has been projected by regional climate modelling studies. I could very well be biased in this opinion due to my research experience in this area, but while I feel this is a very important and well-written chapter, our critics will be left wondering why there was no mention of a topic which got us into a considerable amount of "trouble" in the last IPCC report. (Tamara Janes, Met Office Hadley Centre)	Yes, glacial evolution in the Himalayas is important. This is clearly a key and very sensitive issue and its omission may be wrongly interpreted. It hass been cross-referenced to Chapter 3, which is covering the Himalayas to avoid duplication of information.
4	36769	24	0	0	0	0	The entire chapter needs to be checked by an English editor for grammatical correctness and clarity. There are many grammatical mistakes and poorly structured sentences in the current version of the report. The reading of the chapter is often interrupted by grammatical mistakes, typos, and poor sentences with vague meanings. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	The chapter has been checked by an English editor.
5	36770	24	0	0	0	0	The entire chapter needs to be streamlined and restructured for coherence and logical flow. The information provided in the current draft is rather piece-meal and incomplete. For a comprehensive assessment, it is important to provide a synthesis of the up-to-date knowledge and information and pinpoint the remaining knowledge gaps concerning the climate changes and their impacts. Based on my previous experience in participating in the international assessment, I strongly suggest that one person in the writing team reads the entire chapter and makes rearrangement of the text wherever necessary based on the structure of the chapter agreed by the involved authors. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Existing structure is retained. Nonetheless, the flow has been improved.
6	36775	24	0	0	0	0	In Section 24.4, adaptation is specified for each sector. In Section 24.5, it is again about adaptation. It is better to move the text on adaptation in Section 24.4 to Section 24.5 for coherence. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Existing structure is retained. The team uses the plenary approved outline.
7	36788	24	0	0	0	0	The overall chapter has mentioned little about West Asia, a very dry region. Both water resources and ecosystem in the region are highly sensitive to climate change. An assessment on this region needs to be added in the Chapter, especially given the fact that there is large literature on the climate change and impact for the region. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	The Chapter was expanded.
8	36789	24	0	0	0	0	The information on climate change and impact as well as adaptation concerning West Asia is almost absent in the entire assessment. The authors should fill the gap during the revision of the chapter. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	The information has been expanded based on the availability of literature.
9	36790	24	0	0	0	0	The sections of the chapter should be adjusted to improve the logical flow and avoid repetition. For example, Section 24.4 includes a sub-section Adaptation Options for each sector, i.e., freshwater resources, Terrestrial and Inland Water Systems, etc. Section 24.5 is Adaptation and Managing Risks. There are apparent overlaps between these two sections. The logic of arranging the discussion on Adaptation in this structure is poor. Besides, section 24.4.7 Valuation of Impacts and Adaptation comes rather abruptly. It may be more appropriate to be presented in Section 24.5. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Existing structure is retained. The team uses the plenary approved outline.
10	37571	24	0	0	0	0	Some cities like Tokyo, Shanghai, Hong Kong, Singapore are high density costal cites. They will meet serious problems and challenges in face of climate change. How to carry out the adoption in these cities is a big question. At the same time, high density/compact urban planning is the future trend of Asian cities due to the less resources and high density population. These developing regions and cities of Asia urgently require the application of urban climatic knowledge into their urban planning for better adopting climate change and more sustainable urban development. Unfortunately, there is less experience from other west countries. It would be better to add more relevant information into this Chapter. (CHAO REN, THE CHINESE UNIVERSITY OF HONG KONG)	the team notes this issue, but few references could support it, a more efforts need to do. Thank you!
11	38274	24	0	0	0	0	Looking at figures and tables made for the different chapters, there are similarities (e.g. magnitude of temperature and rainfall changes, impacts on ecosystems...) between chapters because they have they deliver similar information, but for different regions. (Guillaume Simioni, INRA)	Figures and tables have been improved.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
12	38275	24	0	0	0	0	Having a similar layouts (i.e. same styles and legends, symbols, columns, colors, ...) accross the chapters, would help the comparison between regions. Not sure it is important, especially if the readership is different from one chapter to another. It's just a suggestion. (Guillaume Simioni, INRA)	Suggestion will be forwarded to the TSU for further action.
13	38603	24	0	0	0	0	In coastal regions, likely impacts (if any) of salt water intrusion due to sea-level rise and declining river runoff during dry season on crop yields, fishery and aquaculture will be worthwhile to address. (Susmita Dasgupta, The World Bank)	The text had been expanded as much as allowed by literature.
14	38604	24	0	0	0	0	Extreme weather events in a changing climate have not received due attention in this chapter. (Susmita Dasgupta, The World Bank)	The lacking aspect has been improved.
15	42646	24	0	0	0	0	* The order of subregion in Tables is not consistent. Instead of alphabetic order as seen in Table 24-1, I prefer to use the order as seen in Tables 24-2, 24-3, and 24-4 (i.e., North Asia, East Asia, South East Asia, South Asia, West Asia, and Central Asia). Also, the numbers of nations in each subregion of Tables 24-2 and 24-4. might be deleted. Also, the name 'South East Asia' was written in various forms such as 'southeast Asia', 'S-E Asia' and 'South-East Asia'. We should have only one expression. (Suam Kim, Pukyong National University)	Suggestion accepted and update has been done.
16	43133	24	0	0	0	0	The significance of population trends for exposure to risk and vulnerability is generally noted throughout the report, but a detailed analysis of the causal links is usually missing. This requires more attention to structure and composition of population. A good example of this "gap" is section 24.4.5.1, which in lines 33-34 menions the distinction in urban populations between those living in large urban agglomerations and those living in small cities. What is the significance of this distinction for climate change adaptation? Does it make a difference? If it doesn't, then why mention it? If it does make a difference for risk and the development of adaptation strategies, then explain how. If however this is a gap in the research literature then maybe this should be noted as such. (Adrian HAYES, Australian National University)	Sectiont 24.4.5.1 has been improved.
17	43474	24	0	0	0	0	Overall: far too little coverage about the Himalaya (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	The commented topic has been cross-reference to Chapter 3. Text has also been added.
18	43475	24	0	0	0	0	overall: very disorganized chapter. It is very hard to follow details for specific countries or regions (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Organization has been improved. Details of specific countries added where literature is available.
19	44227	24	0	0	0	0	number and quality of figures should be increased (Georg Kaser, University of Innsbruck)	Figures are improved.
20	44427	24	0	0	0	0	It is a well documented chapter presenting Asia cases covering all the areas of extreme events and disasters, from cyclones and heat waves to floods droughts and combination of events in different areas. In general, I would prefer, for its completeness, to add/refer in the presentation of the extreme events by adding other chapters and RCP scenarios results, the possible triggering factors that caused them. These triggering factors may be changing due to climate change hence affecting the frequency of the extreme events occurrence. (Tae sung Cheong, National Disaster Management Institute)	Agree and considered where literature is available
21	44554	24	0	0	0	0	Sections 24.3.1 and 24.3.2: Please update to ensure consistency and cross-referencing with relevant WGI AR5 chapters (in particular, Ch2 and Ch14), and the SREX Chapter 3 in regards to extremes. (Thomas Stocker, IPCC WGI TSU)	Suggestion for 24.3.1 and 24.3.2 accepted and revised
22	44555	24	0	0	0	0	Section 24.3.4: In regards to temperature projections – Please be specific with which WGI AR5 chapter is being referred to for the overall region of 'Asia'. For all projections, please ensure consistency and cross-referencing with relevant WGI AR5 chapters and the Annex I: Atlas of global and regional climate projections. SREX Chapter 3 should also be referred to in relation to projected extremes, and projected changes in tropical cyclones (where a cross-reference is currently only provided to the AR4). (Thomas Stocker, IPCC WGI TSU)	The commented aspect was improved.
23	44556	24	0	0	0	0	FAQ24,1: "Since AR4, what is new in our knowledge about the changing climate in Asia?". We have serious concern with the focus of this FAQ as the assessment needed to answer such a question is primarily within WG and the evidence past, present and future climate change in the regions is covered in the WGI contribution to AR5I. With the current focus of this FAQ, there is a serious risk here of cross-working group inconsistency and overlap that is best avoided. We thus suggest this FAQ to focus on the consequences of this for exposure, vulnerability, impacts, etc. (Thomas Stocker, IPCC WGI TSU)	Deleted.
24	45563	24	0	0	0	0	Authors have provided a very useful assesment of this highly diverse region chareacterised by incomplete and inconsistent data and limited representatitive studies that follow standardised methodologies. As a key region of economic growth and human development potential in the medium to long term, climate adaptation is both a challenge and opportunity for this region. While the region can benefit from experiences elsewhere, the region will face growing challenges in meeting the needs of a growing population whose demands for improving living standards will continue to grow. Managing competing demands of limited available capital would be a key constraint for the developing Asia in meeting climate adaptation challenges which are inextricably linked to the human development challenges including food security, health and education. (Thilak Mallawaarachchi, The University of Queensland)	Thanks
25	45565	24	0	0	0	0	The chapter discussion on addressing vlunerabilities and adaptation stratgies can be improved by strengthening the trade and development aspects including transport and energy management which is currently less well addressed. (Thilak Mallawaarachchi, The University of Queensland)	Yes, considered as much as allowed by availability of literature
26	45614	24	0	0	0	0	The chapter would benefit if cases of adaptation efforts and collaboration within Asia such as APAN(Asia Pacific Adaptation Network) are introduced. (Soojeong Myeong, Korea Environment Institute)	Grey literature has been referrred to, where suitable.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
27	45661	24	0	0	0	0	The current draft is in good form for covering and assessing the literature relating to the major aspects of impacts, vulnerability and adaptaiton in Asia, particularly given that it is still a first order draft. Howver, the level of details on certain aspects appear to be uneven across sub-regions (e.g. there is relatively better coverage and depth for Central Asia), systems/sectors (e.g. infrastructure as a vital part of the regional development focus but its vulnerability and adaptive interventions in the sector does not seem to be sufficiently covered) and areas of adaptation policies and practices (e.g. national adaptation policy frameworks, knowledge sharing and learning through regional networks and forums). (Xianfu Lu, ADB)	Vulnerability and adaptive interventions are included where literature is avilable.
28	46336	24	0	0	0	0	the chpater is well written and encompasses major issues pertaining to climate change in Asia. The Chapter 7 (Food Security and Food Production Systems" and the Section 24.4.4 of the Chapetr 24 "Asia" may be properly linked (Arif Goheer, Global Change Impact Studies Centre (GCISC))	The commented aspect was done.
29	46916	24	0	0	0	0	One of the case studies for this chapter should include the Himalayas, and cover the current and anticipated increase in glacial melting and associated glacier flooding, landslides, and avalanches, which could have significant impacts on hydropower generation in parts of Nepal, Bhutan, China, Pakistan, and elsewhere (see Horstmann 2004, ICIMOD 2011, Khadka 2011). In addition, extreme events such as glacial lake outburst floods (GLOFs) can cause catastrophic damage to hydropower infrastructure. Nepal has experienced 24 GLOFs in recent years including that of the Dig Tsho in 1985, which destroyed the nearly completed Namche hydro project (see the Asian Development Bank's report, Climate Risk and Adaptation in the Electric Power Sector, 2012, and the International Centre for Integrated Mountain Development, http://www.icimod.org). Continuing glacial melting and the impossibility of reliably predicting a specific occurrence of GLOF based on existing knowledge (ICIMOD 2011) highlights the vulnerability of hydropower systems in glacial mountain regions like the Himalayas. According to the IFC (2011): • significantly lower dry season generation (high confidence in rainfall/output link but low confidence in rainfall model); • no change to wet season generation or revenue; • extreme flooding with sedimentation and damage to intake structures (low confidence, poor baseline data); • landslides blocking and flooding the river upstream and/or blocking road access, affecting generation and revenue (qualitative assessment only); • decreased yields by subsistence farmers (but low confidence in models and minimal impact on Khimti output); • increased risk of GLOFs due to widespread and accelerating loss of glacier mass and deterioration of moraine dams (but low confidence in estimating financial impact due to poor baseline data); and • pressure to increase minimum flow to increase downstream irrigation (with high confidence in adverse effects on output and revenue). (Katy Yan, International Rivers)	Himalayas is dealth with in Chapter 3 and cross referenced to that section from this chapter.
30	46932	24	0	0	0	0	Maldives and Bangladesh is highly vulnerable to climate change. Sea-level rise will probably affect most of these two countries. However, these two countries are not duly focused. (Golam Sarwar, Bangladesh Unnayan Parishad (BUP))	Coverage was improved on Bangladesh. However, Maldvives is not included in this Chapter.
31	46933	24	0	0	0	0	Some key references are missing. For Bangladesh, a list includes but not limited to: Allison M A 1998. Historical changes in the Ganges-Brahmaputra delta front, Journal of Coastal Research 14: 1269-1275. DoE 2005. National Adaptation Programme Action (NAPA), Department of Environment (DoE), Ministry of Environment and Forest, Government of the Peoples Republic of Bangladesh, Dhaka. Dube S K, Jain I, Rao A D, Murty T S 2009. Storm surge modelling for the Bay of Bengal and Arabian Sea, Natural Hazards 51: 3-27. Giri C, Pengra B, Zhu Z, Singh A, Tieszen L L 2007. Monitoring mangrove forest dynamics of the Sundarbans in Bangladesh and India using multi-temporal satellite data from 1973 to 2000, Estuarine, Coastal and Shelf Science 73: 91-100. Giri C, Zhu Z, Tieszen L L, Singh A, Gillette S, Kelmelis J A 2008. Mangrove forest distributions and dynamics (1975–2005) of the tsunami-affected region of Asia, Journal of Biogeography 35: 519-528. Islam M B, Khan S R 2008. Coastal Hazards and their Management in Bangladesh, In Mimura N, Asia-Pacific Coasts and their Management, Springer, Dordrecht pp. 288-301. Islam T, Peterson R E 2009. Climatology of landfalling tropical cyclones in Bangladesh 1877-2003, Natural Hazards 48: 115-135. Mikhailov V N, Dotsenko M A 2007. Processes of delta formation in the mouth area of the Ganges and Brahmaputra Rivers, Water Resources 34: 385-400. MoEF 2009. Bangladesh Climate Change Strategy and Action Plan 2009, Ministry of Environment and Forest (MoEF), Government of the Peoples Republic of Bangladesh, Dhaka: 1-76. Nicholls R J, Wong P P, Burkett V R, Codignotto J O, Hay J E, McLean R F, Ragoonaden S, Woodroffe C D 2007. Coastal systems and low-lying areas, In Parry M L, Canziani O F, Palutikof J P, Linden P J v d and Hanson C E, Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK. Penning-Rowsell E C, Sultana P, Thompson P M 2012. The 'last resort'? Population movement in response to climate-related hazards in Bangladesh. Environmental Science & Policy, doi:10.1016/j.envsci.2012.03.009 Sarwar G M, Khan M H 2007. Sea Level Rise: A Threat to the Coast of Bangladesh, Internationales Asien Forum. International Quarterly for Asian Studies 38: 375-397. Woodroffe C D, Nicholls R J, Saito Y, Chen Z, Goodbred S L 2006. Landscape Variability and the Response of Asian Megadeltas to Environmental Change: The Asia-Pacific Region, In Harvey N, Global Change and Integrated Coastal Management, Springer, The Netherlands pp. 277-314. (Golam Sarwar, Bangladesh Unnayan Parishad (BUP))	Thank you
32	46934	24	0	0	0	0	Some references are in the text but not in the list, and vice-versa. These include but not limited to: Balk et al. 2009, Rosegrant 2011, Huang et al. 2004, Karim and Mimura 2008, Al-Tabbaa 2009, Rao et al. 2010, Brouwer et al. 2007, Lasco et al. 2009, Rawlani and Sovacool 2011, ... (Golam Sarwar, Bangladesh Unnayan Parishad (BUP))	Accepted. References will be checked by the team and the TSU.
33	48171	24	0	0	0	0	It seems warranted to add one paragraph to the executive summary giving guidance on the role of no-/low-regrets measures in this region. The underlying chapter text should also be strenthened. (Jochen Harnisch, KfW)	Considered adding no-/low-regrets measures but lacking relative references No relevant literature to support this conclusion.
34	48172	24	0	0	0	0	The limited robustness of regional climate projections e.g. for rainfall, river run-off, droughts and floods should also be mentioned in the executive summary as a major obstacle to implementing dedicated adaptation projects on a larger scale in this region. (Jochen Harnisch, KfW)	Find them from WGI AR5

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
35	51436	24	0	0	0	0	1) Overall -- In preparing the 2nd-order draft, the chapter team should prioritize making each section of the chapter a polished, comprehensive treatment of topics considered. From these sections, the chapter team is then encouraged to maximize the utility of its findings, ensuring that they are robust, compelling, and nuanced. Themes to consider informing in constructing findings include decisionmaking under uncertainty, risks of extreme events and disasters, avoided damages, and limits to adaptation. To these ends, the author team has prepared a strong first-order draft. In an effort to inform further chapter development, I provide some general and specific comments below. (Katharine Mach, IPCC WGII TSU)	Thank you
36	51437	24	0	0	0	0	2) Highlighting key findings -- In developing the second-order draft, the chapter team should aim to identify and present key findings throughout the chapter's sections, using calibrated uncertainty language to characterize its degree of certainty in these conclusions. In this way, a reader of the chapter will be able to understand how the literature reviews and syntheses in the chapter sections--the traceable accounts--support the conclusions of the chapter, especially those presented in the executive summary. Additionally, such identification of key findings throughout the chapter supports their nuanced characterization in the context of the executive summary. (Katharine Mach, IPCC WGII TSU)	Thanks, ES improvement considered and done where possible
37	51438	24	0	0	0	0	3) Usage conventions for calibrated uncertainty language -- Where used, calibrated uncertainty language, including summary terms for evidence and agreement, levels of confidence, and likelihood terms, should be italicized. As already done, the author team may find it effective to present the calibrated terms parenthetically at the end of sentences or clauses, in addition to incorporating them directly into sentences. Casual usage of the reserved uncertainty terms should be avoided, as has been flagged in some specific comments throughout the chapter. (Katharine Mach, IPCC WGII TSU)	Thank you. Checked and removed where usage is casual
38	51439	24	0	0	0	0	4) Specificity of described observations and projections -- The author team is very much encouraged to continue presenting observed and projected impacts, trends, and examples with the high level of specificity and conciseness already employed. Additionally, where possible given the available literature, the author team may wish to consider further ways to present differences projected across scenarios of the future. (Katharine Mach, IPCC WGII TSU)	Has been considered
39	51440	24	0	0	0	0	5) Conditional constructions -- The chapter team has done a nice job of using conditional constructions that explicitly separate a given physical change from its corresponding conditional outcome. The chapter team is encouraged to continue using such constructions, also separately characterizing the degree of certainty for the physical change and the conditional impact/outcome where appropriate. (Katharine Mach, IPCC WGII TSU)	Thanks
40	51441	24	0	0	0	0	6) Figures -- Figures represent an important and effective vehicle for clear communication of assessment and corresponding key findings. The chapter team should continue developing figures to complement assessment in the chapter text, exploring especially figure options in addition to the maps already used. (Katharine Mach, IPCC WGII TSU)	Accepted. Efforts made to develop new figures
41	51442	24	0	0	0	0	7) Coordination across the Working Group 2 contribution -- In developing the next draft of the chapter, the author team should consider treatment of topics not only in this chapter, but also across the report as a whole. For each topic, the chapter team should ensure that treatment here is reduced to the essence of what is relevant to the chapter, with cross-references made to other chapters as appropriate, also minimizing overlap in this way. (Katharine Mach, IPCC WGII TSU)	Yes, the coordination has been done
42	51443	24	0	0	0	0	8) Harmonization with the Working Group 1 contribution to the AR5 -- At this stage of chapter drafting, the author team should carefully consider the working group 1 contribution. Wherever climate, climate change, climate variability, and extreme events are discussed, the chapter team should ensure that their treatment is harmonized with the assessment findings of working group 1. (Katharine Mach, IPCC WGII TSU)	The commented aspect was done.
