

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	56738	24	0	0	0	0	I have reviewed a previous version of this chapter and the current version is improved. I still feel that the coverage is rather variable over the study area (I have made a few remarks to that effect when writing on individual sections below), and that it may have been better to break it down and devote chapters to individual subregions, but clearly this is an approach that has, for whatever reason, not been adopted. The authors have done a decent job in pulling together a disparate and scattered literature of varying quality, and used it to produce an overview for a vast and geographically-variable region. This tends to make the text rather 'bitty' and fragmented, with different issues mentioned in passing for a wide number of different (for example) rivers in climatically v. different regions (see pages 9-11). There is also a great deal of uncertainty in some of the conclusions and projections, but that seems inevitable. Finally, I must apologise for some typos in this review document; I was unable to make the spellcheck function within the template file provided. (David Dudgeon, University of Hong Kong)	The format has been retained as it is generally well accepted. The proposed suggestion can be considered for the next assessment report.
2	57634	24	0	0	0	0	Please refer to three papers provided via supporting material: (1) jcli-d-12-005602E1-early online release.pdf, (2) Is_Global_Strong_Wind_Declining.pdf, and (3) Maximum_Wind_Speed_Changes_over_China.pdf. (ZONG-CI ZHAO, National Climate Center)	The authors are obliged to refer to the WGI report and its conclusions for the physical aspects.
3	57928	24	0	0	0	0	Make sure the references are correct. For instance, I don't find a Zhang et al. 2011 (page 10, line 1) about run-off changes in the Himalaya in the reference list. Sorry, if I overlooked. (Andreas Kaeaeab, University of Oslo)	A fact and number check has been conducted to ensure references are correct.
4	57929	24	0	0	0	0	The description of glacier changes and effects on run-off should become more specific (e.g. page 3, line 20). More recent studies such as Kääh et al. 2012 (Nature, 488(7412), 495-498) draw a more specific picture, both on glacier change and run-off contribution. E.g. Glacier mass loss in the Himalayas is LESS than the global average; glacier imbalance contribution to river run-off in Himalaya only a few percents, but 10% for Upper Indus. There are a number of other studies on glaciers/snow and run-off (e.g. from authors like Bookhagen, Immerzeel, etc.) . (Andreas Kaeaeab, University of Oslo)	The glacier case-study has been revised.
5	64790	24	0	0	0	0	Not much of background information from the Middle East as a region highly vulnerable to CC impacts. (Imad Khatib, Palestine Academy for Science and Technology)	Agree. Coverage table has been introduced to highlight paucity of information.
6	64791	24	0	0	0	0	For Palestine and Israel please refer to the German funded program GLOWA - Jordan River (phases I, II and III) as there are plenty of background information (http://www.glowa-jordan-river.de/) (Imad Khatib, Palestine Academy for Science and Technology)	The focus is on peer reviewed materials. The suggested reference is grey literature.
7	65509	24	0	0	0	0	The chapter is nicely interwoven, encompasses major issues pertaining to climate change in Asia and is properly linked with its relevant chapters in the same book. (Arif Goheer, Global Change Impact Studies Centre (GCISC))	Thank you.
8	65531	24	0	0	0	0	The chapter is very well structured and therefore it would be useful to divide the sub-sections into sub-regions and not only provide random examples corresponding to different countries in the region. (Tamer Afifi, United Nations University Institute for Environment and Human Security)	Done as suggested. Every major section highlights sub-regional findings where they are available in the literature.
9	66097	24	0	0	0	0	The chapter contains very useful information however it requires to be edited by some professional editor as some of the sentences and paragraphs need to be rephrased for the sake of clarity to the readers (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	A native speaker from the Author team has edited the text. In addition, copy editing will be done by the TSU.
10	67936	24	0	0	0	0	The chapter seems to include many examples from a few particular countries and therefore should be more well-balanced in the array of countries from which examples are derived. (JAPAN)	The review depends on coverage of issues in the peer reviewed literature.
11	67937	24	0	0	0	0	Asia should not be divided based on geographical position but on climatic and geographic attributes as it was in the TAR, namely boreal Asia, arid and semi-arid Asia, temperate Asia and tropical Asia. The six sub-regions defined in the chapter are referred to in many of the descriptions provided for "sub-regional diversity", presumably because these sub-regions are not representative of certain climatic features and fail to explain any possible relationships between observed or projected phenomena and climatic attributes. Once the Asian sub-regions are redefined, climatic and meteorological estimations for each sub-region could be provided, taking WGI outcomes into consideration. And such reorganisation by sub-regions should be reflected in SPM and TS as well. (JAPAN)	The regional grouping used in the chapter is more relevant to implementation measures.
12	67938	24	0	0	0	0	Chapter 24 should include more discussion throughout the chapter regarding changes in the habitats of birds and non-marine species (JAPAN)	Page limitation prevents major additions on impacts to animals in 24.4.2 and 24.4.3 and both sections were already too long and have had to be shortened.

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13	68236	24	0	0	0	0	Different parts of Asia are unevenly characterized in ch. 24. Thus, the Asian part of Russia is not considered in regard to trends in water resources. However, it is known that water resources increased in this region in the last decades of the XX century. This is mentioned in the national "Assessment report on climate change and its consequences in Russian Federation" (2008). General summary (similar to SPM) was published also in English and posted at http://climate2008.igce.ru/v2008/pdf/resume_ob_eng.pdf . (RUSSIAN FEDERATION)	The focus is on peer reviewed documents.
14	68237	24	0	0	0	0	Such statement relates to the largest rivers of the Northern Eurasia. Therefore, it is expedient to reflect this information in the main text and in the Executive+G9 summary of ch. 24. (RUSSIAN FEDERATION)	The focus is on peer reviewed documents.
15	68238	24	0	0	0	0	Climate induced decrease in food production and food security in many regions of Asia is stated on page 3 (lines 26-27) in the Executive summary. This is not correct in regard to the Russian Federation, that was clearly shown in the numerous papers of Dr. Oleg Sirotenko (1940-2012) and his group at the All-Russian Research Institute for Agricultural Meteorology (Obninsk, Russia). Respective statements and references can also be found at http://climate2008.igce.ru/v2008/pdf/ . (RUSSIAN FEDERATION)	Agree. Text has been revised accordingly.
16	68239	24	0	0	0	0	A certain bias towards the South Asia is evident in the whole chapter 24: in regard to water resources, agriculture, vectors of human diseases (encephalitis, Lyme disease). It is expedient to improve the final draft of the report in this regard. (RUSSIAN FEDERATION)	The review depends on coverage of issues in the peer reviewed literature.
17	74663	24	0	0	0	0	"Most of Asia" is used several times throughout the chapter. It would be useful to be more specific, so that readers understand which parts of Asia are not encompassed by a specific statement. For instance, on page 7 line 31 regarding increasing trends in annual average temperatures across the region as well as page 8 line 27 on drying trends. (UNITED STATES OF AMERICA)	Checked. Only used twice after revision.
18	74664	24	0	0	0	0	Citing AR4 is reasonable, but the report seems to rely mostly on AR4 beyond Section 24.2. There has been a substantial amount of work done with CMIP5 results and the text should reflect the advancements in the science accordingly. (UNITED STATES OF AMERICA)	Impacts literature on CMIP5 is very limited.
19	74665	24	0	0	0	0	Ecosystem-based approaches to adaptation should be acknowledged more broadly throughout the chapter. The case study on these approaches did not seem to be included. (UNITED STATES OF AMERICA)	We have added a little more on this within space constraints. Cross-referenced with Box CC-EA (Chapter 16)
20	74666	24	0	0	0	0	Given that rising populations are a major factor that acts in synergy with climate change, there should be more consideration of demographics. There is also an interesting observation on page 20, lines 41-42, that human impacts are so drastic that they make climate impacts hard to detect. If this is correct, then more attention should be paid throughout the documents to non-climate human induced stressors and the role of population increases. (UNITED STATES OF AMERICA)	Page limitation prevents additions
21	74667	24	0	0	0	0	Given the size and diversity of the region, it may make sense to report separately on sub-regions in future IPCC reports. (UNITED STATES OF AMERICA)	Agreed. Please recommend more pages for Asia chapter in AR6 at the IPCC-Plenary.
22	74668	24	0	0	0	0	More care should be taken to address uncertainties. IPCC standard confidence language is used inconsistently or not at all, depending on the section. Authors are encouraged to use standardized confidence language consistently throughout the chapter. (UNITED STATES OF AMERICA)	The chapter has been rechecked to ensure consistency.
23	74669	24	0	0	0	0	Much of the information presented in the chapter is made in the form of regional generalizations. However, in many cases the information varies by country (e.g., precipitation) and other factors. These differences should be pointed out and not masked by general statements about vulnerabilities or impacts. It's important to emphasize the sub-regional differences within the broader "Asia" region. (UNITED STATES OF AMERICA)	Please Refer to the WGI report for this aspect.
24	74670	24	0	0	0	0	Other than a few brief references, there seem to be relatively little importance placed on monsoon dynamics considering how important the monsoon is for most of the region, not to mention its global importance. This should be emphasized more in the sections on climate impacts, agriculture, etc. References to the WG1 report could help to resolve this concern. (UNITED STATES OF AMERICA)	Please Refer to the WGI report
25	74671	24	0	0	0	0	Overall, the document does not have enough discussion or synthesis of the issues presented. It reads like a literature review. It is understandable that a lot of references to observations are needed to support statements in the document, however as an assessment by experts, the report needs to have statements that synthesize the current knowledge and provide an assessment. There appears to be very little of what can be called an assessment beyond citing recent work. The convening of experts in this report should generate ideas that can be acted upon. (UNITED STATES OF AMERICA)	Done where possible.

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26	74672	24	0	0	0	0	Please check for consistent spelling of rivers. Syr Darya appears as two words and then later as Syrdarya in other parts of the chapter. (UNITED STATES OF AMERICA)	Rechecked to ensure consistency.
27	74673	24	0	0	0	0	Since only the Eastern part of Russia is considered in the chapter, the expression, "western part of Russia" is a bit confusing. Perhaps the authors intended to say "the Western part of the Russian region in Asia"? (UNITED STATES OF AMERICA)	Rechecked and corrected.