43	53518	24	0	0	0	0	When presenting projected impacts, please include the time frame, scenario, and other assumptions. This is done in most instances but is missing in a few. (Kristie L. Ebi, IPCC WGII TSU)	Accepted. All projections checked and revised as appropriate
44	53519	24	0	0	0	0	Please check consistency of statements with those in the relevant sectoral chapters, such as food systems, coastal zones, and human health. (Kristie L. Ebi, IPCC WGII TSU)	Consistency was checked.
45	54522	24	0	0	0	0	GENERAL COMMENTS: I would like to thank the authors for their work on the FOD. 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)	Thank you
46	54523	24	0	0	0	0	EXECUTIVE SUMMARY: The author team has made a good start on the Executive Summary, including clear attention to providing traceable accounts (see separate comment on this), and calibrated uncertainty language. In the next round of revisions, I suggest considering ways to further integrate information about adaptation options and limits into the presentation of projected impacts, to the extent such information is available. Some findings do this to a certain extent, but further integration would better communicate response options. Likewise, to the extent it is available, information about how impacts vary across emissions scenarios would be useful to include where there are meaningful variations identified. (Michael Mastrandrea, IPCC WGII TSU)	Accepted. Further integration of adaptation and projection done to the extent allowed by available literature

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
47	54524	24	0	0	0	0	TRACEABLE ACCOUNTS: The author team has made a very good start to providing traceable accounts for assessment findings and highlighting the location of those traceable accounts in the Executive Summary. In general, I would recommend the author team continue to strengthen the linkage between support in the chapter text and assessment findings in the Executive Summary. In this context, I suggest providing some explanation of the calibrated uncertainty language used in the Executive Summary in the corresponding chapter section(s) where the traceable account appears for each finding, for cases where this is not done already. In particular, in situations where confidence is not high, it would be useful to understand why the author team has made this judgment (e.g., is there a lack of robust evidence?, are there multiple perspectives in the literature?). In situations where confidence is high or likelihood language is employed, what is the evidence that forms the basis for these assignments? Succinct descriptions in the chapter text of this type will both highlight the basis for ES findings and help explain the author team's assessment of the literature. We in the TSU are available to discuss these issues as well if that would be of use. (Michael Mastrandrea, IPCC WGII TSU)	ES tied to relative contents. In many instances, the literature is limited.
48	54899	24	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-Chap24_Reference Checks.pdf at https://ipcc-wg2.gov/AR5/author/FOD/SuppMat (Monalisa Chatterjee, IPCC WGII TSU)	The commented aspect was done.
49	38512	24	2	0	0	0	I do not see a section documenting observed biodiversity responses to climate change. A pair of papers documents elevation shifts of moths on Mount Kinabalu, and potential declines of cloud forest species. Chen I-C., J.K.Hill, H.-J.Shiu, J.D.Holloway, S.Benedick, V.K.Chey, H.S.Barlow & C.D.Thomas. 2011. Asymmetric boundary shifts of tropical montane Lepidoptera over four decades of climate warming. Global Ecology & Biogeography 20:34-45. AND Chen I.-C., H.-J.Shiu, S.Benedick, J.D.Holloway, V.K.Chey, H.S.Barlow, J.K.Hill & C.D. Thomas. 2009. Elevation increases in moth assemblages over 42 years on a tropical mountain. Proceedings of the National Academy of Sciences, USA 106:1479-1483. (Chris D Thomas, University of York)	Done to the extent allowed by available literature
50	36771	24	2	50	0	0	The executive summary should specify the range of climate change and impact derived from the assessment wherever possible. This concerns, e.g., temperature, precipitation, water resources availability, crop yield and distribution (including rice, wheat, maize etc.). The current version of the summary does not really provide a complete picture of the projected climate change and impact based on the latest knowledge and results. What are said here in the assessment are too general and lack added value over the previous assessment AR4. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Done to the extent allowed by available literature
51	51444	24	2	50	0	0	Executive Summary -- In subsequent work on the executive summary, there are a few aspects of development the author team may wish to consider further: 1st, in terms of formatting, all calibrated uncertainty language, including summary terms for evidence and agreement, levels of confidence, and likelihood terms, should be italicized. 2nd, as is possible, the author team may wish to consider presenting information on differences across outcomes projected for differing climate/socio-economic scenarios. That is, as can be supported by the literature, it would be beneficial to indicate, in addition to a general projection for the future, differences in projections for one scenario versus another at a given time point in the future. (Katharine Mach, IPCC WGII TSU)	Checked again and improved.
52	36772	24	2	51	3	2	The heading should indicate the precipitation for consistency with the content. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Accepted and improved with content from WGI results
53	37363	24	2	52	0	53	1°C to 3°C per century.....Please define the time frame (from-to) (So Kazama, Tohoku University)	Deleted.
54	35177	24	2	52	0	54	Sentence does not seem grammatically correct. (David Dudgeon, University of Hong Kong)	The sentence was corrected.
55	43458	24	2	52	2	52	"presented range between" sounds confusing, takes a moment to understand (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Improved.
56	51445	24	2	52	2	54	There are several aspects of this finding that could be specified further. 1st, it would be helpful to indicate the lower bound for the observed temperature more precisely--how much less than 1 degree? 2nd, the overall timeframe for these observations (for example, since 1950, etc.) could be indicated, to fully characterize the observed rate of increase for the reader. 3rd, the phrase "have been validated again" could be further clarified to indicate presumably the findings of the 4th assessment report have been confirmed. (Katharine Mach, IPCC WGII TSU)	The commented aspects are revised.
57	53520	24	2	52	3	2	Please ensure consistency with chapter 1. (Kristie L. Ebi, IPCC WGII TSU)	Checked chapter 1
58	54525	24	2	52	3	2	Regarding the traceable account for this finding, it would be useful to specify the relevant chapter sections (presumably 24.3.1 and 24.3.2), as well as Table 24-2. Also, given the reference to the table on observed changes and the corresponding chapter text, it seems as if the statement about a warming trend in daily temperature extremes is intended as a statement about observed changes rather than a future projection (such a projection is not discussed in section 24.3.4). If so, please revise wording to clarify. For the finding as a whole, further revisions to specify the timeframe for observed changes and a more precise range for temperature increase would be useful. (Michael Mastrandrea, IPCC WGII TSU)	Improved.
59	37057	24	2	52	4	9	It would be valubale for the reader if the ES could include statement(s) on observed impacts (and their attribution to CC). There is a lot of material in the Chapter on observed impacts, which is not mirrored in the ES. E.g. 4th Para on Ecosystem stresses could include observed changes to permafrost and arctic tundra ecosystems. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Accepted. Revised.
60	43460	24	2	54	3	1	faster temperature increase at higher elevations should be mentioned as well (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Done to the extent allowed by available literature.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
61	35178	24	3	1	0	0	Missing 'the'. I realise this is a draft, but one's confidence in the contents are not heightened by the clumsiness of the first few sentences of the Executive Summary. I will refrain from commenting further on grammar, etc. unless they obscure the meaning of the text. A lot of editorial work remains to be done on the text of this chapter. (David Dudgeon, University of Hong Kong)	Corrected.
62	43459	24	3	4	3	4	to BE a major challenge… (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Accepted. Thank you.
63	53521	24	3	4	3	11	Please ensure consistency with chapter 3. Also, please provide scenario and assumptions. (Kristie L. Ebi, IPCC WGII TSU)	Checked with chapter 3 and revised.
64	54526	24	3	4	3	11	Please provide line of sight references to chapter sections where the traceable account for this finding can be found. (Michael Mastrandrea, IPCC WGII TSU)	24.4.1 consider this statement please
65	45566	24	3	5	0	0	increasing water supply constraints' instead of 'soaring water supply' (Thilak Mallawaarachchi, The University of Queensland)	Revised.
66	45662	24	3	5	0	0	The word “soaring” here does not seem to be an accurate word here – it actually contradicts what is said in the very next sentence. (Xianfu Lu, ADB)	Revised.
67	51446	24	3	5	3	5	It may be helpful to clarify "soaring water supply"--is this really what is meant? (Katharine Mach, IPCC WGII TSU)	Revised.
68	35884	24	3	6	3	6	"is projected to decrease due to climate change" - This isn't generally correct. In some areas, such as parts of South Asia, the freswater avialibility is projected to increase. In my oppinion this regional variability of the projections needs to be included. (Wilhelm May, Danish Meteorological Institute)	Added "in some parts of " before Central, South…..
69	36801	24	3	8	3	9	The meaning '….affected water resources positively ----but negatively in the long term ' is not clear. By positive, do authors mean more runoff, more stable river flow or something else? Also what does negative refer to? (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Added "balance" after "resources"
70	43461	24	3	9	3	9	saying that additional water flow in glaciers due to shrinking glaciers is "positive" is misleading… and depends a lot on when and how the water is released. GLOFs are not positive! (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Revised.
71	51447	24	3	9	3	9	As possible, the author team should consider further specifying the timeframe implied by "near future" and by "the long-term perspective." (Katharine Mach, IPCC WGII TSU)	Timeframe specified where relevant.
72	37364	24	3	10	0	11	Water saving technologies……..Does this include the effects of water reuse and desalination? If yes, sentence better be reworded. (So Kazama, Tohoku University)	Reworded.
73	45567	24	3	10	3	11	Considering 'farming systems' would be more appropriate than 'crops' (Thilak Mallawaarachchi, The University of Queensland)	Accepted. Revised.
74	53522	24	3	13	3	24	Please ensure consistency with chapter 7. Also, please provide time frame. (Kristie L. Ebi, IPCC WGII TSU)	Checked with chapter 7
75	43462	24	3	17	3	17	subscript the 2 on CO2 (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Thank you
76	42923	24	3	18	3	18	Change 'gainers' to 'winners' - here and elsewhere in the chapter (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Thanks
77	43187	24	3	20	3	20	The word "can" may be deleted (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Accepted. Revised.
78	43188	24	3	21	3	21	The word "could" may be deleted and the word "demands" may be replace with " demand" (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Accepted. Revised.
79	43189	24	3	22	3	22	The word "to" may be added before 50% (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Accepted. Revised.
80	43463	24	3	22	3	24	Why is there no mention of effects on food production due to aerosol effects on solar radiation? (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Done to the extent allowed by available literature.
81	36802	24	3	26	3	29	The sentence needs to be checked for clarity (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	The sentence was checked.
82	51448	24	3	26	3	43	If appropriate in any places, the author team might consider indicating differences in projected impacts across climate/socio-economic scenarios. Additionally on line 37, it may be helpful to clarify further if the differences "between different model projections" result from differences in representation of the processes within the models--or from differences in scenarios considered. (Katharine Mach, IPCC WGII TSU)	Revised.
83	53523	24	3	26	3	43	Please ensure consistency with chapter 4. (Kristie L. Ebi, IPCC WGII TSU)	Consistency was checked.
84	36798	24	3	36	3	36	Many models agree ….' is too vague. It does not give a sense of degree of agreement among the models. 'Most models…' may be more appropriate, if it is indeed so. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Done.
85	54528	24	3	36	3	36	Section 24.4.2.3.2 does not exist in the current draft (permafrost is an unnumbered subsection of 24.4.2.3). (Michael Mastrandrea, IPCC WGII TSU)	Done.
86	54530	24	3	45	3	46	The traceable account for this bold statement is unclear, based on the current discussion in the chapter text in section 24.4.3. Please clarify the basis for this finding in revisions to the chapter. (Michael Mastrandrea, IPCC WGII TSU)	Revised.
87	36799	24	3	45	3	50	The text in this paragraph lacks coherence. This is partly caused by the poor structure of sentences. Some of them are difficult to understand. E.g. 'Even most of the major deltas in Asia are now sinking at rates many times faster than the global sea level is rising.' and '….however, for coral reefs, where the temporal and spatial patterns of large-scale beaching events generally correlate well with higher than normal sea surface temperatures.' (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Revised.
88	53524	24	3	45	3	50	Please ensure consistency with chapter 5. Also, please specific which delta. (Kristie L. Ebi, IPCC WGII TSU)	Checked with chapter 5

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
89	51449	24	3	45	3	53	The author team should carefully consider the findings presented in bold on lines 45-46 and 52-53, as they very closely resemble findings from the special report on extremes. It would be greatly preferable to independently develop findings based on the assessment in this chapter. On line 46, it would be helpful to specify more precisely what is meant by "the delta"--is a given delta meant in particular, or is the author team referring to deltas in general? (Katharine Mach, IPCC WGII TSU)	Key message revised.
90	35179	24	3	46	0	0	.. the delta?' Which one? (David Dudgeon, University of Hong Kong)	See following response
91	43464	24	3	46	3	46	delta regions, not "the delta" (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Revised to delta regions
92	54529	24	3	47	3	49	A similar statement appears in the previous paragraph (lines 39-41). (Michael Mastrandrea, IPCC WGII TSU)	Revised.
93	36800	24	3	52	3	53	Here, food security is not really a sector, as water, agriculture, forestry, health, and tourism. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Deleted food security here
94	35885	24	3	52	4	2	In this paragraph about the impacts of extreme events in my oppinon flooding as a consequence of heavy precipitation or of cyclones needs to be included in regions such as Bangladesh. SREX actually reports on a projected increase of heavy precipitation in this region. (Wilhelm May, Danish Meteorological Institute)	Revised.
95	53525	24	3	52	4	2	Please ensure consistency with chapter 11. (Kristie L. Ebi, IPCC WGII TSU)	Checked with chapter 11.
96	54531	24	3	52	4	2	Please expand the line of sight reference to the traceable account for the bold statement in this paragraph in addition to the nonbold sentences. (Michael Mastrandrea, IPCC WGII TSU)	See above two comments.
97	43465	24	3	53	4	2	the parts that are not highlighted are only a small fraction of the highlighted opening of the paragraph, whereas in other paragraphs they are a detailed elaboration. (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Accept and consider to revise this para.
98	42170	24	4	0	0	0	No reference is given about AR4 and SREX in the References Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	Done.
99	46917	24	4	4	4	9	For this section, the main recommendation would be to include, as one major challenge facing the region, increasing hydropower development. As the region advances its hydropower development, there is growing concerns over how climate change increases the vulnerability of the region to project impacts. For example, plans to build the Mekong mainstream dams would exacerbate many of the vulnerabilities being experienced by climate change (see: Mekong River Commission's Strategic Environmental Assessment report, p.123, http://www.mrcmekong.org/news-and-events/consultations/strategic-environmental-assessment-of-mainstream-dams). Furthermore, studies have shown that the impacts of the operation of hydropower storage dams in the basin are much larger than the effects of climate change, which demonstrates increased attention and caution must be given in terms of how this is accounted for in terms of water governance and the use of hydropower dams as a possible adaptation tool (see: "Future Changes in Mekong River Hydrology" (2012), H. Lauri et al, Hydrol. Earth Syst. Sci. Discuss., 9, 6569–6614, http://www.hydrol-earth-syst-sci-discuss.net/9/6569/2012/). (Katy Yan, International Rivers)	Mentioned in case study.
100	53526	24	4	11	4	11	Any key findings on adaptation? There is a growing body of experience with CBA, vulnerability mapping, etc. (Kristie L. Ebi, IPCC WGII TSU)	Mentioned in livelihood section.
101	42647	24	4	18	4	18	"Asia in 2009" might be changed to "Asia in 2008" (Suam Kim, Pukyong National University)	Changed.
102	51450	24	4	32	0	0	Section 24.2. Throughout this section, the author team should italicize all calibrated uncertainty language associated with findings from the previous assessment reports--both in terms of the levels of confidence and the few instances of likelihood terms. Additionally, the references to chapters of past assessments are very precise, and it would be helpful to provide as well the recommended citations (by CLA last name) for each chapter. Also, it would be clearest to indicate that the references to the 4th assessment report pertain to the "WG2 AR4." (Katharine Mach, IPCC WGII TSU)	Accepted. All calibrated uncertainty language associated with findings from the previous assessment reports has been italicized for the next draft. Furthermore, it is additionally specified that the information is coming from WG2 report.
103	43466	24	4	32	6	39	text not very clearly written, hard to follow (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Accepted and revised. Next draft has been revised to improve the clarity of the text by establishing a more logical order of statements.
104	45663	24	4	34	0	0	Suggest to change the heading of subsection 24.2.1. to “Climate change, variability and extreme weather events” to be consistent with the actual text. (Xianfu Lu, ADB)	Accepted. The heading of subsection 24.2.1. has be changed to “Climate change, variability and extreme events”.
105	51451	24	4	37	0	0	It would be helpful to indicate the lower bound for this observed temperature more precisely--how much less than 1 degree? (Katharine Mach, IPCC WGII TSU)	Deleted. The original text was not that specific.
106	45308	24	4	52	4	53	"A decreasing trend was observed in rainfall in the South Asian and East Asian monsoons, due to a rise in sea-surface temperature [SREX, Chapter 3, 3.4.1]." It is not clear if this is referring to mean or extreme rainfall. Also the wording of the SREX highlights the uncertainties in understanding the links between SST and rainfall, and it might be more appropriate to replace the word "due" with "related to" or similar. (John Caesar, Met Office Hadley Centre)	Accepted and revised.
107	42602	24	5	2	5	5	The paper mentioned that 'The land area reaches a 1 m sea level rise in East Asia and the Pacific ,followed by south Asia'. To add the National Report and illustrate which time will rise 1 m are two issues needed to do now. (Juncheng Zuo, Hohai university)	This part of the chapter handles only conclusion from previous IPCC reports.
108	45664	24	5	7	0	0	Suggest to change “Climate change impacts” to ”Extreme weather events” (Xianfu Lu, ADB)	This paragraph does not focus on climate change, but rather on impacts caused by climate change, therefore the title will not be changed.
109	45665	24	5	19	0	0	Suggest to change the heading of subsection 24.2.2. to “to “Impacts, vulnerabilities and adaptation”. (Xianfu Lu, ADB)	This paragraph focuses explicitly on vulnerabilities and the adaptation strategies to reduce those vulnerabilities, therefore the title will not be changed.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
110	37063	24	5	21	5	23	Statement seems to be in contradiction with assessment in 24.4.4.2 (p.19, ln 9-28), where variable responses of crop yields to climate change are suggested, and no trend confirmed. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	This statement was taken from the main conclusions of AR4. Any discrepancy with other parts of the current draft could indicate a higher degree of uncertainty than previously considered.
111	42648	24	5	25	5	25	"in livestock, fishery, and aquaculture net primary productivity" might be changed to "in production in livestock, fishery, and aquaculture". (Suam Kim, Pukyong National University)	Accepted and revised.
112	42171	24	5	30	5	31	The sentence "Changes in the hydrological cycle, and therefore also changes in the water resources have been observed" may be re-phrased again as "Changes in the hydrological cycle with corresponding changes in the water resources have been observed" . (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	Accepted and revised.
113	35891	24	6	2	6	4	No mention of glacial discrepancies in the north-west Himalaya and Karakoram range? As this was a contraversial topic in the media's eye regarding AR4, I feel it is important to at least mention the uncertainty associated with glacial evolution in such regions, as well as the projected impact of this uncertainty on freshwater resources. See Janes & Bush (2012, In press, Journal of Climate, DOI:10.1175/JCLI-D-11-00436.1) (Tamara Janes, Met Office Hadley Centre)	This part of the chapter handles only conclusion from previous IPCC reports.
114	45564	24	6	14	6	39	For economies in transition, providing incentives and developing institutions to promote self-protection and mitigation as environmental conditions change would be a key adaptation strategy. (Thilak Mallawaarachchi, The University of Queensland)	This part of the chapter handles only conclusion from previous IPCC reports.
115	53527	24	6	42	7	35	Please ensure consistency with WGI. (Kristie L. Ebi, IPCC WGII TSU)	Accepted, and checked.
116	37088	24	6	42	7	36	Please add more references and their results. Such as Wang S.W. and Li W.J., eds, 2007, Climate of China, China Meteorological Press (in English), pp428; Ren G.Y., Ding Yi.H., Zhao Z.C., et al., 2012, Recent progress in studies of climate change in China, Advances in Atmospheric Sciences (in English), 29(5) (ZONG-CI ZHAO, National Climate Center)	Added.
117	45666	24	6	42	8	17	It would be helpful to summarize any new findings in terms of projected climate change (including extremes) with relation to what was reported in AR4. Although this is briefly covered in the FAQ, it would be helpful to provide slightly more detailed information on this (e.g., in a summary table). This is important because a lot of impact and adaptation assessments, particularly those at subnational levels, will continue to use AR4-assessed projections in the foreseeable future when AR5-assessed model outputs are gradually been used to derive regional scale climate scenarios. (Xianfu Lu, ADB)	New findings are summarized in ES.
118	51452	24	6	48	6	48	It would be preferable to indicate more specifically which studies are intended by the "several studies" mentioned here. (Katharine Mach, IPCC WGII TSU)	References are added.
119	43467	24	6	48	6	49	what fraction of tempereture records are in urban areas? (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	References are added.
120	45309	24	6	48	6	49	"Several studies pointed out the contribution of urban heat island to the increase in annual mean temperatures." Is this referring to localised increases, or a UHI impact on the global temperature record? Also, these studies should be cited individually. (John Caesar, Met Office Hadley Centre)	References are added.
121	42651	24	7	7	7	7	"South-East and North-West" might be changed to "Southeast and Northwest". (Suam Kim, Pukyong National University)	Follow to Table 24-1
122	51453	24	7	11	0	0	Section 24.3.2. Throughout this section, the author team should italicize all calibrated uncertainty language associated with findings from the special report on extremes. (Katharine Mach, IPCC WGII TSU)	Accepted. All calibrated uncertainty language associated with findings from the previous assessment reports has be been italicized for the next draft.
123	44854	24	7	11	7	35	Section 24.3.2 on Observed changes in Extreme Climatic Events would benefit from a mention of (or explicit discussion of) the Monsoon, and how this relates to temperature/precipitation changes. (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	Accepted. Suggestion has been be considered for the next draft. Further literature review focuses on finding relevant data on the relation between monsoons and temperature/precipitation changes.
124	42649	24	7	27	7	30	In 24.3.2., the frequency of typhoon or supertyphoon ocurrences can be added under Heavy precipitation section. (Suam Kim, Pukyong National University)	Added into Cyclones section.
125	45310	24	7	27	7	30	Does heavy precipitation here refer to the commonly used definition of the number of days with over 10mm of rainfall, or a more general definition? Otherwise this section should be retitled as "Precipitation Extremes", and more discussion should be given related to the differing aspects of extreme precipitation e.g. indices of intensity, frequency or duration (e.g. consecutive wet days). (John Caesar, Met Office Hadley Centre)	Accepted.
126	53528	24	7	38	8	2	This also is covered in chapter 1. Please ensure consistency. (Kristie L. Ebi, IPCC WGII TSU)	Accepted.
127	42650	24	7	40	7	52	Delete from "Since the AR4 was .... (Moss et al., 2010). In addition,". (Suam Kim, Pukyong National University)	Accepted.
128	51454	24	7	42	7	42	The chapter reference provided at the end of this line should be clarified. (Katharine Mach, IPCC WGII TSU)	Accepted.
129	40579	24	8	5	0	0	East Asian rainy season, Meiyu or Baiu is projected to change in structre as we ll as in intensity, duration, and so on. These results may be included in the following article: Sachie Kanada, Masuo Nakano and Teruyuki Kato: “Changes in mean atmospheric structures around Japan during July due to global warming in regional climate experiments using a cloud-system resolving model”, Hydrological Research Letters, Vol. 4, pp.11-14, (2010) . (Toshiyuki Nakaegawa, Meteorological Research Institute)	This section refers to WG 1, Ch 14.
130	36773	24	8	5	8	15	Here, authors should highlight the differences and/or consistence of the AR5 projections compared with AR4. It is important to highlight what is new in AR5. Besides, the summary of the findings from AR4 is too long and lacks a clear story line. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	This section refers to WG 1, Ch 14.
131	35886	24	8	7	8	15	The projected changes summarized in Table 24-4 are all based on different SRRES-scenarios. Having the RCP-scenarios introduced in the preceeding paragraph, I think this neds to be mentioned, when introducing this table. (Wilhelm May, Danish Meteorological Institute)	This section refers to WG 1, Ch 14.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
132	35887	24	8	7	8	15	I can see the point of giving detailed information on the projected future changes in climate collated for specific sub-regions. However, I think it would be quite useful to give here an overall picture of the projected changes in Asia as reoported by WG I. (Wilhelm May, Danish Meteorological Institute)	Accepted.
133	51455	24	8	8	8	8	If not explicit regional trends, are there any generalizable patterns or differences across scenarios? (Katharine Mach, IPCC WGII TSU)	New figure was added to show regional trends.
134	45667	24	8	18	32	40	Discussions on projected impacts and vulnerabilities to drivers for different sectors could be enhanced by linking, whenever possible, reported impacts and vulnerabilities to projected changes in climate change parametres and socioeconomic indicators as appropriate. This would lead to knowledge about the sectoral implications of projected climatic and socio-economic changes, which arguably more decision relevant. (Xianfu Lu, ADB)	Accepted and changed wherever relevant.
135	44855	24	8	24	8	45	However, this increased run-off from glacial melts is not a consistent observation across the region mentioned here, for instance for areas that are in the 'rain shadow' of the monsoon (e.g. north-west Nepal into the Mt Kailash region) it is not the case. See Roman, C., & McEvoy, D. (2011). Kailash Sacred Landscape Conservation Initiative (KSLCI) Strengthening Project - Nepal. Climate Change and Tourism - Final Report. Melbourne: Climate Change Adaptation Program, Global Cities Research Institute, Royal Melbourne Institute of Technology (RMIT) University (avaliable from http://global-cities.info/wp-content/uploads/2011/10/KSL_tourism-Nepal_FINAL_report.pdf). (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	We try not cite grey literature if possible. And we have high confidence with this general statement about increased run-off from glacier retreat.
136	37365	24	8	25	0	27	It is better if the water stress and scarcity thresholds are mentioned so that readers can understand the severity of the situation in countries with low renewable annual per capita water resources. (e.g., Water barrier differentiation proposed by Falkenmark, 1989) (So Kazama, Tohoku University)	Accepted, referred the latest index study from Pfister et al., 2009
137	44428	24	8	26	8	27	Should "m3" be changed to "m3". The sentence makes more sense if it is changed in this way. (Tae sung Cheong, National Disaster Management Institute)	Accepted and changed.
138	51456	24	8	26	8	27	Given that Asia has been described as containing 51 countries in the context of the chapter, it would be helpful to clarify which countries are not considered in this statement. (Katharine Mach, IPCC WGII TSU)	Deleted the whole sentence as the original data is from a grey literature.
139	40580	24	8	30	0	0	For the middle East, the following article may be cited: Akio Kitoh, Akiyo Yatagai and Pinhas Alpert: “First super-high-resolution model projection that the ancient “Fertile Crescent” will disappear in this century”, Hydrological Research Letters, Vol. 2, pp.1-4, (2008) . (Toshiyuki Nakaegawa, Meteorological Research Institute)	Accepted and inserted.
140	53529	24	8	39	8	52	Please ensure statements attributing impacts to climate change are supported by the literature and are what you intended (e.g. lines 41 and 50). (Kristie L. Ebi, IPCC WGII TSU)	Accepted and changed.
141	41638	24	8	41	0	0	Brutsaert and Fujita paper presents marked decline in underground terrestrial water storage in pristine area in upper Mongolia only during the past decade; observed impact s during recent period only. (Lourdes Tibig, The Manila Observatory)	Accepted and changed.
142	41637	24	8	41	8	42	Lacking confidence statements in detection and attribution (Lourdes Tibig, The Manila Observatory)	Accepted and changed.
143	41639	24	8	42	8	45	High agreement, robust evidence; thus high confidence, in the Himalayas and Central Asia (Lourdes Tibig, The Manila Observatory)	Accepted and changed.
144	43190	24	8	43	8	43	"Shrinkage of glacier Is observed" may be replaced with " shrinkage of glaciers are observed" (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Accepted and changed.
145	35892	24	8	43	8	45	As above, I'm concerned there is no mention of glacial observations in the Karakoram/NW Himalayan range, as there has not necessarily been a shrinkage of glaciers in these areas, leading to potentially reduced river runoff and freshwater resources in these areas. But apologies if this has been mentioned elsewhere in AR5! (Tamara Janes, Met Office Hadley Centre)	Himalayan glacier will be mentioned in Ch. 3 case study.
146	41640	24	8	45	8	49	Lacking confidence statements in detection and attribution (Lourdes Tibig, The Manila Observatory)	Accepted and changed.
147	35180	24	8	46	0	0	Oxygen is not a dimension of water quality, and I am doubtful it is correlated with predicitation. (David Dudgeon, University of Hong Kong)	Accepted and changed.
148	35181	24	8	48	0	0	How does carbon (in what form --- dissolved or particulate?) incease health risk? The assetions in this section seem dubious. (David Dudgeon, University of Hong Kong)	accepted and partly changed as here means degradation of water quality may increase health risk, not carbon. Changed accordingly.
149	41641	24	8	48	0	0	Reported changes in nutrient were only during storms events in central Japan (Zhang wet al, 2007b) (Lourdes Tibig, The Manila Observatory)	Accepted and changed.
150	37366	24	8	49	0	50	Water quality in groundwater is related to climate change..... References were given for the Turbidity (Thakue and Ojha, 2010) and Arsenic (Wnkel et al., 2011; Fendorf et al., 2010) issues. However, groundwater temperature is also an important quality parameter found to be vulnerable under changing climate (potential to increase 1.0-4.3°C by the 2100 as estimated by Gunawardhana and Kazama 2012, Global and Planetary Change, Vol 86-87, pp 66-78). (So Kazama, Tohoku University)	Accepted and changed.
151	41642	24	8	52	0	0	Not observed impacts of climate change (Lourdes Tibig, The Manila Observatory)	Accepted and changed.
152	36797	24	9	0	0	0	It would be good to include a Table in Section 24.4.3 for the projected impact on the major rivers in Asia. This can help gain a general picture of the possible impact. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Accepted and changed.
153	40581	24	9	1	0	0	The following article may be cited in this section: Kwak, Y., K. Takeuchi, K. Fukami, and J. Magome 2012: A new approach to flood risk assessment in Asia-Pacific region based on MRI-AGCM outputs. Hydrological Research Letters 6, 70–75.doi: 10.3178/HRL.6.70 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Accepted and changed.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
154	40582	24	9	1	0	0	Same as above. Kure, S., and T. Tebakari 2012: Hydrological impact of regional climate change in the Chao Phraya RiverBasin, Thailand. Hydrological Research Letters 6, 53–58. DOI: 10.3178/HRL.6.53 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Accepted and changed.
155	45967	24	9	1	9	27	Mention that Bhutan, currently engaged in expanding its hydropower production to generate revenue and to support low-carbon energy production, faces threats to the viability of this production because of declining water resources due to glacier retreat. Bolch, T., A. Kulkarni, A. Kaab, C. Huggel, F. Paul, J. G. Cogley, H. Frey, J. S. Kargel, K. Fujita, M. Scheel, S. Bajracharya and M. Stoffel (2012). "The State and Fate of Himalayan Glaciers." Science 336(6079): 310-314. (Ben Orlove, Columbia University)	Himalayan glacier will be mentioned in Ch. 3 case study.
156	53530	24	9	1	9	27	Please ensure consistency with WGI. Also, are the projections based on CMIP3? (Kristie L. Ebi, IPCC WGII TSU)	Most of the studies are based on CMIP3 as CMIP5 results is only recenly available.
157	44429	24	9	9	9	9	Should use RCP scenarios to provide key messages and conclusions. (Tae sung Cheong, National Disaster Management Institute)	Most of the studies are based on old SRES scenarios only.
158	43191	24	9	13	9	13	The sentense is incomplete and need to be completed (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Accepted and changed.
159	37367	24	9	14	0	0	Please mention the country that locates Mahanadi River Basin. (So Kazama, Tohoku University)	Accepted and changed.
160	35182	24	9	24	0	25	What are 'coastal freshwater resources'? (David Dudgeon, University of Hong Kong)	Accepted and changed to freshwater resources in coastal area.
161	37733	24	9	24	9	27	I don't think that fresh groundwater is highly available in Japan. During the second half of the 20th century, so many places especially in the coastal area suffered from land-subsidence due to over-intake of the groundwater. For this reason, intake of groundwater is strictly restricted in those places. In addition, I don't think the coastal areas of Japan have lower population density. (Tsuneyoshi Mochizuki, Japan River Association)	Accepted and changed.
162	35183	24	9	26	0	0	a good place'? (David Dudgeon, University of Hong Kong)	Accepted and changed.
163	36774	24	9	30	9	35	The assessment here should be more specific in terms of the extent of the vulnerabilities. The current text is too general and provides little specific and/or new information. This comment also applies to other sectors concerning vulnerabilities. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Accepted and changed.
164	36803	24	9	30	9	35	Section 24.4.1.4 Vulnerabilities to Key Drivers. From the text presented, it is difficult to get an idea about what key drivers are here. The section is too brief and provides almost no specific information on the matter concerned, but some general statements that come from common sense. The similar problem also exists in other sections concerning Vulnerabilities to Key Drivers. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Accepted and changed.
165	48740	24	9	30	9	35	Information on snow water and river discharge are important to adaptaion and mitigation researches in freshwater resources and winter tourism. Other regional chapters, such as Europe, Australasia, Northe America, and Polar Regions have minute descriptions on these climate parameters. This chapter "Asia" also should contain a detailed description on snow water and river discharge, such as "Snowfall and snow melting is estimated to be very sensitive to the warming because surface air temperature in heavy snow regions in Monsoon Asia is near 0°C even during winter. The seasonal cycle of the river runoff would be modified and affect water management in western part of Japan. (Hara et al., 2008, Ma et al. 2010, and Kawase et al., 2012)". References: Hara, M., T. Yoshikane, H. Kawase, and F. Kimura 2008: Estimation of the impact of global warming on snow depth in Japan by the Pseudo-Global-Warming method, Hydrological Research Letter, 2, 61-64, doi:10.3178/hrl.2.61 Ma, X., T. Yoshikane, M. Hara, Y, Wakazuki, H. G. Takahashi, and F. Kimura 2010: Hydrological response to future climate change in the Agano River basin, Japan, Hydrological Research Letters, 4, 25-29, doi:10.3178/hrl.4.25 Kawase, H., T. Yoshikane, M. Hara, M. Fujita, N. N. Ishizaki, F. Kimura, H. Hatsushika, 2012: Downscaling of Snow Cover Changes in the Late 20th Century Using a Past Climate Simulation Method over Central Japan, Scientific Online Letters on the Atmosphere, 8, pp. 61-64, doi:10.2151/sola.2012-016 (Masayuki Hara, Japan Agency for Marine-Earth Science and Technology)	Accepted and changed.
166	40584	24	9	32	0	0	Although I don't know the detail, the following article may reinforce the statement: Yamanaka, T., Y. Wakiyama, K. Suzuki, 2012 "Is snowmelt runoff timing in the Japanese Alps region shifting toward earlier?" Hydrological Research Letters. Submitted. Please contact the first author: tyam@suiri.tsukuba.ac.jp (Toshiyuki Nakaegawa, Meteorological Research Institute)	Accepted and changed.
167	35184	24	9	32	0	33	The infuences are not all a response to changes in the monsoon. Some are a direct consequence of higher temperatures. The content of 24.4.1.4 does not seem related to the title. (David Dudgeon, University of Hong Kong)	Accepted and changed.
168	51457	24	9	32	9	32	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Accepted and changed.
169	53531	24	9	32	9	33	Which watershed? (Kristie L. Ebi, IPCC WGII TSU)	Accepted and changed.
170	43192	24	9	32	9	35	Text from line 32 to 35 under section 24.4.1.4 may be elaborated more including examples of rivers being fed by glacier melt and snow melt (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Accepted and changed.
171	37734	24	9	40	9	46	What is the meaning of "reservoirs might have an increasing role where water stress is an issue of distribution"? The expression is very ambiguous, so this part needs clarified in detail. (Tsuneyoshi Mochizuki, Japan River Association)	Accepted and changed.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
172	46918	24	9	40	9	50	This section should also recognize the role that dam reservoirs can play in exacerbating climate change impacts or even contribute to rising emissions. Research by Ivan Lima and colleagues from Brazil's National Institute for Space Research (INPE) estimates that India's large dams could be responsible for 19% of the country's total global warming impact, making them the region's largest global warming contributor. Their study showed that total methane emissions from India's large dams could be 33.5 million tonnes (MT) per annum, including emissions from reservoirs (1.1MT), spillways (13.2 MT) and turbines of hydropower dams (19.2 MT). See: Ivan B.T. Lima et al. (2007) "Methane Emissions from Large Dams as Renewable Energy Resources: A Developing Nation Perspective,"Mitigation and Adaptation Strategies for Global Change, published on-line March 2007 (http://ecologia.icb.ufmg.br/~rpcoelho/Congressos/DGL2008/Reservoirs%20GHG%20emiissions/Global%20change%202008%20ok.pdf.) (Katy Yan, International Rivers)	This part discusses the adaptation to water shortage not climate change, this could be include on other parts is necessary.
173	37368	24	9	52	10	4	Please consider other types of hazards attributed to extreme rainfall variations as well (e.g., slope failure and sedimentation hazards as in Ono et al., (2011) (K. Ono, T. Akimoto, L. N. Gunawardhana, S. Kazama, and S. Kawagoe, Distributed specific sediment yield estimations in Japan attributed to extreme-rainfall-induced slope failures under a changing climate, Hydrology and Earth System Science, Vol.15, pp.197-207, 2011.) (So Kazama, Tohoku University)	Accepted and changed.
174	46919	24	9	52	10	4	The planned increase in hydropower capacity in the Himalayan region could increase dam safety and food security risks in light of climate change. These risks should be recognized when adaptation options involving investing in river storage and regulation are proposed. For instance, the government of Pakistan is planning at least ten dams in the Indus Basin in the next few years, hoping to generate a total of 20,000 MW. Existing dams in the country have already dramatically altered river and silt flows. Key issues from existing damming include rivers that are eroding their banks, sinking deltas, and the intrusion of sea water into deltas and aquifers. These changes will worsen the already daunting impacts of climate change. In Bangladesh, dams that hold back water and sediment in the upper reaches of the Ganges-Brahmaputra-Meghna Basins will increase Bangladesh's risk of waterlogging and flooding. Rising sea levels and myriad natural disasters have interrupted agriculture and challenged water resources, health, and energy supply. More than 150,000 MW of new hydropower are proposed in the next 20 years in the Himalayas. (Katy Yan, International Rivers)	Accepted and partly changed as hydropower capacity and impact on food through irrigatable water is not assessed in this section due to lack of accurate information.
175	35185	24	9	53	0	0	Is this a river in Sarawak? (I think yes.) Or a river called the Sarawak River? (David Dudgeon, University of Hong Kong)	Accepted and changed.
176	43193	24	10	31	10	31	Indus River System may be added as it supports the livelihood about 18 million people (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Agree.