28	74674	24	0	0	0	0	The authors emphasize that the glaciers are melting in the Himalayan mountains and that this will eventually cause water shortages during droughts when they occur in the future. But there is a lot of scientific debate on these points. First, there is considerable variability across the region and even within sub-regions; some glaciers may not be melting at the same rate or at all. The extensive coverage of Central Asian glaciers is a helpful case study, but needs to be complemented by some coverage of glaciers elsewhere in the region. Otherwise a reader is left with an incomplete picture of these issues. Second, the water issue is related to more than just glaciers; rather, the role of the monsoon, snowpack, snowmelt (and the timing and magnitude of each) are important factors that may play a greater role in certain parts of the region and need to be considered. The authors should reference the recent US National Academies report on glaciers. (UNITED STATES OF AMERICA)	Section rewritten after consulting experts.
29	74675	24	0	0	0	0	The authors of this chapter may wish to refer to the following reference as its approach to adaptation in the region and the contents could greatly improve the adaptation sections in Chapter 24. USAID. 2010. Asia-Pacific Regional Climate Change Needs Assessment Report: Published by IRG, Washington, DC. http://pdf.usaid.gov/pdf_docs/PNADS197.pdf (UNITED STATES OF AMERICA)	This report has been cited in the Section 24.9.1.
30	74676	24	0	0	0	0	The chapter does discuss human infrastructure vulnerability and the need for Disaster Risk Reduction, but emphasis is needed on the importance of early warning and forecasts of climate extremes at the country and regional level. Consider discussing the need for building data networks as part of building resilience to climate extremes as well as establishing integrated water management and improving performance of climate models. (UNITED STATES OF AMERICA)	Page limitation prevents major discussion of this aspect.
31	74677	24	0	0	0	0	The chapter is unevenly written, with the quality of writing in some parts better than in others. The migration section seems particularly incongruous with the rest of the chapter. The overall style of the chapter is very disparate and it is clear that different paragraphs were written by different authors. The length and specificity of each paragraph also vary considerably. Readability would be improved through the use of a single voice and consistent style. (UNITED STATES OF AMERICA)	This has been done as far as possible by a native English speaker from the team.
32	74678	24	0	0	0	0	The chapter is written more as a literature review than an assessment. As a result, it is difficult to determine which statements should be interpreted as indicative of larger trends, and which are illustrative of very location specific phenomena. The fact that often a single source is cited to substantiate a statement further contributes to this lack of clarity. Authors are strongly encouraged to emphasize "assessment" rather than review. (UNITED STATES OF AMERICA)	Done as far as possible within page limitation
33	74679	24	0	0	0	0	The chapter really reads as a literature review rather than a synthesis/assessment. The threshold/standard for previous work to be cited is understood but gaps in peer-reviewed literature for a region as large and diverse as Asia means that the picture presented for Asia is lacking. In some cases, a topic is discussed for as few as two regions and the reader is left to wonder what is the situation in the rest of Asia. It would certainly be useful to acknowledge data and research scarcity for the region and particularly for West Asia and to a lesser extent in South and Central Asia. (UNITED STATES OF AMERICA)	Paucity of information is highlighted through the new coverage table that has been introduced.
34	74680	24	0	0	0	0	The chapter would be improved by an expanded discussion of adaptation activities. It is recognized that these may be under-represented in the scientific literature and mostly discussed in gray literature. However, these sources should also be included when appropriate. Only some of the adaptation options that are relevant to and/or have been tested in Asia are discussed. Others that should be considered in the appropriate sub-sections could include: strengthening the capacity and capability of regional, national and sub-national hydro-meteorological forecasting; and strengthening regional cooperation to address climate security, transboundary migration, land tenure, and conflict. Also, more attention could be paid to incorporating local or indigenous knowledge and adaptation practices throughout the document. Some consideration of maladaptations should be considered, and examples provided. Finally, there is an overall deficit in addressing the social, planning and governance constraints to adaptation. (Chapter 25 provides good examples of how to handle this and how to balance with the natural science aspects.) (UNITED STATES OF AMERICA)	Page limitation prevents major addition.

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35	74681	24	0	0	0	0	The chapter would benefit from better use of subheadings, both to structure writers' inputs and to make it easier for the reader. For instance, within the impacts sections under freshwater resources, if impacts were presented by subregion or by subsector, it would be easier to navigate. (UNITED STATES OF AMERICA)	Revised. All subsector discussions are based around sub-regions as much as possible, where literature is available.
36	74682	24	0	0	0	0	The Coral Triangle Initiative (CTI-CFF) on Coral Reefs, Fisheries and Food Security was formed in 2007 and one of the 5 goals of the CTI-CFF as described in the Regional Plan of Action is Climate Change Adaptation Measures Achieved (http://www.coraltriangleinitiative.org/about-us). To that end, the 6 countries have adopted National Plans of Actions which include actions to achieve this goal and as a region have completed and adopted a Region-wide Early Action Plan for Climate Change Adaptation in Oct 2011 (http://www.coraltriangleinitiative.org/library/region-wide-early-action-plan-climate-change-adaptation-nearshore-marine-and-coastal-enviro). This action plan sets forth urgent and immediate adaptation actions to be taken across the region to build community and ecological resilience. Guidance to foster community based vulnerability assessment and adaptation planning in the region has been field tested and will be released soon. The authors are encouraged to consider including this type of initiative in section 24.7 or 24.9 or under 24.4.3.5 as it pertains to coastal and low-lying areas and address both natural, built and human resources and it represents a framework through which regional policy is in place to work across national levels while also empowering local/community level adaptation planning and action. (UNITED STATES OF AMERICA)	References consulted.
37	74683	24	0	0	0	0	The document uses single citations, but for the most part, multiple citations on a single issue provide confidence on the observations or strategies. What is missing is the ability to say something about understudied regions. Climate change is likely impacting these areas regardless of published studies. Adaptive strategies proposed in some regions may apply to these other regions. For example, what is needed to adapt to any changes in the Monsoon across Asia? (UNITED STATES OF AMERICA)	Aimed for multiple citations wherever possible, Coverage table introduced.
38	74684	24	0	0	0	0	The SE Asia region contains many large and small islands, but in general there seems to be a lack of attention in the chapter to coastal areas, issues and adaptation efforts and options within this region. This includes both the impacts to coastal natural resources as well as coastal communities. The current focus is very heavy on agriculture and water resource issues and therefore temperature and precipitation, but there are large expanses of coastline and coastal communities that will be impacted by changes in SLR, SST and ocean chemistry. Impacts to coral reef ecosystems, low lying cities and communities, fisheries (both reef and pelagic), etc. will be great. By not including these parameters in places like 24.3 and the associated tables (Table 24.4, Table 24.5, and Table 24.6) there is a risk of the false impression that these changes and the impacts that follow are not issues for Asia. In addition, Tables 24.7 and 24.8 cover only agriculture and livelihood adaptation options. Perhaps other sectors are covered in other chapters but it would be good to at least cross-reference the tables in those chapters. Examples of esources that may be helpful in broadening the focus to include more geographical representation as well as the impacts, vulnerabilities, and adaptation options to the to the coastal systems include; 1) Hoegh-Guldberg, H., et al. 2009 The Coral Triangle and Climate Change: Ecosystems, People and Societies at Risk www.panda.org/coraltriangle , 2) Australian Bureau of Meteorology and CSIRO 2011. Climate Change in the Pacific: Scientific Assessment and New Research, Vol 1: Regional Overview and Vol 2: Country Reports (Timor-Leste, Papua New Guinea, 3) Bell JD, et al. 2011 Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change (Papua New Guinea) 4) van Hooijdonk, et al. 2013 Nature Climate Change 3:508-511 for impacts to coral reefs (UNITED STATES OF AMERICA)	We have expanded our coverage of these issues a little, but also provided links to where they are covered at greater length in other chapters in the WGII report.
39	74685	24	0	0	0	0	There are a number of references from before 2007, including some from 2003-2004. They should be replaced with newer references when available. Greater effort should be made to re-assess the literature in light of recent CMIP5 publications, etc. (UNITED STATES OF AMERICA)	Done as much as available in the literature
40	74686	24	0	0	0	0	There are many interesting observations and data from China, but very few from SE Asia or the Philippines and almost nothing on the Middle Eastern countries. A list of countries by number of mentions in the text: Russia 12 China 81 India 49 Kazakhstan 15 Indonesia 20 Iran 1 Mongolia 19 Pakistan 9 Japan 32 Vietnam 12 Philippines 13. The authors are encouraged to seek a more balanced treatment to the coutries in this region. (UNITED STATES OF AMERICA)	Being as balanced as possible depending on the availability of literature

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41	74687	24	0	0	0	0	Though precipitation patterns in "West Asia," and their changes in response to climate change, may be generally less studied than those of other parts of Asia, it is important to note that the significant research done on precipitation in the Mediterranean littoral often includes data for West Asia. For example, NOAA's 2011 study includes some very alarming data for observed impacts of climatic changes in Syria and other parts of West Asia, which have manifested themselves in severely increased drying (such as the 5-year drought that gripped Syria from 2006-2011): http://www.noaanews.noaa.gov/stories2011/20111027_drought.html (UNITED STATES OF AMERICA)	Referred to WGI report instead of recommended materials
42	78591	24	0	0	0	0	This chapter currently comprises a list of references, with some degree of review. However, I do not see few cases of assessment. This is generally no interpretation of how collections of local studies relate to the larger-scale, little summary of the degree of agreement across sources of evidence, etc. (Dáithí Stone, University of Cape Town)	Done where possible.