177	53532	24	10	38	0	0	Please ensure this section is consistent with WGI and with the relevant chapters of WGII. Alos, please ensure statements attributing impacts to climate change are supported by the literature and are what you attended. (Kristie L. Ebi, IPCC WGII TSU)	There are references to WG1 AR5 and WG2 AR5 chapters in this section. Attribution: will be checked again.
178	41643	24	10	40	10	46	Are there studies (references) that support these statements ? (Lourdes Tibig, The Manila Observatory)	Yes, in the WG1 ZOD.
179	42172	24	10	41	0	0	"ZOD" should be detailed as Zero Order Draft once on page no. 10 and line no. 41 (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	Agree but will be updated.
180	51458	24	10	41	10	41	It would be preferable to provide a more specific citation to the relevant chapter here, along with updating it to the most recent draft. (Katharine Mach, IPCC WGII TSU)	Yes, as soon as it is available.
181	41644	24	10	45	10	46	Feely et al, 2007 study presents results using a very short study period which contradict previous studies reporting accelerating growth rates in tropical forests purported to be caused by increasing concentration of atmospheric CO2 and carbon fertilization effects (Lourdes Tibig, The Manila Observatory)	Page 11, line 7? Agreed, but there is some support for this from the Neotropics. The CO2 fertilization data is at least equally controversial.
182	35186	24	10	46	0	0	I am dountful that changes in inland water systesm due to climate change have been 'widely reported' across Asia. In a few places, maybe. (David Dudgeon, University of Hong Kong)	Remove 'widely'.
183	41645	24	10	50	10	54	Lacking confidence statements in detection and attribution (Lourdes Tibig, The Manila Observatory)	Confidence statements on DnA included where possible.
184	35187	24	10	51	0	0	What animals? Ectotherms? This whole papragraph needs clarification and editing. (David Dudgeon, University of Hong Kong)	Will re-write to clarify.
185	41646	24	11	1	11	4	What are these impacts of regional warming on trends of phenological warming that arewidespread in northern China and Japan? No references for the reported trends in phenological timing? (Lourdes Tibig, The Manila Observatory)	Will re-write to clarify.
186	42173	24	11	6	0	0	"NPP" is used as abbreviation but its detail as "Net Primary Production" should be quoted at the same place (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	Agree.
187	41647	24	11	6	11	14	Lacking confidence statements-high agreement and robust evidence, in particular the satellite measured changes. (Lourdes Tibig, The Manila Observatory)	Confidence statements on DnA included where possible.
188	35188	24	11	12	0	14	I cannot make sense of this sentence; the end and beginning seem to contradict. (David Dudgeon, University of Hong Kong)	Will re-write to clarify.
189	41648	24	11	16	11	46	Lacking confidence statements in detection and attribution -high agreement and robust evidence in the observation that there have been changes in the distribution of species and biome, such as modification of landscapes across mountain ranges in southern Siberia, upward shift of treelines, and the expansion of species in the tropical montane of KInabalu. (Lourdes Tibig, The Manila Observatory)	We can consider some confidence statements.
190	35189	24	11	17	0	0	My recollection of the Bickford et al paper is that by no means all of the chages they recorded were upward. (David Dudgeon, University of Hong Kong)	True, but unfortunately, the full data has not yet been published. DD has probably seen an oral presentation.
191	35190	24	11	24	0	0	388 m? That is remarkable as it is perhaps 10 m per year (see also line 42 for poleward expansion). (David Dudgeon, University of Hong Kong)	Checked again line 42 for poleward expansion. It corresponds to the literature quoted.
192	41649	24	11	48	11	56	Lacking confidence statements (Lourdes Tibig, The Manila Observatory)	Confidence statements on DnA included where possible.
193	41650	24	12	2	12	19	Hgh agreement, robust evidence in the observed impacts on permafrost degradation (Lourdes Tibig, The Manila Observatory)	A confidence statement could be cosidered.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
194	41651	24	12	21	12	34	High confidence in detection with low to medium confidence in attribution (Lourdes Tibig, The Manila Observatory)	Will check this.
195	41652	24	12	32	12	34	This observed impact (Cheng and Wu, 2007) should bbe a part of impacts of climate change on groundwater resources. (Lourdes Tibig, The Manila Observatory)	Suggestion was accepted. Revised.
196	41653	24	12	35	0	0	Wang et al, 2011 should be a part of impact on tundra ecosystems (e.g., degradation/decrease of the area of alpine meadow and alpine swamp) (Lourdes Tibig, The Manila Observatory)	This is true for Wang et al, 2011a. No changes should be made, I guess.
197	53533	24	12	47	0	0	Please ensure this section provides information on time slice, scenarios, and other critical assumptions, and is consistent with relevant chapters. (Kristie L. Ebi, IPCC WGII TSU)	Checked again.
198	51459	24	13	15	13	20	As supported by the underlying literature, it would be preferable to specify the relevant climate/socio-economic scenarios for these projections. (Katharine Mach, IPCC WGII TSU)	In the piece of text in question it is written that models vary in accordance with their structure as well as biome classifications, climatic projections, CO2 level and other characteristics used as inputs, the magnitude of the forest expansion varies greatly across models. It is explained why projections provided by different models are different. It would add no value to specify climate/socio-economic scenarios for these models. Comment could be declined.
199	53534	24	13	15	13	37	The results on tundra impacts appear inconsistent (15-24 vs 33-34). (Kristie L. Ebi, IPCC WGII TSU)	Piece of text on p. 13, lines 15-24 is about tundra, piece of text on p.13, lines 33-34 is about steppe. No change should be done.
200	35191	24	14	7	0	0	widespread losses in bat diversity' is a bit vague. Is this the same as declines in species richness over large areas? And no poleward shifts? (David Dudgeon, University of Hong Kong)	Will expand to clarify.
201	51460	24	14	12	14	15	For this projection, it would be helpful to indicate how the values projected varied across the 2 scenarios considered. (Katharine Mach, IPCC WGII TSU)	Will add.
202	36722	24	14	17	14	19	This statement regarding the decrease in the permafrost area by 2100 in the northern hemisphere is likely incorrect or an incorrect interpretation of the results presented in Schaefer et al (2011). These studies usually only consider the upper part of the permafrost and therefore can only make conculsions about the loss of permafrost in the upper few metres. They often use the term near-surface permafrost. They do not model to of 100 m and greater which is necessary to determine if permafrost will completely disappear over large areas. The permafrost may be degrading over this large area by 2100 but it is unlikely that it will be completely thawed as there are important lag effects etc. which will not be properly considered in models that do not consider the deeper ground. (Sharon Smith, Geological Survey of Canada)	Checked.
203	51461	24	14	17	14	20	As can be supported by the cited source, the author team could provide further indication of which mentioned drivers are most important in determining outcomes across the ranges provided. (Katharine Mach, IPCC WGII TSU)	Checked.
204	53535	24	14	17	14	37	This also is covered on page 12. (Kristie L. Ebi, IPCC WGII TSU)	Will compare.
205	53536	24	14	32	14	33	References are needed. (Kristie L. Ebi, IPCC WGII TSU)	Reference (Romanovsky et al., 2008, with supplement) can be added.
206	53537	24	14	51	14	52	References are needed. (Kristie L. Ebi, IPCC WGII TSU)	Will add. Dudgeon 2011or more recent.
207	35192	24	14	52	0	53	the dominance or ectotherms is typical of all systems (e.g. insects on land) (David Dudgeon, University of Hong Kong)	Strictly true, but birds and mammals are important on land. Will re-word.
208	51462	24	14	54	14	54	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Changed after checking.
209	48304	24	15	0	0	0	Please add a section about the water stress of South Asia. Projections have found that water stress of South Asia will increase (Malini Nair, Indian Institute of Science)	I cannot find a good reference for this. The projections and observations don't seem to agree for S Asia [G&R]
210	35193	24	15	1	0	6	There will be consequential effects on inundation regimes of seasonal wetlands, including changes infrequency and duration of periods of dryness/wetness (David Dudgeon, University of Hong Kong)	Added.
211	35194	24	15	7	0	0	But no other lakes? What about Tonle Sap on Dongting & Poyang? Plus central Asian salt lakes? (David Dudgeon, University of Hong Kong)	Added more on other lakes.
212	35195	24	15	13	0	0	Species extinctions the most likely ireversible change? Surely this applies throughout this document - it is odd to see it singled out here. (David Dudgeon, University of Hong Kong)	They are most relevant here.
213	53538	24	15	18	15	40	Please ensure consistency with WGI and relevant chapters in WGII. (Kristie L. Ebi, IPCC WGII TSU)	Checked.
214	36723	24	15	22	15	22	The term "melting permafrost" is incorrect terminology as the soil does not change phase - only the ice in the ground melts. Please use the term "thawing permafrost" instead. See Grosse et al. (2010) for more information on correct terminology. This revision may be required elsewhere in the text. Ref: Grosse, G., Romanovsky, V., Nelson, F.E., and Lewkowicz, A.G. 2010. Why permafrost is thawing, not melting. EOS Transactions of the American Geophysical Union, 91(9): 87. (Sharon Smith, Geological Survey of Canada)	Changed.
215	35196	24	15	24	0	26	This applies equally to species 'trapped' in lakes. (David Dudgeon, University of Hong Kong)	Requested for reference
216	51463	24	15	32	15	32	It would be helpful to specify more precisely the characteristics (magnitude in addition to overall type) of the "far-reaching consequences." (Katharine Mach, IPCC WGII TSU)	Expanded to clarify.
217	51464	24	15	33	15	33	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Checked.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
218	35197	24	15	54	0	0	While true of PNG, surely these three strategies would apply everywhere. (David Dudgeon, University of Hong Kong)	Yes, but we can only review the literature.
219	35198	24	16	16	0	17	Possible for all species? Probably only practical for a limited subset. (David Dudgeon, University of Hong Kong)	Will add 'some of'
220	53539	24	16	27	0	0	Please ensure consistency with WGI and with chapter 5. (Kristie L. Ebi, IPCC WGII TSU)	Will do.
221	41654	24	16	52	16	54	Low confidence in detection with very low confidence in attribution (Lourdes Tibig, The Manila Observatory)	I disagree.
222	51465	24	16	54	16	54	Would it be more accurate here to indicate that coastal subsidence has had an effect of greater magnitude than has climate change, instead of implying that coastal subsidence has been solely responsible and climate change has had no effect? (Katharine Mach, IPCC WGII TSU)	I think we say this already but I will clarify.
223	35199	24	17	5	0	7	There appear two be two mechanisms cited for the same phenomenon; temperature and herbivory. If the former drives the latter, this needs clarification. (David Dudgeon, University of Hong Kong)	Will clarify.
224	35200	24	17	12	0	19	Here it is not quite clear whether the erosion is of the coast, or of the ice covering the coast. I assume the former. But what does permafrost have to do with it (line 13) and what is a segment (line 16)? (David Dudgeon, University of Hong Kong)	Yes, this is about the coast. Erosion processes for frozen and unfrozen coast are different. Will check segments.
225	41655	24	17	12	17	15	There is no detected increased coastal retreat of crygenic processes in Are paper The influence is mainly on the profile shape and that all changes in profile shape caused by cryogenic process are short-lived. (Lourdes Tibig, The Manila Observatory)	Checked.
226	41656	24	17	15	17	17	Lantuit et al, 2012 study only provides a baseline for future comparative investigation (Lourdes Tibig, The Manila Observatory)	Checked.
227	51466	24	17	16	17	16	If possible, it would be helpful to give more specific indication of the extent of the high erosion rates introduced on this line--can the number of segments be specified more precisely in terms of length of coastline? (Katharine Mach, IPCC WGII TSU)	Will check segments.
228	51467	24	17	24	17	38	For this paragraph, the author team may wish to consider and cross-reference chapter 6 as well as 30. (Katharine Mach, IPCC WGII TSU)	The commented aspect was done.
229	35201	24	17	37	0	38	The is a considerable amount of repetition in the chapter; this exact point was made earlier, and supported by the same reference. (David Dudgeon, University of Hong Kong)	Will remove one.
230	37516	24	17	40	17	44	Perhaps relevant to mention that we do have evidence for the effects of rising sealevel on shallow intertidal coral reefs (which are important sea-defences) that shows that they benefit from elevated sea levels at least in the short-term(see Brown et al (2011) . Increased sea level promotes coral cover on shallow reef flats in the Andaman Sea, eastern Indian Ocean Coral Reefs 30:867-878 - which is exactly in line with the earlier predictions of Buddemeier RW and Smith SV (1988) Coral reef growth in an era of rapidly rising sea level: predictions and suggestions for long-term research. Coral Reefs 7:51-56 (Barbara Brown, University of Newcastle)	Will read these references and change the text.
231	36724	24	18	12	18	12	What is meant by "loose permafrost blocks". Do you mean blocks of frozen material. Are you referring to rocks or frozen unconsolidated sediments that are hard like rocks? (Sharon Smith, Geological Survey of Canada)	There is "loose permafrost rocks", not "loose permafrost blocks".
232	51468	24	18	18	18	22	For this paragraph, the author team may wish to consider and cross-reference chapters 6 and 30. (Katharine Mach, IPCC WGII TSU)	The commented aspect was done.
233	42652	24	18	27	18	27	"Offshore marine systems" might be changed to "Marine ecosystems". (Suam Kim, Pukyong National University)	Disagreed: We mean offshore.
234	42733	24	18	35	0	0	Section 24.4.3.5: Could the authors make a brief introduction on problems in developed cities or countries, such as mega cities in Japan? There are many aging coastal defenses which need the expensive repair and reconstruction costs. This situation as well as aging of population and slow economic growth or decline will make it difficult to upgrade the defenses. (Hiroyasu Kawai, Port and Airport Research Institute)	Not in this section.
235	38605	24	18	48	0	0	In the section 24.4.4 on Food Production Systems and food Security, please consider Yu, W.H., et al. (2010): Climate Change Risks and Food Security in Bangladesh. London: Earthscan Publishers. (Susmita Dasgupta, The World Bank)	Cannot access this book
236	53540	24	18	48	0	0	Please ensure consistency with chapter 7. An issue not discussed is cash crops and what may happen with climate change. (Kristie L. Ebi, IPCC WGII TSU)	Agree
237	42333	24	19	9	0	0	24.4.4.2.Observed Impacts I propose that following sentences are inserted in this section: Crop responses to high temperatures can be accurately estimated from ecological experiments in controlled environments; however, such experiments are not feasible given the abundant crops. The general effects of global warming on a wide variety of crops can be estimated by collecting and analyzing data from various agricultural systems on production changes due to regional recent temperature rises. In Japan where mean air temperature has risen at 1 ºC per the past 100 years, information on changes of agricultural production (cereal, soybean, fruit tree, vegetable and livestock), were collected by surveys of the public institutes of agricultural research in 47 prefectures. Recent effects of warming were analyzed by comparing those data to literature on relation between crop growth and temperature(Sugiura, et al, 2012). Reference Sugiura, T., H. Sumida, S. Yokoyama, and H.Ono, 2012: Overview of recent effects of global warming on agricultural production in Japan. JARQ, 46(1), 7-13. (http://www.jircas.affrc.go.jp/english/publication/jarq/46-1/46-01-02.pdf) (Toshihiko Sugiura, National Agriculture and Food Research Organization, Institute of Fruit Tree Science)	Text revised
238	41657	24	19	13	19	15	Not obsereved impacts of climate change (Lourdes Tibig, The Manila Observatory)	Will check this
239	42924	24	19	16	19	16	Note new! (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Will check this
240	41658	24	19	18	19	22	Not observed impacts of climate change (Lourdes Tibig, The Manila Observatory)	Will check this
241	41659	24	19	25	19	27	Not enough evidence for observed impacts (See Box 18-4 Detection, Attribution and TraditionalEcological Knowledge (TEK) , FOD (Lourdes Tibig, The Manila Observatory)	Will check this
242	42925	24	19	31	0	0	Change 'gainers' to 'winners' - here and elsewhere in the chapter (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Text revised

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
243	53541	24	19	31	0	0	Please ensure this section provides information on time slice, scenarios, and other critical assumptions, and is consistent with relevant chapters. Results in some of the subsections could be summarized in a table. (Kristie L. Ebi, IPCC WGII TSU)	Agree
244	42926	24	19	35	0	0	(Reference) after 'review paper' (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Text revised
245	42927	24	19	36	0	0	Cross reference to food security chapter (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Ref to chap 7 added
246	42928	24	19	45	0	46	The results here look unusual - check. (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	The results are correct
247	44430	24	20	1	20	1	Should "sorghum" be changed to "SORGHUM". The sentence makes more sense if it is changed in this way. (Tae sung Cheong, National Disaster Management Institute)	The text is fine
248	54527	24	20	4	20	6	Please compare this statement with that on page 21, lines 43-47, to ensure consistency. (Michael Mastrandrea, IPCC WGII TSU)	This has been done
249	37369	24	20	8	0	21	please explain the time frames for the increase and decrease rice yield projections. (So Kazama, Tohoku University)	Agree
250	51469	24	20	11	20	12	For this projection, the author team should specify the relevant time frame as appropriate. (Katharine Mach, IPCC WGII TSU)	Agree
251	36776	24	20	37	20	37	Huang-Hai Plain should be Huang-Huai-Hai Plain. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Text revised
252	51470	24	20	37	20	40	It would be helpful to specify the differences in the projections for the 2 scenarios used in the cited analysis. (Katharine Mach, IPCC WGII TSU)	Difference not significant
253	37370	24	20	44	0	53	same as above (So Kazama, Tohoku University)	Agree
254	51471	24	20	44	20	47	For this example, the author team should specify what the acronym RYC stands for. Additionally, as possible, the author team should indicate the key drivers that resulted in the large range of projections obtained. That is, what combination of parameters led to the lowest projected value versus the highest? (Katharine Mach, IPCC WGII TSU)	RYC has been defined in the text.