43	78592	24	0	0	0	0	This chapter largely neglects issues surrounding adaptive capacity, risk, and related issues. (Dáithí Stone, University of Cape Town)	Key risks have been identified
44	81048	24	0	0	0	0	There are some missing/ incorrect citations in the chapter. These discrepancies have been highlighted in the ref check document for chapter 24 and is available in the supporting material web page. Chapter team may wish to rectify these errors before starting to work on SOD revisions and FGD preparation. (Monalisa Chatterjee, IPCC WGII TSU)	Checked and revised
45	81305	24	0	0	0	0	Authors may wish to provide key findings from previous assessments in a table and also add the key findings from AR5 instead of section 24.2. It will reduce text and synthesize key messages from different assessments including AR5 in one place. (Monalisa Chatterjee, IPCC WGII TSU)	Major findings highlighted briefly
46	81306	24	0	0	0	0	Authors have systematically provided rich discussions on observed, projected impacts, vulnerability and adaptation options, livelihood and poverty issues for different sectors. It would very helpful if a table is generated to combine key messages from these discussions. Moreover, authors may wish to consider providing this information in the circular burning embers. (Monalisa Chatterjee, IPCC WGII TSU)	Done as much as possible. Key risks table developed
47	81307	24	0	0	0	0	Authors may wish to add some brief case studies to illustrate discussions in section 24.6 and 24.7. (Monalisa Chatterjee, IPCC WGII TSU)	Page limitation prevents this.
48	81327	24	0	0	0	0	The chapter has rich discussions on several interdependent topics. For FGD preparation, authors may wish to synthesize key messages in tables or in form of other synthetic elements as 'finding rich capsules' that people can use from this assessment. (Monalisa Chatterjee, IPCC WGII TSU)	Done as much as possible. Key risks table developed
49	83487	24	0	0	0	0	1) Overall -- The chapter team has developed a very robust 2nd-order draft. In the final draft, the chapter team is encouraged to continue prioritizing rigorous and compact assessment, high specificity of examples, effective use of rich and comprehensive tables, and clear, accessible writing. (Katharine Mach, IPCC WGII TSU)	Done as much as possible
50	83488	24	0	0	0	0	2) Coordination across Working Group II -- In developing the final draft of the chapter, the chapter team should continue to ensure coordinated assessment, both in the chapter text and at the level of key findings. As appropriate, cross-references to the sections of other chapters and/or their assessment findings should be used, reducing overlaps and harmonizing assessment. (Katharine Mach, IPCC WGII TSU)	Done as much as possible. This has to be double checked during the copy edit stage.
51	83489	24	0	0	0	0	3) Harmonization with the Working Group I contribution to the AR5 -- In developing the final draft, the chapter team should also ensure all cross references to the Working Group I contribution are updated, with discussion of climate, climate change, and climate extremes referencing the assessment findings in that volume. (Katharine Mach, IPCC WGII TSU)	Done as much as possible.
52	83490	24	0	0	0	0	4) Tightening and shortening the chapter's assessment -- As the author team prepares the next draft, it should continue to condense and tighten the assessment wherever possible. The tighter and more compact the chapter text is, the more accessible and widely read the chapter will be. An ambitious but feasible goal would be to reduce the chapter text by at least 10 pages. (Katharine Mach, IPCC WGII TSU)	Done as much as possible.

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53	83491	24	0	0	0	0	5) Characterization of future risks -- In characterizing future risks for Asia, to the degree appropriate the chapter team should indicate the extent to which risks (or key risks) can be reduced through mitigation, adaptation, development, poverty reduction, etc. That is, is it possible to indicate how risks may increase as the level of climate change increases or, potentially, to indicate the relative importance of changes in mean conditions, as compared to changes in extreme events, as compared to potential non-linear changes associated with biome shifts or tipping points? And then, how much can risks be reduced through adaptation or development, in the near-term and long-term? How are factors or stressors that multiply risks relevant in this context? As supported by its assessment of the literature, the author team should consider communicating risks for the era of climate responsibility (the next few decades, for which projected temperatures do not vary substantially across socioeconomic/climate scenarios) and for the era of climate options (the 2nd half of the 21st century and beyond). As might be helpful to the chapter, the framing of table SPM.4 could be considered in characterization of future risks, along with the key and emergent risk typology of chapter 19. (Katharine Mach, IPCC WGII TSU)	Key risks have been identified
54	83492	24	0	0	0	0	6) Informing the summary products -- To support robust and insightful summary products for the report, the chapter team is encouraged to maximize nuance and traceability in its key findings, continuing to use calibrated uncertainty language effectively. In addition to nuanced characterization of future risks (see the previous comment), the chapter team is encouraged to consider themes emerging across chapters, indicating for example how extreme events have demonstrated adaptation deficits and vulnerabilities to date and may relate to future risks, how limits to adaptation may be relevant in the context of this chapter, how multidimensional inequality is relevant in the context of climate change, how adaptation experience has been relevant to date, and how interactions among mitigation, adaptation, and sustainable development may occur. (Katharine Mach, IPCC WGII TSU)	Done as much as possible.
55	83493	24	0	0	0	0	7) Report release -- The chapter team should be aware that the final drafts of the chapters will be posted publicly at the time of the SPM release, before final copyediting has occurred. Thus, the chapter team is encouraged to continue its careful attention to refined syntax and perfected referencing. (Katharine Mach, IPCC WGII TSU)	Done as much as possible by a native English speaker in the Author team.
56	83494	24	0	0	0	0	8) Italicizing calibrated uncertainty language -- For clarity, calibrated uncertainty language should be italicized wherever it is used in the chapter. This way, the reader will be able to understand readily that summary terms for evidence and agreement, levels of confidence, and likelihood terms are calibrated terms reflecting the author team's degree of certainty in conclusions. (Katharine Mach, IPCC WGII TSU)	Revised.
57	83495	24	0	0	0	0	9) Figures and tables -- The chapter team has developed a compelling and robust set of tables. Where reviewers of the 2nd-order draft suggest possible figures that would complement the text of the assessment, the chapter team is strongly encouraged to consider potential data-rich figures to communicate its assessment. (Katharine Mach, IPCC WGII TSU)	Done as much as possible.
58	84829	24	0	0	0	0	GENERAL COMMENTS: I congratulate the author team for all their work on an interesting and informative SOD. When considering the suite of review comments, please look for opportunities to continue to hone and focus the text in revision even further. Please see my detailed comments for suggestions related to specificity of ES findings and traceable accounts and specific clarifications. In addition, where likelihood terms are used ("likely," "very likely," etc.), it is also not always clear whether they are intended as calibrated language or not--please carefully check this and avoid casual usage. (Michael Mastrandrea, IPCC WGII TSU)	Revised and avoided casual usage
59	84830	24	0	0	0	0	SUMMARY PRODUCTS: In preparing the final draft of your chapter and particularly your executive summary, please consider the ways in which your chapter material has been incorporated into the draft SPM and TS. For Chapter 24, this includes presentation of observed impacts and vulnerabilities in section A.i, adaptation experience in section A.ii, sectoral and regional risks in section C.i, and interactions between adaptation and mitigation in section D.ii, as well as related figures and tables. Are there opportunities for presenting chapter findings and material in a way that further supports broad themes highlighted in the summary products and that facilitates additional cross-chapter synthesis in specific findings or figures/tables? Do the existing summary product drafts suggest additional coordination that should occur between Chapter 24 and other chapters at LAM4? (Michael Mastrandrea, IPCC WGII TSU)	Done as much as possible and communicated to the TSU.
60	56836	24	1	0	0	0	There is not any CLA, LA, CA from Near East region. Big gap. Therefore there is no even a quotation in whole text. NE region has very important role for CC issues. Even though, East Asia can play its own role. (Mostafa Jafari, TPS for LFCCs - RIFR - IRIMO)	Literature available has been reviewed. Attempts to seek CA were not successful.

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61	56998	24	1	1	1	1	The tile "Asia" is hanging. Let the title capture the spirit of the underlying text in the entire document. In other words, the title always prepares the reader what he expects in the text of the document (KENYA)	Title is Plenary approved.
62	83496	24	3	8	0	0	Italicizing Calibrated Uncertainty Language in the Executive Summary -- Wherever the chapter team uses calibrated uncertainty language (summary terms for evidence and agreement, levels of confidence, or likelihood terms), the calibrated terms should be italicized for clarity. (Katharine Mach, IPCC WGII TSU)	Rechecked.
63	83497	24	3	8	0	0	Regional Key Risks in the Executive Summary -- The chapter team is strongly encouraged to present clearly the key regional risks for Asia within the executive summary. For the key risks, how do they vary with level of climate change, and what is the potential for adaptation to reduce the risks--what are the opportunities for and barriers and limits to adaptation? What are the risks in the near-term (which can be considered an era of climate responsibility) versus the long-term (which can be considered an era of climate options)? The framing of SPM table SPM.4 or the framing of chapter 25's executive summary and table 25-8 could be considered. Identifying key risks would enable the chapter team to add very substantial value in this assessment, beyond the regional assessments for Asia completed to date. (Katharine Mach, IPCC WGII TSU)	Key risks have been identified
64	84831	24	3	8	0	0	Executive Summary: You have drafted a clear and concise executive summary, with careful use of calibrated uncertainty language and line of sight to chapter sections in general. There are a few directions where additional content could be added to make the findings even more information-rich. To the extent possible as supported by the literature, please emphasize what risks are projected to emerge over different time horizons (e.g., mid-century vs. end-of-century), as well as the potential or lack of potential for mitigation and adaptation to reduce them. Are there ways to integrate further details about adaptation options or limits to adaptation into the existing bullets? (Michael Mastrandrea, IPCC WGII TSU)	Done as much as possible.
65	64674	24	3	8	4	29	Executive Summary : With two sections (24.5 and 24.6) on adaptation, a separate statement would be useful as AR5 is strongly adaptation focussed. (Poh Poh Wong, National University of Singapore)	Literature for adaptation in Asia is relative weak , making a key message very difficult.
66	74688	24	3	8	4	29	As in other chapters, it is suggested that the authors include a discussion of Detection and Attribution in the Executive Summary. (UNITED STATES OF AMERICA)	Limited literature makes this a challenge for Asia.
67	74689	24	3	8	4	29	Check placement of bracketed references to other sections of report and make sure placement is same as other chapters (some chapters appear to put brackets at end of paragraph). (UNITED STATES OF AMERICA)	Revised
68	74690	24	3	8	4	29	Several statements in the executive summary mention non-climate change stressors while others do not, even though these may be equally important. It is suggested that the authors standardize the approach or perhaps dedicate a separate section to non-climate change stressors. (UNITED STATES OF AMERICA)	These are mentioned where relevant.