255	36777	24	20	44	20	52	There are Liu et al., 2010a, b, c in the reference list. Specify which one(s) is referred to here. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Agree
256	46337	24	21	0	21	0	(The following refernce can be added). In Pakistan modeling studies show that wheat yields are expected to decline by 6-8 % under B2 and A2 scenarios respectively by the 2080s. Where as rice yirlds tend to decline by 16-19% under B2 and A2 scenarios by 2080s (iqbal et.al. 2009) [Iqbal, M. M., M. A. Goheer andb A. M. Khan. 2009. Climate change aspersions on food security of Pakistan. Science Vision, 15, 15-23. (Arif Goheer, Global Change Impact Studies Centre (GCISC))	Text added
257	46972	24	21	10	21	12	The number of people died in SIDR is shown as "more than 3000" which is contradictory to the other parts of this report (Chapter 11, page 32, line 11) where this figure is 5-10,000. However, according to Paul (2009), this number is 3406 and according to Islam (2011) this number is 3447 which seems realistic. Reference-1: Islam, A.S., Bala, S.K. Hussain, M. A., Hossain, M.A. and Rahman, M. (2011), "Field investigation on the performances of the coastal structures during Cyclone SIDR", Natural Hazards Review, ASCE, Vol. 12, pp. 111-116, doi:10.1061/(ASCE)NH.1527-6996.0000031. Reference-2: Paul, B.K. (2009) Why relatively fewer people died? The case of Bangldesh's cyclone sidr, Natural Hazards, 50, pp 289-304 (A K M Saiful Islam, Bangladesh University of Engineering and Technology)	Literature added
258	42334	24	21	18	22	38	"Farming sysytems and crop areas" in Section 24.4.3 I propose that following sentences are inserted in this section: High quality fruits are cultivated in narrow temperature zone. In Japan, the current main apple producing districts are 6-14°C on annual mean temperature and 13-21°C on mean temperature from April to October, respectively. Many parts of these apple producing districts will be possibly unfavorable regions to cultivate apples by 2060's (Sugiura, et al., 2005). Reference Sugiura, T., H.Kuroda, H.Sugiura, and H.Honjo. 2005: Prediction of effects of global warming on apple production regions in Japan. Phyton-Annales Rei Botanicae, 45(4), 419-422. (I have sent PDF of this paper. The file name is "apple production regions in Japan.pdf".) (Toshihiko Sugiura, National Agriculture and Food Research Organization, Institute of Fruit Tree Science)	Text added
259	42929	24	21	38	0	0	'Agricultural production in general' needs qualification (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Text revised
260	35202	24	21	39	0	0	No dependence on native bees anywahere in the region? (David Dudgeon, University of Hong Kong)	Not sure what this means
261	37371	24	21	43	0	48	same as above (So Kazama, Tohoku University)	OK
262	43468	24	21	43	21	48	Need to also look at effects of sunlight reduction on crops (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	No data on this
263	51472	24	21	53	21	54	For the example given, it would be helpful to indicate further which climate scenarios resulted in the lowest and highest values cited. (Katharine Mach, IPCC WGII TSU)	Not mentioned in the study cited
264	35338	24	22	11	22	12	Iizumi et al. (2008) assesses the potential reduction of cool-summer damage on rice production in northern Japan and supports this conclusion. Additionally, for rice yield in Japan, ensemble-based probabilistic assessments are available from Iizumi et al. (2011) and Okada et al. (2012). Especially, the latter paper assesses the impacts on both rice yield and eating quality. I Iizumi, T., Y. Hayashi, and F. Kimura, 2007. Influence on rice production in Japan from cool and hot summers after global warming. Journal of Agricultural Meteorology, 63, 11-23.I Iizumi, T., M. Yokozawa, and M. Nishimori, 2011. Probabilistic evaluation of climate change impacts on paddy rice productivity in Japan. Climatic Change, 107, 391-415.I Okada, M., T. Iizumi, Y. Hayashi, and M. Yokozawa, 2011. Projecting climate change impacts both on rice quality and yield in Japan. Journal of Agricultural Meteorology, 67, 285-295. (Toshichika Iizumi, National Institute for Agro-Environmental Sciences)	Text added
265	37713	24	22	20	0	0	Need reference for "an earlier study." Is it one by by Eriyagama or someone else? (George Backus, Sandia National Laboratories)	Text revised
266	37714	24	22	26	0	0	Need reference for "a previous study." (George Backus, Sandia National Laboratories)	Text revised

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
267	35203	24	22	30	0	0	China is a big place with much regional variation in rainfall; what part of China is meant here? (David Dudgeon, University of Hong Kong)	Text revised
268	42653	24	22	40	22	0	Information on marine fishery yields from Asian countries (especially, from East Asia and South East Asia) should be included here. See "Kim, S. and L.-L. Low. 2011. Emerging issues of East Asian fisheries in conjunction with changes in climate and social systems in the 21st century. Journal of Environmental Policy, 10(3): 73-91." and "Kim, S. 2010. Fisheries development in north-eastern Asia in conjuction with changes in climate and social systems. Marine Policy, 34: 803-809". (Suam Kim, Pukyong National University)	Cannot find these articles
269	35204	24	22	46	0	0	Unsure what 'harder' means in this context. Usually harder rain is heavier rain. (David Dudgeon, University of Hong Kong)	That's the term the authors used
270	51473	24	23	15	23	15	At the start of the sentence beginning on this line, it would be preferable to indicate more specifically which "extreme climate events" are meant here, also further adopting a conditional framing if changes in the relevant extreme events differ in their assessed degree of certainty. (Katharine Mach, IPCC WGII TSU)	Agree
271	38513	24	23	16	23	19	Having become familiar with the IPCC report on climate change we noted hard and important work done by its authors. The materials in chapter 24 (Asia) paragraph 24.4.4 Food Production System and Food Security are of a special interest to us and our observations consider materials on Russia. In the table 2.4.7 and on page 23 (lines 16-19) it is stated with reference to (Alkamo et al., 2007) that climatic change in Russia will lead to an increase in the number of lean years compared to a base period (years 1961-1990) from 2 years per decade to 5-6 years per decade. Basically, the authors of this paragraph while analyzing the territory of Russia including Urals, West and East Siberia and Far East confine themselves to this scant information, which doesn't represent modern objective information. Quite a large number of published works written in main research centers in Russia which study such problems (the Faculty of Geography in Moscow State University, the Main Geophysics Observatory, the Russian Academy of Science Institute of Geography, the state universities of Novosibirsk and Krasnoyarsk, the Institute of Global Climate and Ecology, the Research Institute of Agricultural Meteorology) and nevertheless were not included as quoted sources. There is an interesting and credible study (Tchebakova et al., 2010) which analyses the agroclimatical potential of Central Siberia in the 21st century. A conclusion is drawn that climate changes to come for the years 2020 and 2080 (HadCM3 B1 and A2 scenarios) will in general be beneficial for this territory. "From 50 to 85% of Central Sibiria is predicted to be climatically suitable for agriculture by the end of the century, and only soil potential would limit crop advance and expansion to the North. Crop production could increase twofold. Future Siberian climatic resources could provide the potential for a great variety of crops to grow that previously did not exist in these land." (Tchebakova et al., 2010). There also is a collective monograph by the researchers from the Faculty of Geography of the Moscow State University (Ecological and geographical consequences…, 2011) where apart from other problems the authors analyze climatic resources of Western Siberia (thermal and hydrothermal resources, humidity conditions) and trends of possible changes of flora in Western Siberia in the first half of the 21st century. We should also mention a collective monograph (The evaluation of macroeconomic consequences…, 2011), published in the Main Geophysics Observatory of Roshydromet. Finally, in 2012 a monograph "Methods for assessing climate change impacts on physical and biological systems" was published. Its authors in chapter 5 examine the methods of estimating the impact of climate change on agricultural productivity. It is shown that the tend of the end of the 20th ¬¬¬– the beginning of the 21st century is the increase in climate-based productivity of crops in Siberia and Far East. The calculations have shown that in the most of agricultural territory of Russia witnessed climate change for the last 30 years have launched a trend of the increase in productivity of crops and leguminous plants by 3-17%, winter wheat – by 2-26%, spring barley – by 1-6%. (Vera Pavlova, Federal State Institution of Agricultural Meteorology)	We cannot access the reference materials.
272	38514	24	23	16	23	19	References: 1. Tchebakova N.M., E.I., Parfenova, G.I. Luzanova and A.J.Soja. Agroclimatic potential across central Siberia in an altered twenty-first centure. Environ. Res. Lett. 6 (2011). 2. Ecological and geographical consequences of global warming in the XXI century in the East European Plain and Western. Monograph edited by N.Kasimov and A.Kislov. Moscow State University. Faculty of Geography. Moscow, 2011. 493 p. 3. Assessment of macroeconomic effects of climate change on the territory of Russia until 2030 and beyond. Roshydromet. Edited by V.Katsov and B.Porfirjev. Moscow, 2011. 450 p. 4. Methods for assessing climate change impacts on physical and biological systems. Moscow., 2012. Roshydromet. 508 p. (Vera Pavlova, Federal State Institution of Agricultural Meteorology)	Agree
273	51474	24	23	26	23	28	For these statements, it would be helpful 1st of all to specify the relevant chapter from the 4th assessment report (chapter 10 presumably). Additionally, the relevant geographic area for the described "increasing pests and diseases" could be specified further--all of Asia? Then, the author team may wish to consider and cross-reference chapter 7 and 11 regarding studies since the 4th assessment report. (Katharine Mach, IPCC WGII TSU)	Agree
274	35339	24	23	26	23	34	Related to pests and weeds, some literatures are available: (1) Increased temperature for the last 30 years had a little effect on the dynamics of H. cunea population change in Japan (Yamanaka et al., 2008); (2) it is expected that increasing climate variability increases population fluctuations and extinction risks (Jongejans et al., 2010); and (3) the observed number of light-trap catches of C. suppressalis and N. cincticeps in summer increases with increasing temperatures in the previous winter and the influence of temperature is not carried over to the next year (Yamamura et al., 2006). l Yamamura, K., M. Yokozawa, M. Nishimori, Y. Ueda, and T. Yokosuka, 2006. How to analyze long-term insect population dynamics under climate change: 50-year data of three insect pests in paddy fields. Population Ecology 48: 31-48.l Yamanaka, T., S. Tatsuki, and M. Shimada, 2008. Adaptation to the new land or effect of global warming? - An age-structured model for rapid voltinism change in an alien lepidopteran pest. Journal of Animal Ecology 77, 585-596.l Jongejans, E., Kroon, H.d., Tuljapurkar, S., & Shea, K. (2010) Plant populations track rather than buffer climate fluctuations. Ecology Letters, 13, 736-743. (Toshichika Iizumi, National Institute for Agro-Environmental Sciences)	Will consider this

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
275	35205	24	23	29	0	0	Italics needed for scientific name (see also line 35, pg 40). (David Dudgeon, University of Hong Kong)	Text revised
276	51475	24	23	37	0	0	Section 24.4.4.4. The author team should provide citations to support statements made in this section. (Katharine Mach, IPCC WGII TSU)	Text deleted
277	42930	24	23	42	0	0	Reframe to indicate what the impacts are likely to be, and how they interact with climate change (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Text deleted
278	42654	24	24	4	24	6	Add specific "adaptation strategies documented". (Suam Kim, Pukyong National University)	Text revised
279	45615	24	24	6	24	6	adaption should be adaptation (Soojeong Myeong, Korea Environment Institute)	Text revised
280	42931	24	24	10	0	0	These would be good to expand on (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Checked.
281	42932	24	24	12	0	0	Expaqnd on these! (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Expanded to clarify.
282	53542	24	24	15	0	0	Please ensure this section provides information on time slice, scenarios, and other critical assumptions, and is consistent with relevant chapters. (Kristie L. Ebi, IPCC WGII TSU)	Valuable comment. Information on these aspects will be added.
283	35206	24	24	19	0	0	It seems a bit late in the document to point this out. (David Dudgeon, University of Hong Kong)	Yes, that is correct. Reference to this point will be shifted to the beginning of chapter 24.
284	35207	24	24	20	0	21	Obvious and adds nothing. (David Dudgeon, University of Hong Kong)	The comment is right in that it is a rather obvious point. Nevertheless, it serves as a good entry point into section 24.4.5.
285	42174	24	24	26	24	26	No reference is given about 'UNFPA, 2010' in the Reference Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	OK, will be added.
286	42175	24	24	31	24	31	No reference is given about 'UN ESCAP, 2011' in the References Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	OK, will be added.
287	46935	24	24	48	0	0	Penning-Rowsell et al. 2012 reference may be used (Golam Sarwar, Bangladesh Unnayan Parishad (BUP))	It is not really clear which publication is meant.
288	53543	24	24	53	24	54	References are needed. (Kristie L. Ebi, IPCC WGII TSU)	Checked and revised.
289	51476	24	24	53	25	4	The author team may wish to further paraphrase this material as compared to presentation in the special report on extremes. (Katharine Mach, IPCC WGII TSU)	If the current wording is taken from IPCC (2012) without much of change -- which I will check -- this would make for a reasonable comment.
290	37372	24	25	6	0	12	It will be interesting to see some information about severe flood damage in Southeast Asia in 2011. Detail information can be found in Thi et al., 2012 Water International, Vol. 37, No. 3, 218–235. (So Kazama, Tohoku University)	The call for more detailed information on flood damage is reasonable. Yet, not only for SEA but for other parts of Asia as well. The source Thi et al. 2012 will be checked in this respect. Other sources can be added as well. However, in all this flood damage analysis it is important to underscore that -- at least very often -- we are not talking about an observed climate change impact since most of these floods currently cannot be associated to climate change. However, flood damage assessments of these kind nevertheless provide important lessons learned for the assessment of future -- to be expected -- climate change impacts.
291	41660	24	25	6	25	12	Not observed impacts of climate change (Lourdes Tibig, The Manila Observatory)	Yes, the reviewer is right. This needs to be underscored. Nevertheless such analyses are important for generating lessons learned for expected CC impacts (see also my above comment).
292	41661	24	25	8	25	9	Single event? (Lourdes Tibig, The Manila Observatory)	Will be clarified.
293	36793	24	25	9	0	0	Section 24.6 Intra-regional and Inter-regional Issues is very brief. It may be combined with Section 24.7 which is also very brief. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Sections are based on the plenary approved outline.
294	43469	24	25	13	25	13	discussion of landslide impacts missing (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Ok, reasonable comment. Will be inserted.
295	38309	24	25	24	26	11	The subsection on projections gives little in the way of projected outcomes. Rather, it focuses on the what would happen if hazards in general (cyclones, drought, floods, etc.) were to increase. The section could be strengthened to provide outputs of model projections, and what their likely impacts would be on human settlements and industry. (Lindsey Jones, Overseas Development Institute)	The reviewer is right in general. However, there are not many models/published papers that do this for Asia. I think Hanson et al. 2011 do it (referenced in the text). However, the comment is taken up in the sense that a thorough second literature review will be conducted on this issue and literature inserted (if found).
296	37373	24	25	32	0	39	Potential damage cost of flooding in Tokyo is projected to be significantly higher than other regions in Japan (e.g., Kazama et al., (2009). Evaluating the cost of flood damage based on changes in extreme rainfall in Japan. Sustainability Science Vol 4, pp. 61–69. (So Kazama, Tohoku University)	OK, papers will be checked.
297	35209	24	25	37	0	38	Is this corect? Most major Asian cities have no sewers? (At all?) (David Dudgeon, University of Hong Kong)	Good point. This sounds strange to me, too. We need to check carefully for which cities this would be correct and as this statement is coming from World Water Report-2012 (will check again). Probably, this point probably should be deleted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
298	45311	24	25	42	25	43	"Climate change is expected to increase the risk of cyclones..", in conjunction with "along with an increase of intensity in tropical cyclones" from page 4, line 44, appear to contrast with page 17, line 52 where it states that "However, current trends in cyclone frequency and intensity are unclear (Seneviratne et al., 2012)." There also appears to be more information about tropical cyclone changes in Table 24-3 which does not appear to be discussed elsewhere in the chapter. (John Caesar, Met Office Hadley Centre)	Yes, this is a very important comment because there is in fact quite some disagreement in the literature to date. Many papers provide rather anecdotal arguments that cyclone activity is going to increase (e.g. in the South China Sea or the Gulf of Thailand) whereas modelling papers can often not find evidence in support of this link. Hence, we need to check this carefully and provide a balanced picture here that hints to remaining uncertainties.
299	37735	24	25	47	25	51	These numbers "US$3, 40, and 27 billion" should not be cited (or at least should be estimated more precisely). These numbers are just the economic damage of the coastal on-shore areas, not including the damages of the densely-populated hinterland areas where ground elevations are lower than sea level. These low-lying hinterland areas are vulnerable to the floodwater flowing from many rivers and waterways, so such additional damages should be considered and estimated. (Tsuneyoshi Mochizuki, Japan River Association)	OK, the figures should be either specified or deleted. Tbd.
300	37374	24	25	48	0	51	Please provide the reference. (So Kazama, Tohoku University)	OK, reference will be checked.
301	35208	24	26	13	0	14	I could not understand this - the words in parentheses confuse rather than illuminate (David Dudgeon, University of Hong Kong)	Yes, I would agree.
302	43470	24	26	13	26	13	given how fast cities have changed in the past 6 decades, is it realistic to list top cities for anything in 2070? (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Note that this is a modelling projection -- not a forecast. In the sense of providing background information for scenario building, for instance, such information can be useful.
303	51477	24	26	13	26	14	It may be helpful to further clarify if the population exposure described here reflects exposure to extreme events, exposure to climate change, or both? (Katharine Mach, IPCC WGII TSU)	Yes correct. "Exposure to what" will be clarified.
304	35340	24	26	13	26	21	Iizumi et al. (2008) assesses the potential impacts of climate change on rice insurance payouts that is an institution operated by the Japanese government to give a measure to farmers to deal with natural-disaster-induced rice yield loss. This study suggests the reduction of insurance payouts in 2070s due to the decreased cool-summer damage in northern Japan where is a major rice producing area under warmer climate. I Iizumi, T., M. Yokozawa, Y. Hayashi, and F. Kimura, 2008. Climate change impact on rice insurance payouts in Japan. Journal of Applied Meteorology and Climatology, 47, 2265-2278. (Toshichika Iizumi, National Institute for Agro-Environmental Sciences)	Interesting findings. Yet, this would probably rather fit into chapter 24.4.4.
305	43471	24	26	23	26	26	don't forget non-delta cities mining their groundwater, such as Kathmandu (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Good point. Will be added.
306	37375	24	26	27	0	29	Please provide some case studies or examples (e.g., Kawagoe et al. (2010), Hydrol. Earth Syst. Sci., Vol. 14, pp. 1047–1061). (So Kazama, Tohoku University)	OK, references and case studies will be added to this section. The suggested paper will be checked in this respect.
307	51478	24	26	27	26	29	It would be preferable to provide citations for these statements. (Katharine Mach, IPCC WGII TSU)	Ok, references will be added.
308	51479	24	26	38	26	48	The author team may wish to consider assigning calibrated uncertainty language to the components of this summary paragraph. Summary terms for evidence and agreement or levels of confidence may be particularly appropriate. Additionally, in the 1st sentence, it would be helpful to specify if impacts characterized are observed and/or projected. For example, the 1st impact reflects observations, but the relative timeframe (observed versus projected) is not perfectly clear in all cases. (Katharine Mach, IPCC WGII TSU)	Revised where relevant.
309	41781	24	26	41	0	43	The three studies cited to support the loss of ski tourism in Japan are not in the bibliography (nor have I ever come across them in the comprehensive reviews I've done of this field - e.g. see winter tourism section in Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232), so I cannot evalute their scientific content. (Daniel Scott, University of Waterloo)	OK, we need to check this carefully and also need to check Scott's paper he mentions.
310	41782	24	27	4	0	5	Climate change has little influence ...' - This statement will need to be further explained and defended as there is a body of literature (and other Chapters in AR4 and AR5) that suggest otherwise. (Daniel Scott, University of Waterloo)	Ok, needs to be checked.
311	41783	24	27	4	0	5	This statement does not make sense. When was the last time a tropical storm hit Israel? Furthermore, the Gossling and Hall 2006 book does not support any of the statements made in this sentence. (Daniel Scott, University of Waterloo)	Comments seems reasonable.
312	51480	24	27	4	27	4	For this statement, it would be helpful to clarify the relevant geographic area--all of Asia? Additionally, is the statement referring to projected climate change or to changes observed to date? (Katharine Mach, IPCC WGII TSU)	Ok, needs specification. See also above comments.
313	35210	24	27	5	0	0	Reference not listed at the end. Also leaves the impression that Israel experiences tropical storms. Reword. (David Dudgeon, University of Hong Kong)	Ok, needs to be changed.
314	40583	24	27	5	0	0	The following article assesses the possible damage by tropical cyclones in Japan: Hirohiko Ishikawa, Yuichiro Oku, Sunmin Kim, Jun Yoshino. 2012. Estimation of possible maximum damage caused by tropical cyclones. Hydrological Processes.Accepted. (Toshiyuki Nakaegawa, Meteorological Research Institute)	OK, these articles will be checked.
315	41784	24	27	6	0	7	Fully agree that more research is needed with respect to the tourism sector in Asia. The literature identifies this as a major regional knowledge gap (see the following for a detailed discussion of regional and other knowledge gaps in this sector: Scott, D., Gössling, S., Hall, C.M. (2012) Climate Change and Tourism: Impacts, Adaptation and Mitigation. London: Routledge). That said there is other relevant literature on the tourism sector for Asia, including impacts of coral bleaching on dive tourism, global econometric modeling outputs, etc. (see the previous reference for discussion of this literature). Why are these not discussed in this section/chapter? (Daniel Scott, University of Waterloo)	OK, needs to be checked and inserted.
316	53544	24	27	9	27	9	Which countries? (Kristie L. Ebi, IPCC WGII TSU)	OK, will be specified.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
317	51481	24	27	12	0	0	Section 24.4.5.4. For the 1st and 3rd paragraphs in this section, the author team should provide further citations in support of statements made. (Katharine Mach, IPCC WGII TSU)	OK, futher sources will be added.
318	51482	24	27	44	27	47	For the tripling in losses described here, it would be helpful to specify if the key drivers are changes in socio-economic conditions or in flooding. (Katharine Mach, IPCC WGII TSU)	Done.
319	35211	24	27	46	0	47	It would be helpful to outline what some of the suggested adapation measures were. (David Dudgeon, University of Hong Kong)	Done.
320	53545	24	28	15	28	16	More details would be helpful. (Kristie L. Ebi, IPCC WGII TSU)	Yes, the entire section on risk and adaptation governance should be expanded. Birkmann et al. (2010), for example, argue based on a review of urban adaptation strategies (to a big part from Asia) that a paradigm shift is needed away from only adapting physical infrastructure towards also adapting planning, management and governance modes. They define criteria for what they call 'Adaptive Urban Governance' (Birkmann et al. 2010, in Sustainability Science). Similarly, Garschagen and Kraas (2011) argue that urban adaptation has in Asia to be understood against the background of comprehensive economic, social and political transformation processes in these countries. They show for the case of Vietnam how these transformations change the preconditions/challenges for urban governmental climate change adaptation. There are more relevant papers on adaptation governance in (urban) Asia.
321	45616	24	28	21	28	21	Vuuren, et al., 2011 is missing at reference section (Soojeong Myeong, Korea Environment Institute)	OK, will be added.
322	53546	24	28	24	0	0	Please ensure this section provides information on time slice, scenarios, and other critical assumptions, and is consistent with relevant chapters. (Kristie L. Ebi, IPCC WGII TSU)	Done. Information is in the table.
323	41337	24	28	24	31	51	Papers cited in the section 24.4.6. do not appear in the references at the end of the chapter. (Masahiro Hashizume, Institute of Tropical Medicine, Nagasaki University)	References should be added.
324	53547	24	28	32	28	32	Which countries? (Kristie L. Ebi, IPCC WGII TSU)	The countries should be specified. Impossible for me (MH) to specify the countries because no reference list are available.
325	37064	24	28	51	29	45	There is a lot of very valuable information in these paragraphs, however, an assessment of the study outcomes is missing. In particular, the role of climate change needs further elaboration. Please consider the framework for detection and attribution of climate change impacts provided by Ch 18 when revising this section. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Considered where relevant.
326	41338	24	28	53	29	5	Associations between floods, diarrhoea (cholera and non-cholera) and dengue have been reported in Dhaka, Bangladesh (Hashizume M, Wagatsuma Y, Faruque ASG, Hayashi T, Hunter PR, Armstrong B, Sack DA. Factors determining vulnerability to diarrhoea during and after severe floods in Bangladesh. J Water Health 2008;6:323–332.; Hashizume M, Dewan AM, Sunahara T, Rahman Z, Yamamoto T. Hydroclimatological variability and dengue transmission in Dhaka, Bangladesh: a time-series study. BMC Infect Dis. 2012:12:98 doi:10.1186/1471-2334-12-98) (Masahiro Hashizume, Institute of Tropical Medicine, Nagasaki University)	The first paper suggested here has been cited and added in the reference list in the end of the text. However, because the current description does not specify the diseases but discussed about the exposure routes (water quality and mosquito proliferations), it is not clear exactly what diseases are epidemic due to flooding. An alternative is like "Epidemics of diarrhoea (Harris et al., 2008; Hashizume et al., 2008; Solberg, 2010), vector-borne diseases (Pawar et al., 2008) and rodent-borne diseases like hantavirus and leptospira (Kawaguchi et al., 2008; Zhou et al., 2011)..." The second paper suggested here has been ciited in the section of vector-borne diseases.
327	41662	24	28	53	29	45	Medium agreement, robust evidence of impacts of exttreme events on health, but still low confidence in attribution to climate change, if at all. (Lourdes Tibig, The Manila Observatory)	Revised.
328	35212	24	28	54	0	0	I do not think the mosquitoes invade; instread they proliferate as a result of the flooding. (David Dudgeon, University of Hong Kong)	Agree. The sentence has been amended.
329	53548	24	29	7	29	14	There also are studies from South Korea. Also, what about studies on air pollution and on the Asian brown cloud? (Kristie L. Ebi, IPCC WGII TSU)	Some of the studies from South Korea have already been cited in the paragraph (e.g., Chung et al., 2009; Kim et al., 2006, Yi et al., 2010). To make it clear, country information was added to the 5th line under 'Heat and health' section: "East Asia including Japan, South Korea and Taiwan". Also, some air pollution studies have already been included (Lee et al., 2007; Qian et al., 2010; Wong et al., 2010; Yi et al., 2010). Another option could be creating a new sub-section of "air pollution and health" including Asian brown cloud issues. In this case, the contents should be consistent with Ch11 and focused on studies in Asia.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
330	42176	24	29	9	0	0	Full reference of the paper from "Guo et al., 2009" is not given in the References Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	The reference should be added.
331	42177	24	29	10	0	0	Full reference of the paper from "McMichael et al., 2008" is not given in the Reference Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	The reference should be added.
332	42178	24	29	13	0	0	Full reference of the paper from "Hyatt et al., 2010" is not given in the Reference Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	The reference should be added.
333	42179	24	29	13	29	14	Full reference of the paper from "Nag et al., 2007" is not given in the Reference Section (Naeem Manzoor, Global Change Impact Studies Centre (GCISC))	The reference should be added.
334	37376	24	29	25	0	27	The relationship between flood magnitude and risk of waterborne infectious disease is shown in Kazama et al., (2012). A quantitative risk assessment of waterborne infectious disease in the inundation area of a tropical monsoon region Sustainability Science Vol 7, pp. 45-54. (So Kazama, Tohoku University)	The paper suggested here has been cited in the section of "Floods and health" because this paper is about waterborne disease risk due to flooding.
335	41339	24	29	29	29	30	More distal factors (e.g., ENSO and Indian Ocean Dipole) affecting sea surface temperatures (SSTs) over the basin of Bay of Bengal and ultimately cholera epidemics in Bangladesh have been reported. The ENSO has been reported to play an important role in the interannual variation of endemic cholera in Bangladesh ((1) Bouma M, Pascual M. Seasonal and interannual cycles of endemic cholera in Bengal 1891-1940 in relation to climate and geography. Hydrobiologia 2001; 460: 147-156.; (2) Colwell RR. Global climate and infectious disease: the cholera paradigm. Science 1996; 274: 2025-2031. (3) Pascual M, et al. Cholera dynamics and El Nino-Southern Oscillation. Science 2000; 289: 1766-1769. (4) Rodo X, et al. ENSO and cholera: a nonstationary link related to climate change? Proc Natl Acad Sci U S A 2002; 99: 12901-12906.). The Indian Ocean Dipole (IOD) is another climate mode that arises from ocean-atmosphere interactions that cause interannual climate variability in the tropical Indian Ocean (Saji NH, et al. A dipole mode in the tropical Indian Ocean. Nature 1999; 401: 360-363.). IOD events strongly influence sea level variations in the Bay of Bengal and sea level anomalies in the northern Bay which influence flooding and outbreaks of cholera in Bangladesh (Han W, Webster P. Forcing Mechanisms of Sea Level Interannual Variability in the Bay of Bengal. J Phys Oceanogr 2002; 32: 216-239.). Indeed, a short-term temporal association between IOD and cholera incidence in Bangladesh has been reported (Hashizume M, et al. The Indian Ocean dipole and cholera incidence in Bangladesh: a time-series analysis. Environ Health Perspect 2011; 119: 239-244.). (Masahiro Hashizume, Institute of Tropical Medicine, Nagasaki University)	A sentence has been added in the end of the sub-section Water-borne diseases: "More distal climate mode such as El Niño and Indian Ocean Dipole that arises from ocean-atmosphere interactions that cause interannual climate variability in the tropical Pacific and Indian Ocean, respectively, have been associated with cholera epidemics in Bangladesh (Pascual et al., 2000; Rodo et al., 2002; Hashizume et al., 2011)"
336	35213	24	29	33	0	0	Not just arthropods - snail intermediate hosts of various parasites (flukes) are also favoured. Should be mentioned here on in previous para' on water-borne diseases (e.g. schistosomiasis). (David Dudgeon, University of Hong Kong)	Agree. The word "arthropod" has been dropped.
337	38310	24	29	47	30	2	This subsection could be greatly expanded. At present it says little about the impacts of climate change on livelihoods and poverty across Asia. A great deal of literature is available on this and would provide significant value added to the chapter. (Lindsey Jones, Overseas Development Institute)	This section has been expanded taking into consideration the latest literature [SVRKP]
338	53549	24	30	10	30	21	There also are studies on heat and work that would be appropriate to include. (Kristie L. Ebi, IPCC WGII TSU)	Agree. A sentence and references have been added in the section: "Heat stress disorders and consequent productivity loss among workers have also been reported in Asia (Lin et al., 2009; Langkulsen et al., 2010)."
339	44431	24	30	10	30	43	Thailand's flood example should be described in this sentence (Tae sung Cheong, National Disaster Management Institute)	This section talks about projected impacts and hence Thailand flood may not fit to describe here. However, literature related to similar return period events could be considered in subsequent revisions of livelihood and poverty part of this section.
340	53550	24	30	23	30	31	Please provide information on time slice, scenarios, and other critical assumptions, and is consistent with chapter 11. (Kristie L. Ebi, IPCC WGII TSU)	Agree. But because the reference list is not provided to CA, it is impossible to specify the "time slice, scenarios and other critical assumptions".
341	53551	24	30	45	30	45	What about unplanned settlements? (Kristie L. Ebi, IPCC WGII TSU)	Unplanned settlements is an implicit factor within the built environment and land-use change that influences health effects.
342	38311	24	30	48	31	8	Much more can be elaborated on in terms of the key institutional and socio-political barriers to adaptation (and their implications for vulnerability). Issues such as political hegemony, ethnic discriminartion, caste (particularly for Southern Asia), and gender each act as considerable social barriers (see Agrawal 2008 for local institutions in India; Ahmed & Fajber 2009 for gender dimensions of adaptation; or Jones & Boyd 2011 for examples of social barriers in Nepal). Ref: Agrawal, A. & Perin, N., 2008. Climate Adaptation, Local Institutions, and Rural Livelihoods, Michigan: International Forestry Resources and Institutions Programme. Jones, L. & Boyd, E., 2011. Exploring social barriers to adaptation: Insights from Western Nepal. Global Environmental Change, 21(4), pp.1262–1274. Ahmed, S. & Fajbar, E., 2009. Engendering apatation to climate variability in Gujarat India. Gender and Development, 17(1), pp.33–50. (Lindsey Jones, Overseas Development Institute)	Elaboration and new references added.
343	35214	24	30	53	31	1	This very long list of references is not helpful to the reader. (David Dudgeon, University of Hong Kong)	can be reduced but difficult to do without exploring the cited literature.
344	53552	24	32	3	0	0	Please ensure consistency with chapter 17. (Kristie L. Ebi, IPCC WGII TSU)	Consistency checked with chapter 17 from FOD. Read the chapter and found no inconsistentcy / conflicts between this section and chap. 17.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
345	38606	24	32	3	32	5	In the section 24.4.7 on Valuation of Impacts and Adaptation, please note the World Bank case study on estimated damage from extreme weather events in a changing climate and adaptation cost in Bangladesh, World Bank (2012): The Cost of adapting to Extreme Weather Events in a Changing Climate at http://siteresources.worldbank.org/INTBANGLADESH/Resources/BDS28ClimateChange.pdf If 2012 is beyond the cutoff date of the background literature of IPCC WGII AR5, please consider an earlier analysis presented in the World Bank (2010): Economics of Adaptation to Climate Change- Bangladesh at http://climatechange.worldbank.org/sites/default/files/documents/EACC_Bangladesh.pdf (Susmita Dasgupta, The World Bank)	Accepted. Added the reference in the text.
346	51483	24	32	34	32	34	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Corrected as italic.
347	38608	24	32	43	0	0	In the section 24.5 on Adaptation and Managing Risks, it will be useful to consider the country (Bangladesh and Vietnam) case studies conducted by the World Bank (2010): Economics of Adaptation to Climate Change at http://climatechange.worldbank.org/sites/default/files/documents/EACC_Bangladesh.pdf and http://climatechange.worldbank.org/sites/default/files/documents/EACC_Vietnam.pdf (Susmita Dasgupta, The World Bank)	Richard to provide. Text has been replaced.
348	53553	24	32	43	0	0	Please ensure consistency with the adaptation chapters. (Kristie L. Ebi, IPCC WGII TSU)	Text has been replaced.
349	45668	24	32	43	35	6	This section on adatpation and risk management could be expanded to assess current adaptation practices, including policies (e.g. national level adaptation policies, for example in India, China, Sri Lanka etc.), programmes (e.g. the Pilot Programme for Climate Resilience in Bangladesh, Cambodia, Nepal and Tajikistan supported under the Climate Investment Fund (http://www.climateinvestmentfunds.org/cif/ppcr) and adaptation knowledge management mechanisms (e.g. the Asia-Pacific Adaptation Platform - http://www.apan-gan.net; and the annual adaptation forum - http://www.asiapacificadapt.net/adaptationforum2013/. (Xianfu Lu, ADB)	Text has been replaced.
350	46920	24	32	47	33	14	This section should mention that increased dam building in the region could exacerbate water security concerns. For instance, most glaciers on the Tibetan plateau are retreating rapidly, according to a comprehensive 2012 study based on 30 years of satellite and field measurements of more than 7,000 glaciers (see Yao, T., et al., 2012, Nature Clim. Change, http://dx.doi.org/10.1038/NCLIMATE1580). Since rivers originating in the Tibetan plateau provide water for millions living downstream in China, India, Burma, etc., China's plans to tap Tibet's rivers for hydropower and water transfer could pose a major water security risk to downstream regions. In the second section on resource conservation and restoring connectivity, special attention (i.e. increased investment in research and conservation efforts) should be given to freshwater species, which compared to terrestrial biodiversity, is often overlooked. (Katy Yan, International Rivers)	Text has been replaced.
351	35215	24	32	51	0	0	A reference appears to be needed here. And in line 53. (David Dudgeon, University of Hong Kong)	Text has been replaced.
352	35216	24	33	11	0	0	Not only those in fragmented landscapes; those in lakes, those that lack good seed dispersers, and so on. (David Dudgeon, University of Hong Kong)	Text has been replaced.
353	35217	24	33	12	0	0	Fighting talk indeed. So what should they adopt if they abandon that focus? (David Dudgeon, University of Hong Kong)	Text has been replaced.
354	53554	24	33	17	0	0	Please ensure consistency with chapter 5. (Kristie L. Ebi, IPCC WGII TSU)	Accepted. Modified at the beginning of the first paragraph and at the beginning of the third paragraph.
355	38607	24	33	19	33	22	In the section 24.5.2 on Flood Risks and Coastal Inundation, it will be worth referring to World Bank (2010): Climate Risks and Adaptation in Asian Coastal Megacities: A Synthesis Report. Washington DC. (Susmita Dasgupta, The World Bank)	Accepted. The paper pointed out is cited at the begininng of the first paragraph.
356	46936	24	33	29	0	0	Sarwar (2012) has developed Coastal Vulnerability Index (CVI) for Bangladesh. The vulnerability of the coast to sea-level rise has been mapped elaborately. [Sarwar M G M 2012. Vulnerability Assessment of the Coast of Bangladesh using Geographic Information Systems, PhD Thesis submitted to University of Wollongong, Australia] (Golam Sarwar, Bangladesh Unnayan Parishad (BUP))	Rejected. The paper pointed out couldn't be identified whatsoever.
357	45669	24	33	42	33	52	This paragraph, discussing the merits of community-based adaptation in general terms, does not serve any particular purpose in this section here. (Xianfu Lu, ADB)	Accepted. The third paragraph was rewritten completely with focusing on climate adaptation context.
358	53555	24	34	1	0	0	Please ensure consistency with the adaptation chapters and with chapter 13. (Kristie L. Ebi, IPCC WGII TSU)	Checked consistency with chapter 13 from FOD. Read the chapter and found no inconsistenty / conflicts between this section and chap. 13.
359	53556	24	34	4	34	6	References are needed. (Kristie L. Ebi, IPCC WGII TSU)	References have been added. The sentence has been revised to a new as "Generally, the level of weath has been used as a measure of..." instead of " Attempts have been made to use the level of wealth as a measure of....
360	53557	24	34	19	0	0	Please ensure consistency with the adaptation chapters. (Kristie L. Ebi, IPCC WGII TSU)	Done.
361	42933	24	34	26	0	28	Does this list need expanding? (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Expanded as much as possible based on available published literature
362	45467	24	34	26	34	32	For an account of the relatively successful mainstreaming of climate change into local level land use and development planning, see Kehew, Robert, et al. 2013. "Formulating and implementing climate change laws and policies in the Philippines, Mexico (Chiapas) and South Africa: A local government perspective". Local Environment: The International Journal of Justice and Sustainability. Forthcoming. (Rafael Tuts, United Nations Human Settlements Programme)	Not available for SoD.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
363	45670	24	34	29	34	30	An example of multilateral development agencies investing in mainstreaming adaptation to development planning: ADB has been stepping up its efforts in supporting its developing member countries to pursue climate resilient development through investing in, among other, developing and piloting technical approaches to assessing and managing climate risks to climate-sensitive infrastructure projects (e.g., ADB, 2011, Guidelines for climate proofing investment in the transport sector, http://www.adb.org/sites/default/files/guidelines-climate-proofing-roads.pdf). (Xianfu Lu, ADB)	Defend.
364	42934	24	34	34	0	44	Much of this is covered in the adaptation chapters - perhaps just cross-reference. Also, it would be good to use Asian-based references throughout the chapter where available (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Done based on available published literature
365	45617	24	35	9	35	47	Other issues need to be considered; transboundary issues such as Asian dust storm related with deforestation and climate change (Soojeong Myeong, Korea Environment Institute)	Added some of the other transboundary issues eg. dust and sand storm.
366	36791	24	35	22	35	29	The example on China given here is not pertinent to the statement in the last sentence 'the effective trade liberalization ….to mitigate some of major climate change challenge's affecting the environment and health…'. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Revised.
367	53558	24	35	22	35	29	What about the impacts on air pollution and the Asian brown cloud? (Kristie L. Ebi, IPCC WGII TSU)	Addressed by WGp 1.
368	46937	24	35	27	0	0	Migration is the 'last resort' for climate victims (Penning-Rowsell et al. 2012) (Golam Sarwar, Bangladesh Unnayan Parishad (BUP))	Accepted. The report was reviewed and cited.
369	35114	24	35	32	0	0	"24.6.2. Migration and Population Displacement" I suggest including data from the annual reports from the Internal Displacement Monitoring Centre since they have been monitoring global (internal and external) displacement due to natural hazard-induced disasters, including climate-related disasters, over the past 4 years. Numbers for 2011 show that around 14,9 million people were displaced. Around 90 percent is due to climate-related disasters, and around 90 percent is in Asia. A few mega-disasters often displace huge amounts of people such as the floods in China in 2010. So far the numbers exclude people displaced in slow-onset disasters, such as drought, due to the challenges related to determining causality and forced displacement (rather than voluntary migration) in such cases. The reports are all available at www.internal-displacement.org IDMC has also carried out case studies on f ex the 2010 floods in Pakistan. (Vikram Kolmannskog, Norwegian Refugee Council)	Accepted. The related information was added to the first paragraph of this section.