69	74691	24	3	8	4	29	The Executive Summary, while appropriately brief, is a bit too terse and there is often a lack of transition between sentences. The various paragraphs or sections vary considerably in length and level of details. The amount of detail or the total length does not seem correlated with the importance of a given topic in comparison with the other topics. For example, it seems strange that the treatment of urban areas is so short considering this is a region of mega-cities. Chapter 25 provides an example of how the summary can be handled equally succinctly, but in a way which flows more smoothly. (UNITED STATES OF AMERICA)	This has been done as far as possible by a native English speaker from the team.
70	78570	24	3	8	4	29	With the exception of the first (climatic) and last (gaps) paragraphs, this ES is entirely sectoral. There is no discussion of vulnerability, adaptive capacity, etc. (Dáithí Stone, University of Cape Town)	Agreed. But diversity is a challenge.
71	83498	24	3	10	3	11	The overall time frame for this finding should be specified (over the past century, since 1950, etc.?). (Katharine Mach, IPCC WGII TSU)	The time frame has been specified.
72	83499	24	3	11	3	11	"high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Corrected accordingly.
73	84833	24	3	11	3	12	Cold days are not mentioned in section 24.3. Please provide line of sight for this element. (Michael Mastrandrea, IPCC WGII TSU)	Added information about cold days in section 24.3
74	83500	24	3	17	3	18	For this finding, it is not clear if there is any role of climate change within expected outcomes for water scarcity, in terms of the formulation of the finding. The role of climate change in relation to other stressors and trends should be specified. (Katharine Mach, IPCC WGII TSU)	The key message reflects the conclusions as drawn from the literature.
75	84832	24	3	17	3	24	Please ensure consistency with the discussion in section 24.4.1, which seems to be the relevant section rather than 24.4.3. Ensure that all statements are fully supported there--specifically, the bold finding and the sentence linking glaciers and water resources could be discussed more clearly in the referenced section. (Michael Mastrandrea, IPCC WGII TSU)	Revised and sent to expert for check.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
76	78569	24	3	17	4	20	I am surprised at the lack of a discussion of past trends here, whether under a detection and attribution framework or not. (Dáithí Stone, University of Cape Town)	Limited literature makes this a challenge for Asia.
77	83501	24	3	18	3	18	"medium confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Corrected accordingly.
78	83502	24	3	19	3	19	"low confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Agree. Text revised.
79	83503	24	3	20	3	24	It would be beneficial to specify the degree to which proactive adaptation could reduce these risks. For example, instead of indicating that "better water management strategies are needed to ease water scarcity," is it possible to indicate more precisely what the strategies could be and how much potential there is for them to reduce risk, building for instance on material in the next sentence? (Katharine Mach, IPCC WGII TSU)	Agree. Text revised.
80	80637	24	3	26	3	27	Here the author only referred the negative impacts, but did not mention the positive impacts. SUGGESTION: change as "The impacts of climate change on food production and food security in Asia will vary by region with some regions experiencing a decline while in some other regions are increasing in productivity." (Jiahua PAN, Chinese Academy of Social Sciences)	Agree. Text revised.
81	74692	24	3	26	3	37	Regarding impacts of climate change on food production and in particular rice production, an important consideration will be the impact of sea level rise on the extent of areas suitable for rice cultivation (and currently used in rice cultivation), which are often in low-lying areas such as river deltas and coastal plains. Research has been done to estimate these impacts (including: ADB and IFPRI (2009), Building climate resilience in the agriculture sector in Asia and the Pacific) and would be useful to cite, both in the Executive Summary and in Sec. 24.4.4 on Agriculture and Food Security, given that (in these studies) it is a major determinant of future rice production/productivity in Asia. (UNITED STATES OF AMERICA)	Agree. Text revised.
82	84835	24	3	26	3	37	In line with my general comments on the executive summary, can any indication be given of how these impacts are projected to evolve over time? Are there any conclusions to be drawn about risks over the next two to three decades vs the end of the century? (Michael Mastrandrea, IPCC WGII TSU)	Rechecked. Not possible.
83	83504	24	3	27	3	27	"medium confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Agree. Text revised
84	74693	24	3	30	3	30	Define "critical temperature threshold" or use different language to express the concept. Also, the sentence reads as if there is only a single threshold; make clear that thresholds vary depending on the crop, growth stage, etc. (UNITED STATES OF AMERICA)	Agree. Text revised
85	83505	24	3	30	3	30	The phrase "near the critical temperature threshold" should be clarified--near the critical temperature threshold for what? (Katharine Mach, IPCC WGII TSU)	Agree. Text revised
86	83506	24	3	31	3	34	Is this pattern an outcome that changes over time depending on the amount of temperature increase? (Katharine Mach, IPCC WGII TSU)	Not in the literature cited.
87	84834	24	3	35	3	35	A small detail, but the text says 51%, while "up to 50%" implies no greater than 50%. "A decrease of around 50%" may be more accurate. (Michael Mastrandrea, IPCC WGII TSU)	Agree. Text revised
88	83507	24	3	36	3	37	Is it possible to provide any information on barriers or limits to adaptation for such strategies? (Katharine Mach, IPCC WGII TSU)	Rechecked. Not possible.
89	83508	24	3	39	3	40	"high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Corrected.
90	84836	24	3	39	3	40	What is meant by increasing pressure? Are there ways to make this clearer? Section 24.4.2 provides relevant material that could be summarized here. It is not clear how section 24.2.2 supports this statement. (Michael Mastrandrea, IPCC WGII TSU)	This first sentence has been removed. The reference to 24.2.2 has been removed.
91	83509	24	3	39	3	41	Is it possible to indicate any differences in expected/projected changes across different levels of temperature increase, especially in the 2nd half of the 21st-century? (Katharine Mach, IPCC WGII TSU)	The literature does not allow us to do this with any confidence.
92	67907	24	3	39	3	52	The paragraph is focused on vegetation change but should also discuss projected impacts on the distribution of animal habitats which should be included. (JAPAN)	This has been added.
93	74694	24	3	39	3	52	More can be said on the impacts of climate change on vegetation despite "poor understanding" of those impacts. At the very least, some description of what those impacts are without having to explain them are needed. The text says "large changes may also occur" (line 43) without saying what those large changes refer to. (UNITED STATES OF AMERICA)	This has been re-written and linked more closely to the main text.
94	80638	24	3	39	3	52	Explain and confirm that the mark "high confidence" is consistent with the statement "likely" in the following sentence. (Jiahua PAN, Chinese Academy of Social Sciences)	This has been re-written and linked more closely to the main text.
95	83510	24	3	41	3	41	Where "the largest changes" are mentioned, is it possible to specify more precisely what is meant--what types of changes, changes in both aspects of vegetation and permafrost degradation, etc.? (Katharine Mach, IPCC WGII TSU)	This has been re-written and linked more closely to the main text.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
96	83511	24	3	42	3	43	The author team may wish to consider whether a level of confidence would be more appropriate given the nature available evidence, as compared to the likelihood terms employed. Also, is the probability of the outcome the same across scenarios of climate change--or can differing trends in risks be identified? (Katharine Mach, IPCC WGII TSU)	We have now done this. All of the impacts we mention are similar across scenarios examined in the literature cited in the main text.
97	83512	24	3	44	3	45	The use of "constrained" could be reconsidered here, as the term adaptation constraint more often refers to constraints on proactive adaptation, whereas it seems the author team is stating here that vegetation change--an impact of climate change reflecting adaptive ecological shifts in the relevant biomes--will be limited where vegetation is fragmented with ramifications for seed dispersal. A bit of clarification would be helpful. (Katharine Mach, IPCC WGII TSU)	This has been re-worded.
98	64967	24	3	50	3	51	"have lost in total" would be clearer than "have lost on average". (J. Graham Cogley, Trent University)	This statement has been removed.
99	74695	24	3	50	3	51	Provide citations for statements on % of glacier loss (or reference to other part of report where this information occurs) or delete. Same for statements on agriculture on lines 34-36. (UNITED STATES OF AMERICA)	The loss numbers for glaciers have been deleted.
100	74696	24	3	52	3	52	Suggest including here, or in the underlying text, discussion that rates of degradation also depend on basin characteristics. See Immerzeel et al. Science 328, 1382 (2010) (UNITED STATES OF AMERICA)	This has been deleted.
101	83513	24	4	1	4	2	This finding is not very nuanced--can more be said to communicate the core conclusions of the chapter's assessment? (Katharine Mach, IPCC WGII TSU)	We have been unable to come up with an alternative way of summarizing the assessment.
102	84837	24	4	1	4	2	Can the drivers referenced here be described more specifically? (Michael Mastrandrea, IPCC WGII TSU)	The climate drivers are described below and the non-climate drivers in 24.4.3
103	74697	24	4	1	4	8	Suggest including a discussion of the many small coastal islands in the region that could become completely inundated over this century. (UNITED STATES OF AMERICA)	We can find no literature at all on this issue for Asia.
104	83514	24	4	2	4	2	"high confidence" and "very" should be italicized. (Katharine Mach, IPCC WGII TSU)	Corrected.
105	83515	24	4	2	4	8	For these outcomes, is it possible to indicate broadly any differences across levels or scenarios of climate change? Is it possible to indicate the potential for adaptation to reduce these risks? (Katharine Mach, IPCC WGII TSU)	No, the Asian literature does not support any differentiation.
106	83516	24	4	3	4	5	To maximize the clarity and directness of this statement, the author team should strongly consider placing "high agreement, medium evidence" within parentheses at the end of the sentence. (Katharine Mach, IPCC WGII TSU)	Done as suggested.
107	74698	24	4	5	4	5	Suggest including a discussion about saline wetlands (e.g., these wetlands will be lost unless they are able to migrate). (UNITED STATES OF AMERICA)	We have added this.