370	45671	24	35	32	0	0	An additional reference: ADB, 2012, addressing climate change and migration in Asia and the Pacific (http://www.adb.org/sites/default/files/pub/2012/addressing-climate-change-migration.pdf) (Xianfu Lu, ADB)	Accepted. Additional information and policy suggestions are added from this report.
371	53559	24	35	32	0	0	Please ensure consistency with chapter 12. Also, please see the Foresight report on migration and global change. (Kristie L. Ebi, IPCC WGII TSU)	Checked and cross referenced where relevant.
372	36792	24	35	41	35	47	I would think that the authors may need to mention that some of the adaptation measures, such as construction of water projects, dams and reservoirs, can also lead to migration and population displacement.. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Accepted. This point was made in the paper with proper citation.
373	53560	24	35	50	0	0	Please ensure consistency with WGIII. (Kristie L. Ebi, IPCC WGII TSU)	Accepted. Revised.
374	51484	24	36	11	36	11	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Accepted. Replaced with prone.
375	42935	24	36	14	0	0	Insert after Verchot reference: 'or otherwise depending on how they are implemented.' (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Accepted and inserted.
376	42936	24	36	21	0	24	Essentially repetition of above paragraph (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Will remove one.
377	35218	24	36	35	0	0	By state-of-the-art, I assume zero emissions is meant. Perhaps elaborate. (David Dudgeon, University of Hong Kong)	Please revert to reference for elaboration.
378	51485	24	37	14	0	0	Box 24-1. The author team should provide citations for the statements made in this box. (Katharine Mach, IPCC WGII TSU)	Box deleted.
379	45672	24	37	14	37	23	The case presented here does not seem sound particularly coherent. The second sentence in this paragraph suggests that the case is meant to illustrate a case whereby measures taken today as autonomous adaptation hinder adaptive responses in the future. But the example cited here is more about trade-offs between adaptation and mitigation. Was the "adaptation" in "future adaptation" meant to be "mitigation"? (Xianfu Lu, ADB)	Deleted.
380	42937	24	37	16	0	23	This needs expanding (Mark Howden, Commonwealth Scientific and Industrial Research Organization)	Deleted.
381	51486	24	37	20	37	21	The author team should revisit the wording of this sentence to ensure a formulation that would not be interpreted as policy prescriptive. (Katharine Mach, IPCC WGII TSU)	Deleted.
382	53561	24	37	28	0	0	This is a good section but could use a clearer organization. (Kristie L. Ebi, IPCC WGII TSU)	Text has been replaced.
383	45673	24	37	28	39	5	The coverage of research gaps could be expanded to include the understanding of adaptation process including decision making, stakeholders and their roles, effectiveness of the current practices etc. (Xianfu Lu, ADB)	Text has been replaced.
384	45312	24	37	32	37	32	"Furthermore, research data on changes in extreme climate events does not cover most Asian regions." It is not clear precisely what is meant here. Observations of climate extremes indices now cover the Asian region quite well, at least on the broad scale, though it is acknowledged that there remains limited data availability (on at least a daily timescale) from some countries within the region. (John Caesar, Met Office Hadley Centre)	Text has been replaced.
385	35219	24	37	46	0	48	Is this all there is to say about key research priorities for biodiversity in Asia? All of Asia? And what about aquatic/marine animals and plants? (David Dudgeon, University of Hong Kong)	Text has been replaced.
386	53562	24	38	5	38	9	Cash crops could be included. (Kristie L. Ebi, IPCC WGII TSU)	Text has been replaced.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
387	43472	24	38	11	38	12	need more details on heat - air pollution interactions. Too vague now. (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Text has been replaced.
388	53563	24	38	11	38	13	What about VBD? (Kristie L. Ebi, IPCC WGII TSU)	Text has been replaced.
389	53564	24	38	14	38	16	This issue could be further explored in the chapter. (Kristie L. Ebi, IPCC WGII TSU)	Text has been replaced.
390	44856	24	38	18	38	22	A greater understanding of various existing policy processes in place/specific geographic context, their compatibilities and non-compatibilities, should also be examined e.g. options to increase livelihood options through conservation initiatives that may restrict the access to natural resources for the very people that rely upon these resources for their living. See for e.g. Roman, C., & McEvoy, D. (2011). Kailash Sacred Landscape Conservation Initiative (KSLCI) Strengthening Project - Nepal. Climate Change and Tourism - Final Report. Melbourne: Climate Change Adaptation Program, Global Cities Research Institute, Royal Melbourne Institute of Technology (RMIT) University (avaliable from http://global-cities.info/wp-content/uploads/2011/10/KSL_tourism-Nepal_FINAL_report.pdf). (Carolina Adler, Swiss Federal Institute of Technology (ETH) Zurich)	This point has been further explored as suggested.
391	53565	24	38	35	38	38	Also, monitoring, reporting, and evaluation. (Kristie L. Ebi, IPCC WGII TSU)	Text has been replaced.
392	36787	24	39	0	0	0	Cases for China and India should be included in this section because of their large sizes and importance in Asia. For Glaciers, those in the Himalayan mountain chains should be mentioned because they are the sources of a number of major rivers in Asia. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Himalayan glaciers cross-referenced to Chapter 3
393	36794	24	39	0	0	0	For case studies, I would suggest to include cases for China and India due to their importance in the region and the adaptions taken place in the two countries. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Space limitation prevents the addition of more case studies
394	35220	24	39	0	40	0	24.9.1: surprising to see no mention of dams --- a very serious transboundary issue both in terms of the flow of water and materials, and the flow of financing and generated power - e.g. Thai investment in Laotian dams. There is a recent paper in Frontiers of Ecology & Environment on governance issues in the LMB which is relevant here (Grumbine is one of the authors). Also an interesting projection of fisheries impacts of Mekong dams by Ziv et al in PNAS. (David Dudgeon, University of Hong Kong)	The effects of dams are not emphasized here as the main focus of this case study, which focuses on transboundary issues in relation to climate change adaptation. The references and elaboration of impact of hydropower dams on hydrology in the LMB and the impact on fisheries has been incorporated.
395	45674	24	39	8	42	49	(1) The megadeltas and Himalayan glaciers featured in AR4 are not included here. Given the importance of these two issues in the region, it would be helpful to high them as case studies as well; (2) Given the rapid economic development and hence the increasing demand for infrastructure development in the region, it would be good to highlight as a case study the growing interest in integrating the consideration of climate change risks into infrastructure development. (Xianfu Lu, ADB)	Refererred to relevant chapter. Limited space.
396	46921	24	39	19	39	21	This figure should be updated. The Mekong River Commission's 2010 State of the Basin report has estimated that fishery products in the four Mekong countries reached US$3.9–7.0 billion per year. (see: http://www.mrcmekong.org/assets/Publications/basin-reports/MRC-SOB-Summary-reportEnglish.pdf) (Katy Yan, International Rivers)	The proposed data from the Mekong River Commission's 2010 State of the Basin report has been incorporated.
397	37059	24	39	27	39	32	the relative contribution of climate change to crop losses and negative impacts on fisheries, and the uncertainty of attribution of observed impacts to climate change should be addressed more clearly. The cited sources do not seem to justify the statement, e.g., that "negative impacts of CC are being observed (on fisheries). (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	The observed impact on agriculture and fisheries using examples from LMB countries and citing relevant studies has been clarified using more relevant refrences.
398	51487	24	39	28	39	29	For the described changes in rainfall patterns, the author team could consider whether it would be clearer to indicate the nature of these changes (increases, decreases, or both?). Additionally, in terms of the intensification of flooding and droughts, is the author team presumably referring to physical events themselves or also to impacts of these climate extremes? (Katharine Mach, IPCC WGII TSU)	Specific changes on rainfall pattern has been clarified. For flooding and droughts, the intensification of the physical events themselves, e.g. increased frequency, higher level of severity/magnitude and longer duration are clarified.
399	37058	24	39	32	0	0	Reference MRC 2010 missing from Reflist (p 57) (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	MRC 2010 did exist in our zero order draft submission, it is added back to the reference list.
400	51488	24	39	43	39	46	For these areas, the author team could consider assigning calibrated uncertainty language to reflect its degree of certainty in them. (Katharine Mach, IPCC WGII TSU)	The cited sources and studies do not provide sufficient information for this to be done.
401	46922	24	39	44	39	44	Reframe sentence to reflect the following: The Mekong River Commission's Strategic Environment Assessment report states that climate change would see agricultural productivity increase in the basin (around 3.6% by 2030) but food security decrease (see page 121, http://www.mrcmekong.org/news-and-events/consultations/strategic-environmental-assessment-of-mainstream-dams). (Katy Yan, International Rivers)	The author team will incorporate this comment by reframing the negative outlook of future agricultural output towards a statement reflecting the changes of spatial distribution of agricultural output combined with a total decrease in food security as proposed by the commentator. The agricultural productivity increase (around 3.6% by 2030) estimated in a CSIRO research has a few limitations. For example, it does not factor extreme events such as flooding and drought which may cause loss of rice productivity by average 30-50% estimated by a SEA START research and the estimated productivity increase is for the whole Mekong Basin instead of the Lower Mekong Basin. Therefore, the author team think it may not be appropriate to reflect this estimation for the whole Basin in the context of Lower Mekong Basin.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
402	52146	24	40	0	0	0	"Section 24.9.3 : Reports on disappearance of Himalayan glaciers leading to drying up of the Indo-gangetic plains have created undue strain and panic. Himalayan glaciers have attracted attention of various researchers and reports are conflicting. In some regions like Karakoram, remotely sensed frontal changes and surface velocities between 2000-2008 provide evidence for strong spatial variations in glacial behaviours linked to topography and climate(Scherler et al 2011). The authors have reported more than 65% of the monsoon influenced glaciers are retreating , but heavily debris covered glaciers with low gradient terminus regions typically have stable fronts. These observations led the authors to conclude that there is no uniform response of Himalayan glaciers to climate change and that debris cover is of utmost importance to understand the glacier retreat phenomenon. (Ref : Dirk Scherler, Bodo Bookhagen, and Manfred R Strecker. 2011. Spatially variable response of Himalayan glaciers to climate change affected by debris cover. Nature geosciences 4, 156-159) More recently Sorg et al., (2012) demonstrated in an elaborate study that glacier shrinkage was found to be most pronounced in peripheral, lower elevation ranges in the Tien Shan (Central Asia). It is understandable that such climate driven changes can greatly affect stream flow having direct implications on freshwater supply, irrigation and hydropower potential in the affected regions during summer in the densely populated arid lowlands. Shifts have already been noted in seasonal runoff in some rivers and it is apprehended that summer run off will further decrease if precipitation and discharge from thawing permafrost bodies do not compensate sufficiently for the short falls. (Ref : Annina Sorg, Tobias Bolch, Markus Stoffel, Olga Solomina and Martin Beniston. 2012 . Climate change impacts on glaciers and runoff in Tien Shan (Central Asia). Nature Climate Change, doi: 10.1038/nclimate1592) (Shelley Bhattacharya, Visva Bharati University)	Thank you, the comments is partly accepted. A map of major glaciers of Asia (based on vulnerability criteria) will be developed where information on the Himalayas will be cross-referenced with existing chapters in SOD, especially with Box 'Case Study: Himalayan Glaciers' in WG2 AR5 Chapter 3 'Freshwater Resources'. This will be part of the Ch24 water sector. The case study 24.9.3. Glaciers of Central Asia and Siberia will not be expanded to other Asian glaciers.
403	45675	24	40	16	40	17	Details on this study will be helpful here. (Xianfu Lu, ADB)	The specific scope and results of this study has been accepted for publication. The findings have been incorporated [AS]
404	35221	24	40	31	0	0	Much' of the region's fauna? The whole region? (David Dudgeon, University of Hong Kong)	No. A lot of species cannot live in peat swamp forest.
405	53566	24	40	42	40	42	Please cite WGI. (Kristie L. Ebi, IPCC WGII TSU)	Will do.
406	44225	24	40	48	0	0	24.9.3. Glaciers of Central Asia and Siberia: The entire section is inaceptably biased twowards one single author (a CA of the Ch24). The entire section must be rewritten by including mayn other papers of many other authors. Too many to be listed here. An expert not so much involved in this particular area may be added as CA. It is also highly suggested to not only present Central Asia and Sibiria (if a limited case study it is a too large and complex area - probably also defined by the study areas of the respective CA) in this section of the Asia Chapter 24, despite being thought as a case study. This gives an inclined picture of glaciers in Asia. This is not a critics against the studies cited but against the exclusion of many other studies. (Georg Kaser, University of Innsbruck)	Partly accepted. We inserted additional citations to publications (please see Table 24-12), but we did not change much the text of the case study 24.9.3. "Glaciers of Central Asia and Siberia". We also added cross-reference to WG1 Ch04 Section 4.3. Information on Himalaya glaciers is included into other parts of Ch 24. Reviewer has not itemized publications about central Asia. We agree, there are many papers and books published about central Asia glaciers in Russian, not in English. Authors of the Case Study, Vladimir and Elena Aizen worked in central Asia continuously since the 1970's and during the last 20-25 years their papers have been published mainly in English. We give also references on the papers published in Russian. We know only few which have been published in English , but most of these publications are about one small glacier basin or separate mountain range. They do not cover the entire mountain system (Altai, Tien Shan or Pamir). There is a recent publication by Annina Sorg et al, 2012. However, this paper is only about the western Tien Shan. There are also many "black" publications produced through the UNU, US AID, the World Bank and Asian Development Bank but all of them are not peer-reviewed and should be avoided as information and data souce for the IPCC assessment.
407	47036	24	40	48	0	0	This entire section seems to be heavily biased towards the work of one author (Aizen) which is not acceptable. I suggest to get a much better balance here and also consider other work about glacier change in this region, there are actually quite a lot of further publications available. (Frank Paul, University of Zurich)	Partly Accepted. Response the same as for #406 above.
408	35893	24	40	48	41	50	This is a very concise a well-written section on projected changes in glacial characteristics for central Asia and Siberia, but would it be possible to include similar sections on other mountainous areas in Asia such that the projected evolution of Asian glaciers is not a one-sided argument? I feel it would be very beneficial (both to scientists and the media) to include a section highlighting the differences in observations/projections for the Karakoram/NW Himalayan regions, as glaciers in these regions have been observed and projected to behave differently to other Himalayan glaciers, and previous errors regarding these regions has severely discredited climate science in the public eye through media exposure. A few key references that might be helpful in summarizing the state of Karakoram glaciers can be found in Janes & Bush (2012, In press, Journal of Climate, DOI: 10.1175/JCLI-D-11-00436.1). (Tamara Janes, Met Office Hadley Centre)	Same as reply to #402.
409	37061	24	40	48	41	50	This very informative case study may be improved by adding more context/information on observed/short term and long term impacts of the increasing deglaciation. As it stands now, it focuses on more WG1 type information of the changes in state of physical system. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Thank you, the comments is accepted. Cross-reference to Ch 24 Section 24.4.1 Freshwater Resources and a bit of text is added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
410	43473	24	40	48	41	50	Am surprised that there is no mention of the Himalaya (David Molden, International Centre for Integrated Mountain Development (ICIMOD))	Same reply as to # 402.
411	37060	24	41	1	41	2	Statement would profit from assignment of confidence and citation of source of statement. (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Accepted. Errors in total glaciers area and in total volume of glacier loss are added. Citations are added as well. This statement made on the base of 5 years intensive research of glacio-climatoological group at the University of Idaho with two sources of remote sensing data over Altai-Sayan, Tien Shan and Pamir: Corona KH-9 Mapping Program (1973-1975), Landsat ETM+ and ASTER images (1999-2003) plus ALOS PRISM 2009. The Altai-Sayan glaciers were evaluated since 1960 using aerial photos but Tien Shan and Pamir glaciers compuited from 1973-1975. All data will be avaliable on the university web site: http://www.asiacryoweb.org that is in process of reorganization now and after three major papers published in the Journal of Glaciology and possibly in the Cryosphere electronic journal in 2013.
412	47037	24	41	2	0	0	This statement needs to have a citation. (Frank Paul, University of Zurich)	Accepted. Citation and explanations are added. The USSR Glacier Catalogue and Chinese Inventory were created by aerial photography of 1960s-1980s accordingly but no repeated inventory has been made since that time. completed Two glacier inventories were completed by Vladimir Aizen and colleagues. The first one at the same time as the USSR Glacier inventory to see the difference in estimation made by aerial photography and Corona KH data, and the second inventory using modern data of 2000s. So, the whole period is covering ~50 years (1960 to 2009). The longest in Altai-Sayan and 10 years lesser in Tien Shan and Pamir ~40 years (Aizen et al, 2011; 2012; Nikitin et al, 2012).
413	51489	24	41	4	41	7	For these statements, it would be helpful to specify the relevant time frame more precisely--these observations pertain to the period since 1960? (Katharine Mach, IPCC WGII TSU)	Accepted. Time-frame is specified. See also answer to #412.
414	47038	24	41	7	0	0	lost 14%: over which period? (Frank Paul, University of Zurich)	Accepted. Period is from 1960s to 2009, it is be added to the text.
415	47039	24	41	14	0	0	it is the longest valley glacier, not the largest one (Frank Paul, University of Zurich)	Yes, this is the largest glacier in the mid- low latitudes, outside of the Polar regions (Kotlakov, World Atlas of Snow and Ice Resources, 1977) .We will add additional information that it is the largest at mid- low- latitudes with additional references.
416	44226	24	41	24	0	0	The discussion about the Jacob paper has made considerable progress. Chross check with WG1 Ch4 (Georg Kaser, University of Innsbruck)	Thank you. The comment is accepted. We checked WG1 Ch4, cross reference is added.
417	51490	24	41	36	41	36	It would be clearest to specify explicitly what the acronym ELA stands for. (Katharine Mach, IPCC WGII TSU)	ELA is a glacier equilibrium line altitude (zero glacier mass balance altitude for the current year or an average for certain years). It is specified above, see p.41, line 25 in Ch24 FOD.
418	53567	24	41	36	41	40	Please cite WGI. (Kristie L. Ebi, IPCC WGII TSU)	Accepted. We did this.
419	51491	24	41	38	41	40	For this statement, it would be preferable to specify the relevant climate/socio-economic scenario by name, along with the relevant geographic area and timeframe. (Katharine Mach, IPCC WGII TSU)	Partly accepted. We specified a set of scenarios, and it is clear where future information can be read. However, to specify all of them by name and provide additional information here requires additional space, and we are requested to short the Chapter text.
420	51492	24	41	40	41	46	It would be helpful to provide indication of how these projections differ for the other end of the range (a 2 degree increase). (Katharine Mach, IPCC WGII TSU)	Accepted, requested addition is made. If air temperature increases to the minimum predicted value, i.e. by 2 ◦C, and if precipitation increases to the maximum predicted value 1.24 times the current value, then the simulation model predicts almost no changes in the number of glaciers, GCA, and glacier volume, while glacier runoff will increase by 1.25 times of the current value (Aizen e al., 2007).
421	53568	24	41	45	41	45	Disappear by when? (Kristie L. Ebi, IPCC WGII TSU)	Under the threshold predicted conditions, if air temperature increases by 8oC and precipitation decreases to the minimum predicted value, i.e. by 0.84 times the current rate, then current glaciations will disappear.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
422	51493	24	41	46	41	50	The logic of the statements leading to the conclusion in the last sentence could be clarified. (Katharine Mach, IPCC WGII TSU)	Accepted. The Altai and inner Tien Shan glaciers did not exist in the Bølling-Allerød (BP), which is the warm period before the Young Dryas episode and further the Holocene. The climate of the BA was warmer than all Holocene warm periods including modern. During the last 12,000 years, the warmest period was in the Holocene Climatic Optimum (circa 7,600BP), when mean air temperature was about 4.2oC higher than modern, i.e. the annual average temperature in the last three decades. Nevertheless, central Asian glaciers survived the thermal Maximum. The mean air temperature should be at least 5oC higher than modern (Aizen et al., 2012e) to complete modern glacier disappearance. We added this clarification in short, however, it was a request to short the text of this Case study.