108	74699	24	4	6	4	6	Make clear that increasing mean temperatures (not simply high temperature events) are affecting corals. (UNITED STATES OF AMERICA)	The literature suggests that it is high temperature events
109	83517	24	4	7	4	8	To maximize the clarity and directness of the statement, the chapter team should strongly consider placing "high confidence" within parentheses at the end of the sentence. (Katharine Mach, IPCC WGII TSU)	This would make a very clumsy sentence.
110	76773	24	4	10	0	14	also add "unplanned urbanization, industrialization and economic development..." (RAIS AKHTAR, ALIGARH MUSLIM UNIVERSITY)	This is not supported in the underlying text.
111	74700	24	4	10	4	13	Suggest including the points that climate change will also aggravate pressures on the built environment, placing increasing stress on infrastructure systems, particularly in Asian developing countries, that are already stretched and unable to meet existing demands adequately. (UNITED STATES OF AMERICA)	This is not supported in the underlying text.
112	83519	24	4	10	4	14	For these statements, can more be said to communicate the core conclusions of the chapter's conclusions, especially given that the 1st 2 sentences were findings of the 4th assessment report? (Katharine Mach, IPCC WGII TSU)	The author team retains the same message as they are important and relevant.
113	83518	24	4	11	4	11	"high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Revised.
114	84838	24	4	11	4	13	These lines are a restatement of an AR4 finding. Please consider what can be said beyond the conclusions of AR4 in this context, based on the chapter assessment. (Michael Mastrandrea, IPCC WGII TSU)	The author team retains the same message as they are important and relevant.
115	74701	24	4	16	4	17	"Extreme events will have greater impacts" -- greater than what? (UNITED STATES OF AMERICA)	Revised.
116	84839	24	4	16	4	17	Does the "greater" here mean compared to their current impact, or compared to other sectors? Please clarify. (Michael Mastrandrea, IPCC WGII TSU)	Revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
117	83520	24	4	16	4	20	It would be helpful to clarify what is meant by "greater impact"--a greater impact compared to other sectors? Also, can more be said in this paragraph to communicate the core conclusions of the chapter's assessment, going beyond the findings of the 4th assessment report? Throughout, what is the potential for adaptation to reduce the described risks? (Katharine Mach, IPCC WGII TSU)	This has been revised to provide more clarity.
118	83521	24	4	17	4	17	"high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Revised.
119	74702	24	4	19	4	19	The authors should include mention that the described changes will also have an impact on urban poverty, not just rural. (UNITED STATES OF AMERICA)	This is not supported in the underlying text.
120	78568	24	4	22	4	23	How do you define sufficient? Are well-studied areas sufficiently represented? This "research gaps" paragraph seems an unusual one to include in the ES. (Dáithí Stone, University of Cape Town)	Revised.
121	69741	24	4	24	24	25	If particularly in Central and West Asia regions are not sufficiently represented by climate change observations, how then earlier claims in various confidence levels (e.g. high confidence) are made. Please give more information on this in the text (NETHERLANDS)	Revised. A table on the coverage of information at the subregional level has been added.
122	66098	24	4	32	4	43	Introduction includes general description about some demographic information of Asia rather than the importance of its physical location and topography in the context of climate change. Please make some addition by giving brief information regarding Asia's high land role in regional climate, in particular with the reference of Himalayan mountains and Tibetan Plateau (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Page limitation prevents this. The section has been shortened.
123	74703	24	4	39	4	39	Aggregate population density for the entire region/continent is not very useful. Suggest providing a range to give a sense of regional diversity, which ranges from mega-cities to sparsely settled rural areas. (UNITED STATES OF AMERICA)	Revised. The section has been shortened.
124	74704	24	4	42	4	43	Please clarify whether this refers to nominal income or purchasing power parity. (UNITED STATES OF AMERICA)	Revised. The section has been shortened.
125	83522	24	5	1	0	0	Section 24.2. In this section communicating major conclusions from previous assessments, all calibrated uncertainty language used in those assessments should be italicized. On page 5, please italicize calibrated uncertainty language on lines 10, 12-13, 14, 26, 32, 33, 35, 41, 48, and 49; on page 6, please see lines 10, 13, 17, 22-23, 24, 25, 28, 30, 32-33, and 34. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
126	74705	24	5	1	7	8	Overall, the summary of AR4 findings can be significantly pared down and the audience would be better served by an assessment of what has changed since AR4, e.g. what is different in AR5. For example, the text could say, "Since AR4, ...". (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
127	78575	24	5	1	7	8	I do not see the use of this section. It does not provide an obvious baseline for use in understanding the rest of the chapter. (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
128	78576	24	5	1	7	8	Verb tenses are all wrong here. If you are reporting what was reported in AR4, then "something has been observed is wrong", it should be "something had been observed". (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
129	78571	24	5	3	5	5	How does "Climate change, variability and extreme events" fit under "Climate change impacts"? (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
130	78572	24	5	7	5	17	Why report this? The material in the AR5 does not really represent improved understanding but rather updates on reports from routine monitoring. (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
131	57468	24	5	7	5	26	The context should mention changes of precipitation, temperature, sea level rise, monsoon and sea surface temperature, therefore in observed and future projections. (So Kazama, Tohoku University)	The text has been revised to incorporate this perspective.
132	78574	24	5	7	5	26	If this is needed, why are there no references to WGI AR4 Ch11? (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
133	74706	24	5	8	5	10	Does this refer to annual precipitation? If so, considering contrasting to observations about changes in seasonal precipitation in the previous assessments. (UNITED STATES OF AMERICA)	We have not chosen to incorporate this perspective. Because we have highlighted Asian spatial patterns of annual precipitation trends.
134	83523	24	5	11	5	17	If the assessment findings being summarized here specified relevant time frames for these outcomes, the timeframe should also be communicated here. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
135	57469	24	5	14	5	14	Spatial distribution of trend in precipitation extremely varies with the topography of the area , resulting increasing and decreasing trend . (So Kazama, Tohoku University)	We have not chosen to incorporate this perspective. Because we have highlighted Asian spatial patterns of annual precipitation trends.
136	74707	24	5	14	5	15	Text states that decreasing trends in rainfall in SE and E Asian monsoons was "due to a rise in sea surface temperatures". Are the authors comfortable with the certainty expressed in this statement? Does SREX make this association unequivocally? (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
137	67908	24	5	15	5	15	The proposed phrase "due to a rise in sea-surface temperature" is inaccurate and may be misleading. Therefore recommend replacing this phrase with the following: "seemed to be related to the warming trend of tropical SST" to be consistent with the description of SREX below. If not reworded to avoid inconsistency with approved SREX text, then this phrase should be deleted. [SREX 3.4.1] The observed negative trend in global land monsoon rainfall is better reproduced by atmospheric models forced by observed historical SST than by coupled models without explicit forcing by observed ocean temperatures (Kim et al., 2008). This trend in the east Asian monsoon is strongly linked to the warming trend over the central eastern Pacific and the western tropical Indian Ocean (Zhou et al., 2008b). [...] The decrease in east Asian monsoon rainfall also seems to be related to tropical SST changes (Li et al., 2008), and the less spatially coherent positive trends in precipitation extremes in the southeast Asian and north Australian monsoons appear to be positively correlated with a La Niña-like SST pattern (Caesar et al., 2011). (JAPAN)	We have deleted the sentence to condense major conclusions from previous assessment.
138	78573	24	5	19	5	26	The way this is presented, it is not clear how it provides a baseline for contextualising the updated projections. Is it useful and needed? (Dáithí Stone, University of Cape Town)	We have deleted the sentence to condense major conclusions from previous assessment.
139	83524	24	5	21	5	22	For this statement, it would be preferable to indicate the relevant climate/socioeconomic scenario if possible. (Katharine Mach, IPCC WGII TSU)	We have deleted the sentence to condense major conclusions from previous assessment.
140	74708	24	5	22	5	23	Are heat waves unlikely to be a problem in West and Central Asia, or was these regions simply not reported in AR4? There does appear to be information on temperature extremes in those regions. (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
141	74709	24	5	23	5	23	Refers to "heavy precipitation" - does this refer to increased storm and monsoon intensity? If so, this would be more direct language to use. (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
142	69742	24	5	23	5	25	unclear statement (rephrasing necessary) (NETHERLANDS)	We have deleted the sentence to condense major conclusions from previous assessment.
143	83525	24	5	31	5	32	If the assessment findings being summarized here specified a relevant time frame for this outcome, it should also be communicated here. (Katharine Mach, IPCC WGII TSU)	We have deleted the sentence to condense major conclusions from previous assessment.
144	66099	24	5	35	5	35	It will be appropriate to give name of the four studied river basins of the North Western Himalays (HAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	We have deleted the sentence to condense major conclusions from previous assessment.
145	71420	24	5	48	5	49	Suggest rewording from "studies suggest that in the future as well substantial decreases are probable" to "studies suggest that substantial future decreases in agriculture are probable." This phrasing is less complicated. (CANADA)	We have deleted the sentence to condense major conclusions from previous assessment.
146	83526	24	6	15	6	17	This key finding is repeated in the current executive summary on page 4, lines 11-13. In the executive summary of this chapter, the author team should ensure it goes beyond the assessment of the 4th assessment report based on the expanded literature base now available. (Katharine Mach, IPCC WGII TSU)	We have deleted the sentence to condense major conclusions from previous assessment.
147	74710	24	6	15	6	18	Did AR4 consider whether growth in income/GDP in subregions would mean greater ability to adapt? How might the observations in AR5 differ? (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
148	74711	24	6	20	6	21	Use of the term "regions" is unclear; does it refer to these entire areas, or some portions of them? The following sentence refers to the "same regions," hence a need to be more specific. (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
149	74712	24	7	1	7	8	The second clause (adaptation and vulnerability assessments by setting in place early warning systems and information distribution systems to enhance disaster preparedness) doesn't really make sense and appears to conflate two discrete sets of measures, the first being adaptation and vulnerability assessments of projects and programs, and the second being setting in place early warning systems. Please clarify. (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
150	74713	24	7	1	7	9	Long lists in paragraph form are hard to read. Might be better in a bulleted list format. (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
151	74714	24	7	2	7	3	The reference to high quality information on climate change should emphasize the uncertainties and limitations inherent in such information somewhere in the chapter, either in a more general discussion of uncertainty and decision-making or of improved access to climate information as an adaptation option. See: Opitz-Stapleton, et al, "Only Death is Certain, Yet you still get out of bed in the morning: observations on the use of climate information in adaptation and resilience practice, Climate Resilience in Concept and Practice Working Paper Series, ISET, Boulder, Colorado. (UNITED STATES OF AMERICA)	We have deleted the sentence to condense major conclusions from previous assessment.
152	74715	24	7	12	7	12	Suggest adding, "identification of new impacts or reassessment of severity" to this box. (UNITED STATES OF AMERICA)	Objective of the box is to serve as a guide post. Please refer to key risks table for this aspect
153	83527	24	7	15	7	15	Is "assessment tools" the best phrase here--are these "research tools" more generally? (Katharine Mach, IPCC WGII TSU)	Revised

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
154	83528	24	7	20	7	20	The distinction between "projected changes" and "impacts" should be clarified. (Katharine Mach, IPCC WGII TSU)	Revised
155	83529	24	7	20	7	20	The chapter team might consider, in collaboration with Chapter 3, making box 3-2 a cross chapter box. (Katharine Mach, IPCC WGII TSU)	Box is cited in Chapter 24
156	69898	24	7	27	0	0	Section 24.3: Variability related to ENSO is mentioned later in some of the sections on climate impacts. It would be useful to discuss in this section where ENSO (or other large scale drivers of variability) are known, or implicated in, aspects of observed climate variability. For example in the section on cyclones where the phase of ENSO can influence the location and tracks of cyclones. Or heavy rainfall, and the mechanism responsible e.g. whether a region gets the most intense rainfall as a result of monsoon process, or tropical cyclones. It could also be useful to summarise whether models from which the projections are drawn are thought to simulate these large scale processes well or not in general. (John Caesar, Met Office Hadley Centre)	The points you have raised are beyond the scope of this section. We have cited WGI AR5 sections related to monsoon, cyclones etc. which can help to referring to large scale drivers.
157	83530	24	7	27	0	0	Section 24.3. The author team should consider clarifying the title of this section. As is, the title does not distinguish the content of this section from the title and content of 24.4. A clearer title could simply be "observed and projected climate change," even despite section 24.3.3--the only section for which this title would not be an all-encompassing descriptor. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
158	74716	24	7	27	7	52	Please clarify that section 24.3 includes observed changes since AR4 (if this is indeed the case) and provide more analysis where appropriate of how they relate to findings from AR4 (i.e., follow the model of the statement on line 31). (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
159	74717	24	7	27	7	52	SST, SLR and ocean chemistry observations are important aspects of climate change in SE Asia. While they are discussed in 24.4.3, there is no reference to that section here and if one were to look only at 24.3 and the associated tables the important observations would appear not to figure into the Asia picture. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
160	78581	24	7	27	9	19	This section is a review. Is there any assessment in there? (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
161	78578	24	7	29	0	0	This section is all about trends, not variability. (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
162	80432	24	7	29	7	52	Sections 24.3.1 and 24.3.2: These sections cover physical science aspects of climate change. They therefore have to link to the assessment of WGI AR5. 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. The SREX link in section 24.3.2 has to be strengthened. (Gian-Kasper Plattner, IPCC WGI TSU)	The text has been revised to incorporate this perspective.
163	62320	24	7	31	7	34	This could be misleading because of the sentence about the urban heat island effect. You should qualify this sentence and state what the contribution of the urban heat island effect is and make the point that it cannot account for the increasing temperatures in Asia. (Patrick Nunn, University of New England)	The text has been revised to incorporate this perspective.
164	78577	24	7	31	7	40	I am surprised that you do not point out here that Asia includes one of the fastest warming regions of the planet: Siberia. (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
165	62778	24	7	33	7	34	Suggest including the following reference on the temperature trend in HK and UHI effect : Chan, H.S., M.H. Kok, T.C. Lee, 2012 : Temperature trends in Hong Kong from a seasonal perspective, Climate Research 55:53-63 - doi:10.3354/cr01133. (Sai-ming Lee, Hong Kong Observatory)	We have not chosen to include these citations as we deleted the sentence related to UHI to avoid misleading the reader (see Comment No.163).
166	66100	24	7	34	7	40	Sentence started from word "Despite" till the end of paragraph need to be rephrased as both cited phenomena's do not seem to have any direct relationship (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	The text has been revised to incorporate this perspective.
167	57470	24	7	35	7	35	It is clearer if some statistical values of trend are present, at least for extreme conditions. (So Kazama, Tohoku University)	We have not chosen to incorporate this perspective. because extreme conditions vary by regions, and we have to clarify regional features in this section.
168	62769	24	7	37	7	40	Latter half of the description is unsuitable because the decreasing trend of Mean Minimum Temp. in KaKarachi is only expressed during 1947-75 (Sajjad et al., 2009) (Motoki Nishimori, National Institute for Agro-Environmental Sciences)	The text has been revised to incorporate this perspective.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
169	68069	24	7	45	7	49	We remark the necessity of explicit citations of the reference period of the trend of each country compared herein, and the importance of the statistical significance of these trends and ensuring the validity of comparison among those trends. In this context, we request the overall rewrite of this paragraph. Please see below for more detail: In current descriptions, there is no mention about the time horizons of assessed trends of each regions. Such a presentation would induce misunderstanding that all the trends herein are calculated based on a comparable length of period, although the actual length for Japan and India is over 100 years and that of China cited from Yao et al. 2008 is only for 25 years. Considering relatively large fluctuations of the amount of precipitation which depend on the annual/decadal or regional variability, a trend of a specific period may also depend on the choice of reference period. (JAPAN)	The text has been revised to incorporate this perspective.
170	74718	24	7	45	7	49	Consider including Tajikistan, given its importance in Central Asia water management. Table 24-3 notes that trends varied by region in Tajikistan but results were considered "insignificant". Consider explaining why the findings are not significant. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
171	74719	24	7	45	7	49	It would seem that there are significant gaps in regional precipitation data from the discussion here and from Table 24-3. If this is the case, explicit mention would seem to be justified. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
172	62783	24	8	0	0	0	Section 24.3.2 - please consider including a paragraph on the observed sea level rise in this section. (Sai-ming Lee, Hong Kong Observatory)	The text has been revised to incorporate this perspective.
173	78579	24	8	4	0	0	Additional to what? (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
174	74720	24	8	6	8	7	This statement needs a citation. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
175	74721	24	8	6	8	10	The text states that warm days and nights are significantly decreasing in regions including Mongolia, North China, Afghanistan, Pakistan and Malaysia. The statement appears paradoxical (at least with respect to Mongolia) considering that overall warming in Mongolia (+2.14 deg C 1940-2005) is among the highest reported in Table 24-2. While recognizing potential explanations to this apparent paradox, it would seem worthwhile to expand and explain. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
176	83531	24	8	6	8	36	Most statements in these paragraphs do not indicate the relevant time frame for the observed changes. At the level of specificity that is appropriate, the broad (or specific) time frame for each observation/statement should be specified. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
177	74722	24	8	8	8	10	Wan, 2009 seems to be about projected future change more than observed change. Is this the citation that the authors intended? (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
178	62779	24	8	10	0	0	Suggest including the following reference regarding extreme temperature trend in Hong Kong and Southern China : Lee, T.C., H.S. Chan, E.W.L. Ginn & M.C. Wong, 2011 : Long-term Trends in Extreme Temperatures in Hong Kong and Southern China, Wong. Advances in Atmospheric Sciences, Vol.28(1), 147–157 (Sai-ming Lee, Hong Kong Observatory)	We have not chosen to include these citations as we have cross-referenced information in WGI AR5.
179	74723	24	8	12	8	12	The coverage of heat waves here seems minimal considering its importance. Suggest that the authors consider at least some expansion of this discussion. The sentence regarding the severity in China seems truncated. More "frequent and intense" than what? The rest of the region? Than in the past? (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
180	69882	24	8	12	8	13	Is it possible to describe any other regional patterns for heatwaves apart from China? (John Caesar, Met Office Hadley Centre)	The text has been revised to incorporate this perspective.
181	78580	24	8	12	8	13	Are more frequent and intense than what? (Dáithí Stone, University of Cape Town)	The text has been revised to incorporate this perspective.
182	74724	24	8	16	8	18	This statement doesn't make sense as written. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
183	62780	24	8	20	0	0	Suggest including the following reference on extreme weather event (including precipitation) in Hong Kong : Wong MC, Mok HY, Lee TC (2010) Observed changes in extreme weather indices in Hong Kong. Int J Climatol 31: 2300–2311 (Sai-ming Lee, Hong Kong Observatory)	We have not chosen to include these citations. Because we referred the information of WGI AR5
184	65363	24	8	21	8	21	in Korea" needs to change to 'in South Korea' or 'in the Republic of Korea' (REPUBLIC OF KOREA)	The text has been revised to incorporate this perspective.
185	74725	24	8	23	8	24	Has this variability increased or decreased? (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
186	74726	24	8	26	8	29	Suggest that the authors consider additional data to report here. (UNITED STATES OF AMERICA)	Page limitation prevents this.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
187	62321	24	8	31	8	31	This is fine if all readers know that typhoons are the same as tropical cyclones. But I suggest just one term is used to reduce the risk of confusion. (Patrick Nunn, University of New England)	The text has been revised to incorporate this perspective.
188	67909	24	8	31	8	31	The title of this paragraph should be "Tropical cyclone", NOT "Cyclones." "Cyclones" consist of "tropical cyclones" (which include typhoon) and "extratropical cyclones," but this paragraph does not mention extra-tropical cyclones. (JAPAN)	The text has been revised to incorporate this perspective.