423	35222	24	41	50	0	0	Sentence seems incomplete. (David Dudgeon, University of Hong Kong)	Please see response in #422.
424	35223	24	42	0	0	0	Seas (or lakes) don't die (see also line 48) but they can dry. Suggest a change in wording. (David Dudgeon, University of Hong Kong)	Rejected. Is the Aral Sea Dying? This is a widely used term during the last decade in the scientific litterature. See, for example, a book "Dying and Dead Seas. Climatic versus Anthropic Causes", J.C.J. Nihoul, P.O. Zavialov, Ph.P. Micklin (Eds.), NATO ARW/ASI Series, Kluwer Acad. Publ., Dordrecht, 2004
425	51494	24	42	17	42	17	The author team may wish to consider use of the word "irrationally"--presumably some actors in this situation perceived the use as rational? (Katharine Mach, IPCC WGII TSU)	Accepted. The text is proposed to change to: "Since 1960, the water resources of the Amudarya and Syrdarya rivers have been excessively used in order to increase irrigation of agricultural lands as well as to create artificial water reservoirs, which later proved to be irrational (Glantz, 1999; Kostianoy and Kosarev, 2010."
426	51495	24	42	19	42	19	Is the word "irreversible" fully precise here, given that some reviving of the sea is described in the final paragraph on the page? (Katharine Mach, IPCC WGII TSU)	Yes, it is, because the Aral Sea will never reach the same shape, surface and volume, as it was in 1960, because of lack of water. Reviving is observed only in the separated (by the dam) Small Aral Sea which is a small part of the former Aral Sea.
427	37062	24	42	34	42	41	While the statement on "Supplementary desiccation" is intuitively clear, a more formal Detection and Attribution analysis would be needed to derive a scientifically sound conclusion. If literature is inconclusive (or non existing) that should be pointed out, and statement rephrased. Discussion of importance of drivers would add value to case study! See e.g. Small et al 2000; Micklin 2007 (Gerrit Hansen, Potsdam Institute for Climate Impact Research)	Partly accepted. In this Case study (1 page only with one figure) there is no place for "Detection and Attribution analysis". It was important to mention here not only irrational water use (which is given like a single reason in most of the Aral Sea publications), but also some of the natural factors, which led all together to a dessication of the Aral Sea. Two references are provided for the statement under discussion.
428	53569	24	42	38	42	39	Please cite WGI, if possible. (Kristie L. Ebi, IPCC WGII TSU)	Accepted. The following Reference will be added in the text: "(IPCC, 2007; Lioubimtseva and Henebry, 2009) " and in the list of References: IPCC. Climate change 2007: The physical science basis. In: Contribution of Working Group I to the Fourth Assessment report of the Intergovernmental Panel on Climate Change, Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M., Miller, H.L., Eds., Cambridge University Press, Cambridge, 2007.
429	45313	24	43	7	43	8	"Variability of trends in average and extreme precipitation is projected to be wider within the region." Not clear what "wider variability" refers to precisely. (John Caesar, Met Office Hadley Centre)	Deleted.
430	35224	24	43	12	0	13	The use of positive and negative here is a bit misleading as more water is not necessarily positive. Better to say more and less water. (David Dudgeon, University of Hong Kong)	Revised.
431	36778	24	43	21	43	28	The timeline of the impacts needs to be presented more clearly. Also, it is not clear what the overall impact on rice would be. The authors first say the impact is negative because of shorter growing period. Then said the CO2 fertilization effect could increase the rice yield. What is the overall impact? (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Revised.
432	43194	24	43	30	43	37	Under FAQ. 24.4: It is suggested that women, childern and margenalised people may be considered for risk assessment for climate change (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	There is no literature to support this - but generic reference to this group is implied.
433	35225	24	43	53	0	54	A single sentence on biodiversity; it is not even clear that this is the most important thing about Asian biodiversity under climate change that needs to go into a FAQ. Surely some mention of vulnerability would be essential? (David Dudgeon, University of Hong Kong)	Agree. We can write a FAQ on biodiversity but the number of FAQs for the FOD has been restricted.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
434	45202	24	44	22	0	0	Please add the appropriate main references here; for Adélie penguins: Ainley, D.; Russell, J.; Jenouvrier, S.; Woehler, E.; Lyver, P.; Fraser, W. & Kooyman, G. Antarctic penguin response to habitat change as Earth's troposphere reaches 2 degrees above preindustrial levels. Ecological Monographs, 2010, 80, 49-66; for emperor penguins: Barbraud, C. & Weimerskirch, H. Emperor penguins and climate change. Nature, 2001, 411, 183-186; Jenouvrier, S.; Holland, M.; Stroeve, J.; Barbraud, C.; Serreze, M.; Weimerskirch, H. & Caswell, H. Effects of climate change on an emperor penguin population: analysis of coupled demographic and climate models. Global Change Biology, 2012; for snow petrels: Jenouvrier, S.; Barbraud, C. & Weimerskirch, H. Long-term contrasted responses to climate of two Antarctic seabirds species. Ecology, 2005, 86, 2889-2903. (Stephanie Jenouvrier, Woods Hole Oceanographic Institution)	There are no penguins in Asia. References could be useful for Chapter 28 "Polar Regions".
435	43114	24	45	10	0	0	References: Please, add the following: Al Zawad, F., 2009, Climate change in Saudi Arabia on a regional scale: Impacts on evaporation, surface runoff and soil moisture, VDM Verlag Dr. Muller, ISBN: 978-3639217735 (Faisal Al Zawad, Presidency of Meteorology and Environment)	Done.
436	51496	24	69	0	0	0	Table 24-2. In the caption for this table, the author team should refer to table 24-5 to clarify abbreviations used. Additionally, the author team should consider separately presenting information for temperature and precipitation (either by dividing information in this table or using 2 separate tables). (Katharine Mach, IPCC WGII TSU)	Comment taken into account.
437	53998	24	69	0	0	0	Table 24-2: An explanatory caption including reference to table 24-5 for acronyms used for parameter must be provided. The data presented here could be grouped a little more, probably by region, instead of by different parameters within a given region. (Yuka Estrada, IPCC WGII TSU)	Comment taken into account.
438	36804	24	70	0	0	0	Table 24-2. The information on West Asia is too narrow, given the fact that the region includes 17 countries. The authors need to provide more literature concerning the region. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Added more information on West Asia.
439	45314	24	70	0	74	0	Tables 24-2 to 24-4. What does "General" refer to in the Countries column? Presumably it means for the whole region? (John Caesar, Met Office Hadley Centre)	Added the definition of "General"
440	36805	24	71	0	0	0	Table 24-3. Drought is missing in the table. Extreme drought events have occurred in many countries in Asia during the past decades, e.g., southwestern China, Iran, etc. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Comment taken into account.
441	42655	24	71	0	0	0	The second and third lines (Mean relative excess ... Of +9%) under South Korea should be removed from the Table 24-3. (Suam Kim, Pukyong National University)	Comment taken into account.
442	51497	24	71	0	0	0	Table 24-3. In the caption for the table, it would be helpful to indicate specifically what is meant by "*SREX." (Katharine Mach, IPCC WGII TSU)	Added the information about "SREX"
443	36779	24	73	0	0	0	Table 24-4 is important as it presents a summary of the assessment for Asia. It needs to be more inclusive and reflect the results of a wider range of studies, with respect to different research teams, GCMs, SRES, etc. In the current table, the results for each region on each aspect are mostly from one single study, e.g., Dagvadorj et al, 2009 for North Asia on temperature and precipitation; Kim and Byun, 2009 for East Asia in General. It is not clear to what extent that these individual studies can represent the latest knowledge and conclusions on the matter concerned so far. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Added more information.
444	51498	24	73	0	0	0	Table 24-4. For this table, the author team should consider separately presenting information by temperature, precipitation, or other event type. Such separation could further facilitate review and interpretation of the table by an interested reader. (Katharine Mach, IPCC WGII TSU)	Comment taken into account.
445	43113	24	73	0	74	0	Table 24-4: I would like to suggest adding information about Saudi Arabia in West Asia section (Page 74) as follows: Region: West Asia Countries: Saudi Arabia (to be placed after Aremenia) Please see the sheet titled "Saudi Arabia" (uploaded to supporting material) (Faisal Al Zawad, Presidency of Meteorology and Environment)	Comment taken into account.
446	48741	24	73	0	74	0	Table 24-4 In the table, following information is seems to be also useful for readers. Region, Countries, Parameter, Unit, Projected change, Scenario, GCM, RCM, Base year, Period, Reference Asia, Japan, Snow water equivalent, %, 39.4, SRES A2, MIROC3.2(medres), WRF, 2005, 2071-2080, Hara et al., 2008 Asia, Japan, Snow water equivalent, G ton, 6.1, SRES A2, MIROC3.2(medres), WRF, 2005, 2071-2080, Hara et al., 2008 Asia, Japan, Snow water equivalent, %, 51.6, SRES A2, MIROC3.2(medres), WRF, 2006, 2071-2080, Hara et al., 2008 Asia, Japan, Snow water equivalent, G ton, 4.9, SRES A2, MIROC3.2(medres), WRF, 2006, 2071-2080, Hara et al., 2008 Asia, Japan, River runoff, %, 39.4, SRES A2, MIROC3.2(medres), WRF SVAT&HYCY model, 1991-2000, 2071-2080, Ma et al., 2010 Asia, Japan, River runoff, %, 51.6, SRES A2, MIROC3.2(medres), WRF SVAT&HYCY model, 1991-2000, 2071-2080, Ma et al., 2010 Asia, Toyko, Monthly mean temperature in August, K, 1.4 ~ 3.3, SRES A1B, (BCCR-BCM2.0, CSIRO-Mk3.0, GFDL-CM2.1, INGV-SXG, MRI-CGCM2.3.2), RAMS, 1991-2000, 2071-2080, Adachi et al., 2012 References: Hara, M., T. Yoshikane, H. Kawase, and F. Kimura 2008: Estimation of the impact of global warming on snow depth in Japan by the Pseudo-Global-Warming method, Hydrological Research Letter, 2, 61-64, doi:10.3178/hrl.2.61 Ma, X., T. Yoshikane, M. Hara, Y, Wakazuki, H. G. Takahashi, and F. Kimura 2010: Hydrological response to future climate change in the Agano River basin, Japan, Hydrological Research Letters, 4, 25-29, doi:10.3178/hrl.4.25 Adachi, S. A., F. Kimura, H. Kusaka, T. Inoue, and H. Ueda 2012: Comparison of the Impact of Global Climate Changes and Urbanization on Summertime Future Climate in the Tokyo Metropolitan Area, Journal of Applied Meteorology and Climatology, doi:10.1175/JAMC-D-11-0137.1 (Masayuki Hara, Japan Agency for Marine-Earth Science and Technology)	Comment taken into account.
447	53999	24	73	0	74	0	Table 24-4: Again, the table could use further grouping to avoid repeating the same content over multiple cells. (Yuka Estrada, IPCC WGII TSU)	Comment taken into account.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
448	36806	24	74	0	0	0	Table 24-4. West Asia (18) should be West Asia (17) (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Revised according the comment.
449	42656	24	75	0	0	0	Table 24-5 might be re-named such as Appendix 24-1. (Suam Kim, Pukyong National University)	Comment taken into account.
450	35226	24	76	0	0	0	Is it deliberate that there is no entry under water for West Asia. It is arid, but not entirely dry. (David Dudgeon, University of Hong Kong)	Revised.
451	36780	24	76	0	0	0	The information provided in Table 24-6 and Table 24-7 is too narrow. More complete and inclusive information needs to be reported here. The regions should be put in the row to leave more room and flexibility to report details in the Table. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Revised.
452	51499	24	76	0	0	0	Table 24-6. Citations must be provided for all information presented in this table. Additionally, the author team should consider if this table adds enough value to justify its conclusion, beyond description of relevant citations in the chapter text. (Katharine Mach, IPCC WGII TSU)	Revised.
453	45203	24	76	28	0	0	Please provide references here on population and species distribution models, which link climate output from CMPI3 to population and species distribution models. This will give a better balance with the "end- to – end" models. For example, for habitat modeling: Predicting 21st-century polar bear habitat distribution from global climate models Ecological Monographs, 2009, 79, 25-58 and refer to section on polar bear of Chapter 30; for population modeling: Jenouvrier, S.; Caswell, H.; Barbraud, C.; Holland, M.; Stroeve, J. & Weimerskirch, H. Demographic models and IPCC climate projections predict the decline of an emperor penguin population. Proceedings of the National Academy of Sciences, 2009, 106, 1844-1847 Jenouvrier, S.; Holland, M.; Stroeve, J.; Barbraud, C.; Serreze, M.; Weimerskirch, H. & Caswell, H. Effects of climate change on an emperor penguin population: analysis of coupled demographic and climate models. Global Change Biology, 2012. (Stephanie Jenouvrier, Woods Hole Oceanographic Institution)	Revised.
454	51500	24	77	0	0	0	Table 24-7. Also for this table, the author team should consider whether presentation of this information in the context of the chapter text alone would be clearest. (Katharine Mach, IPCC WGII TSU)	Revised.
455	37715	24	78	0	0	0	last text box: Need references for studies and experiments. (George Backus, Sandia National Laboratories)	Deleted.
456	36781	24	79	0	0	0	More references should be given for each item in the Reference column. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Considered.
457	51501	24	79	0	0	0	Table 24-8. The author team should consider balancing the rich presentation of information in this table with further discussion in the chapter text. (Katharine Mach, IPCC WGII TSU)	Done
458	35227	24	80	0	0	0	I did not understand the first table entry 'environmental impacts' (David Dudgeon, University of Hong Kong)	Deleted
459	36782	24	80	0	0	0	Table 24.9 should mention China because of its importance in the region and many adaptation activities are going on there. There is much literature on the relevant issues in both Chinese and English language. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Deleted
460	45618	24	80	0	0	0	There are a few more options for diaster resilience: Enhancing early warning system using SNS (Social Network System) in case of South Korea. General public participate early warning mechanism by sharing their nearby disaster information. (Soojeong Myeong, Korea Environment Institute)	Deleted
461	46973	24	80	0	0	0	Table 24-9. The solution of adaptation for Bangladesh is not truely rely on the "Integrated approaches through existing community-based practices and enhancement of social capacity". One third of the people live in the urban and peri-urban region of the country where structural and non-structural measures are required. For example, national capital Dhaka city is one of the mega cities of the world which suffers from both internal and external floods. Adaptation options for the city dewlers will be completely different than the rural area. (A K M Saiful Islam, Bangladesh University of Engineering and Technology)	Deleted
462	51502	24	80	0	0	0	Table 24-9. In the table caption, it would be helpful to further specify the relevant scope of adaptation options presented here: urban, infrastructure-related, etc.? (Katharine Mach, IPCC WGII TSU)	Deleted
463	35228	24	81	0	0	0	Table does not add anything to text as far as I can see. (David Dudgeon, University of Hong Kong)	Merged into a new table.
464	36783	24	81	0	0	0	Table 24-10 should be placed before Table 24-8. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Merged into a new table.
465	51503	24	81	0	0	0	Table 24-10. For this table, the author team should consider whether presentation of this information in the context of the chapter alone is clearest. Alternatively, the author team could consider ways to enhance the "added value" achieved by presenting this information in table format. (Katharine Mach, IPCC WGII TSU)	Merged into a new table.
466	35449	24	82	0	0	0	Table 24-12 - Sources are not clear for these numbers, but cross reference to the WGI- Ch4 tables should be done at some stage. (David Vaughan, British Antarctic Survey)	Deleted. More to included in the text.
467	36784	24	82	0	0	0	Table 24-12 should include all the major glaciers in Asia, particularly those in the Himalayan mountain chains. It would be good to provide the information on observed and projected changes in major glaciers in Asia in the Table. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	To be deleted. More to included in the text.
468	36795	24	82	0	0	0	Table 24-11. The Aspect/Issues for Tibet relating to livelihoods may be more about the degradation of pastoral land, rather than biodiversity loss. Please check the literature to verify. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Checked and revised.
469	36796	24	82	0	0	0	Table 24-12. If possible, the Table should include major glaciers in the Himalayan region. It is mentioned in the Executive Summary that shrinking of glaciers in Central Asia and the Himalayas is projected…. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	The table is excluded from the Chapter 24 Second Order Draft.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
470	42657	24	82	0	0	0	References were needed for Table 24-12. (Suam Kim, Pukyong National University)	Same reply as to # 469.
471	51504	24	82	0	0	0	Table 24-12. Citations for the information provided in this table must be provided. (Katharine Mach, IPCC WGII TSU)	Same reply as to # 469.
472	35229	24	83	0	0	0	What do the dark areas in Fig. 24-2 represent? The desert parts have no water, but not all of the dark areas are desert. (David Dudgeon, University of Hong Kong)	Figure deleted.
473	36785	24	83	0	0	0	Figure 24-2. The dark green/black color dominating the map does not match the color code in the legend. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Figure deleted.
474	51505	24	83	0	0	0	Figure 24-2. It would be helpful to specify more precisely the metric used for quantifying hazard mortality risk in this figure. (Katharine Mach, IPCC WGII TSU)	Figure deleted.
475	54000	24	83	0	0	0	Figure 24-1 and Table 24-1 could be combined to make a single figure. (Yuka Estrada, IPCC WGII TSU)	Tables have been revised.
476	35230	24	84	0	0	0	Given that the Mekong is the subject of a transboundary case study , it is odd that the Chinese part of the river is not shown in Fig 24-3. The map is also an odd choice; none of the town marked are referred to in the text. (David Dudgeon, University of Hong Kong)	The Case Study focuses on the Lower Mekong River Basin. The towns are marked to familiar readers with the river traverse.
477	35231	24	84	0	0	0	The legend of Fig 24-4 mentions elevation, but the figure does not shopw elevation. (David Dudgeon, University of Hong Kong)	Accepted. Figure caption is corrected. The new caption: 'The difference in losses of glacier area in Altai-Sayan, Pamir and Tien Shan. Remote sensing data analysis from 1960s (Corona) through 2009 (Landsat, ASTER and Alos Prism)'.
478	35450	24	84	0	0	0	Figure 24-4 - I really don't understand the figure caption. And where does the figure come from - cite the source. (David Vaughan, British Antarctic Survey)	Figure caption is corrected, see annotation to the comment #477. The Figure is drawn by Elena Aizen, Contributing Author of the Chapter 24.
479	36786	24	84	0	0	0	Figure 24-3 is not necessary as it is merely a map of the Lower Mekong Basin. Alternatively, the authors could provide the information on the climate change impact on the river basin. (Hong Yang, Swiss Federal Institute for Aquatic Science and Technology (Eawag))	Map included to illustrate the countries involved for readers unfamiliar with the region.
480	42658	24	84	0	0	0	Tajikistan is missing in Figure 24-4. (Suam Kim, Pukyong National University)	Thank you, the comment is accepted. Tajikistan is indicated on the figure, and Kyrgyzstan is indicated as well.
481	45619	24	85	0	0	0	It would be nice if time series satellite images of Aral sea were included (Soojeong Myeong, Korea Environment Institute)	Rejected. Unfortunately, there is a strong limitation in space (brief text and one figure) for Case Studies. The present figure gives the look on the Aral Sea in 2008 and its shape in 1960 for a comparison. A geographic map of Central Asia is added over.