189	83532	24	8	31	8	31	It would be helpful to clarify what is meant by "typhoon influence." (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
190	74727	24	8	31	8	32	Very awkward sentence. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
191	62781	24	8	31	8	33	Please consider including the findings of the following studies on the possible influence of climate change on the shift of tropical cyclone track and formation location over the western North Pacific. References : - Wang, R. F., L.G. Wu and C. Wang, 2011: Typhoon Track Changes Associated with Global Warming, J. Climate, doi: 10.1175/JCLI-D-11-00074.1. - Tu, Jien-Yi, Chia Chou, Pao-Shin Chu, 2009: The Abrupt Shift of Typhoon Activity in the Vicinity of Taiwan and Its Association with Western North Pacific–East Asian Climate Change. J. Climate, 22, 3617–3628. doi: 10.1175/2009JCLI2411.1. - Wu, L.G. and B. Wang, 2004 : Assessing impacts of global warming on tropical cyclone tracks, Journal of Climate, 17, p1686-1698. (Sai-ming Lee, Hong Kong Observatory)	We have not chosen to include these citations. Because we referred the information of WGI AR5
192	64675	24	8	31	8	36	Conflicting statements for typhoons in South China Sea from Wu et al 2005 (decreasing) and Rozynski et al 2009 (increasing). (Poh Poh Wong, National University of Singapore)	The text has been revised to incorporate this perspective.
193	57633	24	8	31	8	40	Please add a sentence, "In recent 50 years, both summer mean wind speed and maximum wind speed observed all show declining trends over the coastal region of China. This changing feature of wind speed in China's offshore areas is related to the decreasing characteristics of typhoon frequency over the northwestern Pacific Ocean (Jiang and Zhao, 2011). Reference: Jiang Y. and Z.C.Zhao, 2011, Characteristics of summer wind speed changes over coastal region of China, Science & Technology Review, 29(06),21-30, doi: 10.3981/j.issn.1000-7857.2011.06.002 (ZONG-CI ZHAO, National Climate Center)	We have not chosen to include these citations. Because we referred the information of WGI AR5
194	67910	24	8	31	8	40	Recommended to refer to Lee et al. (2012) here. Lee et al. (2012) is a review paper of past climate change impact on tropical cyclones in the western North Pacific, which is the region of ESCAP/WMO Typhoon Committee Member countries and territories. Since its authors are involved in the activities of ESCAP/WMO Typhoon Committee, Lee et al. (2012) includes comprehensive results on tropical cyclone activity changes based on past observations and formal reports from the Typhoon Committee Member countries and territories, and other materials from experts and Secretariat working for the Typhoon Committee. Moreover, they took into consideration comments from experts and Secretariat working for the Typhoon Committee. Lee, T.-C., T. R. Knutson, H. Kamahori and M. Ying, 2012: Impacts of climate change on tropical cyclones in the western North Pacific basin. Part I: Past observations. Tropical Cyclone Research and Review, 1, 213-230. doi: 10.6057/2012/TCRR02.08. (JAPAN)	We have not chosen to include these citations. Because we referred the information of WGI AR5

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
195	62782	24	8	33	8	40	Please include the assessment results by the UN ESCAP/WMO Typhoon Committee Expert Team on the impacts of tropical cyclone (TC) activity in the western North Pacific basin with a focus on the possible changes in TC track and impact areas, including landfalling statistics/trends (Lee et al., 2012a). For long term observations, the assessment found that, with considerable interannual and interdecadal variations in the TC activity in this basin, it remains uncertain whether there has been any detectable human influence on TC activities in the region. Observations also indicate some regional shifts in TC activity in the basin, such as a decreasing trend in TC occurrence in part of the South China Sea and an increasing trend along the east coast of China during the past 40 years. This change is apparently related to local circulation changes in the eastern Asia and western North Pacific, though the cause of the circulation changes is still a subject of further research. The assessment also provided latest information on the TC landfalling frequency trend of a number of Members of the Typhoon Committee, including China, Japan, Hong Kong, Korea Peninsula, the Philippines, Thailand, and Macao. Moreover, the recent study by Lee et al. (2012b) examines the long-term variations of TC frequency and intensity in the South China Sea and the vicinity of Hong Kong from 1961 to 2010 based on the best track data of four main weather agencies in the western North Pacific. The results show that, for the long-term trend, all datasets depict a decrease in the TC frequency in the South China Sea and the vicinity of Hong Kong during the study period, but the trend is not statistically significant at 5% level for most of the datasets. References : - Lee, T. C., T. R. Knutson, H. Kamahori, and, M. Ying, 2012a: Impacts of Climate Change on Tropical Cyclones in the Western North Pacific Basin. Part I : Past Observations. Tropical Cyclone Res. Rev. 1, 213-230. http://tcrr.typhoon.gov.cn/EN/abstract/abstract30.shtml - Lee T. C., Y. Y. Leung, M. H. Kok and H.S. Chan, 2012b: The long term variations of tropical cyclone activity in the South China Sea and the vicinity of Hong Kong, accepted for publication in Tropical Cyclone Res. Rev, 1(3): 277-292. DOI: 10.6057/2012TCRR02.01 http://tcrr.typhoon.gov.cn/EN/abstract/abstract20.shtml . (Sai-ming Lee, Hong Kong Observatory)	We have not chosen to include these citations. Because we referred the information of WGI AR5
196	83533	24	8	43	0	0	Section 24.3.3. For this section, it would be beneficial to indicate that a lot of IAV research is still based on SRES scenarios and not on SSPs and SPAs. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
197	74728	24	8	46	9	10	This paragraph is extremely difficult to follow due to excessive use of acronyms and jargon. What does "future radiative forcing pathway" mean? Also, this appears to be the first use of IAV, SPA or SSP as acronyms (if so they should be defined). Finally, it is not clear why lines 46-54 are necessary as a general explanation of the RCPs should appear elsewhere in AR5. This section should focus on their relevance for Asia and report on examples of regional studies. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
198	83534	24	8	52	8	53	It might be clearer not to capitalize the scenario elements. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
199	83535	24	8	54	8	54	The word "essential" could be adjusted here since research has occurred and will continue to occur relevant to socio-economic conditions, even without these new pathway and assumption scenarios. (Katharine Mach, IPCC WGII TSU)	The text has been revised to incorporate this perspective.
200	67912	24	9	0	0	0	The projected impacts of saltwater intrusion as a result of seawater level rises, which are discussed in subsections 24.4.2 Terrestrial and Inland Water Systems and 24.4.3 Coastal Systems and Low Lying Areas, should also be discussed in subsection 24.4.1 Freshwater Resources, in terms of the impacts on water supply (drinking water and agricultural irrigation) of saltwater intrusion, especially in deltas. (JAPAN)	Page limitation prevents this.
201	62784	24	9	10	9	19	Section 24.3.4 - please consider including the projected changes in sea level rise and tropical cyclone activity in Asia. For projected changes in tropical cyclone in western North Pacific, please include the assessment results by the UN ESCAP/WMO Typhoon Committee Expert Team on the future changes in tropical cyclone activities in the western North Pacific basin. Reference : - Ying, M., T. R. Knutson, H. Kamahori, and T. C. Lee, 2012: Impacts of Climate Change on Tropical Cyclones in the Western North Pacific Basin. Part II: Late 21st Century Projections. Tropical Cyclone Res. Rev. 1, 231-241. (Sai-ming Lee, Hong Kong Observatory)	The text has been revised to incorporate this perspective. But we have not chosen to include these citations. Because we referred the information of WGI AR5

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
202	67911	24	9	10	9	19	Recommended to refer to Ying et al. (2012) here and update Table 24-4 in page 90. Ying et al. (2012) is a comprehensive review paper of future climate change projection on tropical cyclones in the western North Pacific, which is the region of ESCAP/WMO Typhoon Committee Member countries and territories. Since its authors are involved in the activities of ESCAP/WMO Typhoon Committee, Lee et al. (2012) took into consideration comments provided by other experts and Secretariat working for ESCAP/WMO Typhoon Committee. Besides, Lee et al. (2012) includes comprehensive tables summarizing results on tropical cyclone activity changes in late 21st century from many research papers including tropical cyclone frequency, intensity, rainfall, and track patterns. These tables are quite useful to capture whole image of tropical cyclone projections, such as overall trend, variability and reliability. Ying, M., T. R. Knutson, H. Kamahori and T.-C. Lee, 2012: Impacts of climate change on tropical cyclones in the western North Pacific basin. Part II: Late twenty-first century projections. Tropical Cyclone Research and Review, 1, 231-241. doi: 10.6057/2012/TCRR02.09. (JAPAN)	The text has been revised to incorporate this perspective. But we have not chosen to include these citations. Because we referred the information of WGI AR5
203	74729	24	9	10	9	31	What about SST, SLR and ocean chemistry projections and observed impacts? This is quite an important aspect of climate change in SE Asia and while they are discussed in 24.4.3 if one were to look only at 24.3 and the associated tables it would appear not to figure into the Asia picture. (UNITED STATES OF AMERICA)	The text has been revised to incorporate this perspective.
204	62770	24	9	22	0	0	Future projection of larger temperature increasing in summer as shown in Table 24-4 are quite fatal fact in Asia, therefore it is necessary to describe in the text of Section 24.3.4. (Motoki Nishimori, National Institute for Agro-Environmental Sciences)	We have not chosen to incorporate this perspective. Because Table 24-4 is summary of projected climate change and we have avoided repetition and redundancy.
205	83536	24	9	22	0	0	Section 24.4. For each "observed impacts" subsection across 24.4, the chapter team should consider whether the current title is most reflective of the full range of relevant information assessed in the sections. For example, would a title such as "observed trends and impacts" or "observed trends, sensitivities, and impacts" be more appropriate? (Katharine Mach, IPCC WGII TSU)	This is consistent with the way the chapter was conceptualized.
206	83537	24	9	34	0	0	Section 24.4.1. The chapter team has developed a strong section here. It should continue to prioritize coordination with and cross-referencing of the key findings of chapter 3 in this report, as well as the working group 1 contribution to the 5th assessment report. (Katharine Mach, IPCC WGII TSU)	Checked with other chapters and done as much as possible. Need to be double checked during the copy edit stage.
207	74730	24	9	34	11	29	The section would benefit by a short discussion of the impacts of development on per capita water consumption, since increases in access to water and overall wealth will likely lead to increased individual domestic water use. (UNITED STATES OF AMERICA)	Accepted and added a short discussion
208	74731	24	9	34	11	29	Groundwater should be mentioned in this section. Overdraft is an increasingly major concern across much of Asia. See Nature 460, 999-1002 (20 August 2009) Satellite-based estimates of groundwater depletion in India. See also extensive work by Tushaar Shah and IWMI. See http://www.worldbank.org/en/news/feature/2012/03/06/india-groundwater-cr... Also India's Groundwater Challenge and the Way Forward Vol - XLVI No. 02, January 08, 2011 Himanshu Kulkarni, P S Vijay Shankar, and Sunderrajan Krishnan Special Articles (UNITED STATES OF AMERICA)	Short discussion is added together with peer-reviewed journal references.
209	74732	24	9	34	11	29	The Freshwater Resources section is significantly weaker than other sections, with excessive dependence on single sources, mainly, from Central Asia. (UNITED STATES OF AMERICA)	The reality is that few peer-reviewed references can be found in central Asia. We have to rely on the current literature.
210	74736	24	9	38	9	0	What does 'significantly vulnerable' mean? Suggest changing to 'highly vulnerable' unless significantly vulnerable has specific meaning and is defined in the IPCC's use of terms. (UNITED STATES OF AMERICA)	The sentence is revised now.
211	74733	24	9	38	9	39	The water sector is vulnerable for reasons other than just agriculture. Also, Table 24-5 doesn't show vulnerability per se, as the text indicates. (UNITED STATES OF AMERICA)	The sentence is revised now.
212	74734	24	9	38	9	46	Asia is huge and diverse. Unless most or ALL areas are highly vulnerable and will face water shortages (like Central Asia), suggest adjusting first line to reflect the vast and heterogenous nature of Asia. Why does this section focus on Central Asia and Middle East? - because that is where the most information exists or because that is where the greatest vulnerabilities are? What about the Himalayas, South Asia, and even parts of SE Asia and East Asia? Clarifying these issues will help readers with the rather abrupt transition to Observed Impacts, which starts with China. (UNITED STATES OF AMERICA)	The section has been revised to highlight sub-regional perspectives as much as available in the literature.
213	74735	24	9	38	9	46	Climate change impacts on water are discussed in a very general way. Is there enough information available to deduce the likelihood that increased efficiency measures would close the gap? It would be good to have a sense of whether the gap can be met with greater efficiency measures in water use. (UNITED STATES OF AMERICA)	Climate impacts are discussed in 24.4.1.2

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
214	74737	24	9	39	9	40	Suggest citing Vorosmarty et al which also highlights vulnerabiity of China and India. (UNITED STATES OF AMERICA)	Revised to avoid confusion
215	74738	24	9	40	9	41	'Regional assessments' = all of Asia (as defined in this chapter) or do the authors mean 'sub-regional' assessments as defined in this chapter. Are there sub-regions for which there is better information than others? If so, a ranking of where sub-regional assessments are most sorely needed and also where information is better would be helpful. (UNITED STATES OF AMERICA)	Now changed to sub-regional assessment. We agree it would be great to highlight the situation on sub-regional scale but due to the literature limitation, we are afriad it needs to be done in future assessment report.
216	83538	24	9	41	9	41	In the helpful to clarify what is meant by "the environmental impact of the freshwater situation." (Katharine Mach, IPCC WGII TSU)	Revised and only kept as sub-regional assesemnt of freshwater situation
217	74739	24	9	41	9	42	Appropriation of freshwater for agriculture should also be mentioned; perhaps it is implied in 'thriving economic growth', which is otherwise vague. (UNITED STATES OF AMERICA)	Added now.
218	74740	24	9	42	9	44	This statement is at odds with the evidence reported in Table 24-3, where four of the five studies cited provide evidence of increasing precipitation or no indication of change in these regions. (UNITED STATES OF AMERICA)	Added now.
219	78582	24	9	44	0	0	What decrease in precipitation? A projected decrease? (Dáithí Stone, University of Cape Town)	Deleted now.
220	74741	24	9	44	9	44	Note that Kitoh et al. 2008 address the "fertile crescent" in particular. Also note that they don't simply say there will be "challenges;" they say that much of this area could "disappear" by the end of the century. (UNITED STATES OF AMERICA)	Revised now.
221	74742	24	9	44	9	46	This statement incorrectly implies that the water resource issues in Central Asia result from only mismanagement. The authors should address the complexity of this issues (e.g., transboundary issues) and climate change plays a role. Additionally, mismanagement of water resources has been a problem in Central Asia for several decades, but the text suggests it is a recent problem. (UNITED STATES OF AMERICA)	Revised now.
222	74743	24	9	49	10	8	This section is a good example of a problem that pervades the chapter - a laundry list of statements that is lacing in critical discussion or assessment. (UNITED STATES OF AMERICA)	Revised now.
223	56741	24	9	51	0	0	This statement needs a supporting reference. There is probably something in Chapters 3 or 4 that could be used if not something from elsewhere in this chapter. (David Dudgeon, University of Hong Kong)	Added now.
224	65326	24	9	51	0	53	In agreement with the assessment of confidence levels in detection and attribution of Chapter 18 (See Table 18-6) (Lourdes Tibig, The Manila Observatory)	Checked table 18-6.
225	74745	24	9	51	9	0	To improve readability, an introductory sentence would be helpful for the start of this section / paragraph referring to the overall scope and availability of data on observed impacts. (UNITED STATES OF AMERICA)	Added now.
226	74744	24	9	51	9	52	The attribution point is important and should be emphasized. It very likely relates to observed impacts throughout the region as disentangling non-climate and climate pressures on freshwater resources is difficult and few rigorous studies exist for the region. (UNITED STATES OF AMERICA)	Agree. The attribution point is now highlighted as much as allowed in the literature.
227	83539	24	9	51	9	52	"high confidence" and "low confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Agreed. Revised now.
228	66331	24	9	51	10	8	The chapter defines climatogenic water resources changes for Middle Asia, China, Mongolia, Himalayas. A general tendency to water lack is marked. Meanwhile these regions are big but they do not cover all Asia territory. Analogical processes are not considered (Anna Kukhta, Institute of Global Climate and Ecology of Roshydromet and RAS)	The literature does not cover the whole region. We reframe this section with an introductory sentence followed by available subregional discussion.
229	66332	24	9	51	10	8	In the chapter the registered water balance climatogenic changes for Southern Asia (Central Asia, Mongolia, China) are discussed. At that, processes taking place on such hige territories as Siberia, Russian Far East, Russian Northern Asia (tundra and fores (Anna Kukhta, Institute of Global Climate and Ecology of Roshydromet and RAS)	The literature does not cover the whole region. We reframe this section with an introductory sentence followed by available subregional discussion.
230	83540	24	9	52	9	52	It would be helpful to clarify the finding here regarding attribution. The variation in water availability has been attributed fully to climate change, but with low confidence? Or it has been partially attributed to climate change and partially to their activities? (Katharine Mach, IPCC WGII TSU)	Revised
231	74746	24	9	53	9	53	The phrase "no evidence shows significant changes" should be changed to "there is no evidence that suggests significant changes" - if this is what the authors intended. As written, the meaning is unclear. (UNITED STATES OF AMERICA)	Revised
232	74747	24	9	53	9	54	The Brutsaert and Sugita article concerns groundwater, not surface water. (UNITED STATES OF AMERICA)	Revised

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
233	64968	24	9	54	9	54	I question whether central Asian water resources are “primarily” generated in mountain glaciers. There are many unglacierized catchments, and in some glacierized catchments the significance of headwater glaciers diminishes progressively downstream. (This, of course, does not apply to streams that flow into deserts.) (J. Graham Cogley, Trent University)	Revised
234	74748	24	9	54	10	2	Has any change in quantity of flow or timing of flow been observed for the Himalayas - in the way that earlier snowmelt has changed flow in the western US? Increased runoff is not the only problem; the timing of the runoff with regard to agricultural production and ecological processes downstream are critical. (UNITED STATES OF AMERICA)	Discussed in 24.4.2.2
235	65327	24	9	54	10	3	Same comment as above (Lourdes Tibig, The Manila Observatory)	Discussed in 24.4.2.2
236	74749	24	10	1	10	1	This paper seems to be about Inner Mongolia, not the Himalayas. (UNITED STATES OF AMERICA)	This has been deleted.
237	83541	24	10	1	10	3	The timeframe for these observations could be specified. Additionally, "high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Revised as directed.
238	74750	24	10	1	10	8	GLOFs should be mentioned in this section and, where appropriate, elsewhere in the chapter. (UNITED STATES OF AMERICA)	The focus of this section is not on GLOFs. Page limitation prevents its inclusion.
239	56739	24	10	3	0	6	A lack of clarity here: climate change is correlated to (with is meant) water quality ----- how is it correlated? By what means and in what direction? The text goes on to suggest that the correlation gives rise to increased health risk so I assume the authors mean that climate change leads to reduced water quality and increased health risk. This needs to be made clear, as does the nature of the health risk --- is it due to pollution and contamination of potable water, or proliferation of water-borne parasites and diseases? (David Dudgeon, University of Hong Kong)	The health part is removed and the negative correlation is highlighted.
240	65328	24	10	3	0	8	Same comment as above (Lourdes Tibig, The Manila Observatory)	Same as above
241	74751	24	10	3	10	4	Do the authors suggest that climate and surface water quality are negatively correlated? (UNITED STATES OF AMERICA)	Text revised for clarification
242	83542	24	10	4	10	4	It would be helpful to clarify if the correlation is positive or negative. (Katharine Mach, IPCC WGII TSU)	Text revised for clarification
243	74752	24	10	6	10	7	How is groundwater quality related to climate change? Given that four separate studies are cited to substantiate this claim, a modest explanation might be warranted. Also, groundwater quality may be an issue but the overall question of use and availability of groundwater is potentially much larger. (UNITED STATES OF AMERICA)	Changed now and deleted groundwater parts
244	74753	24	10	6	10	7	Winkel et al is about over-abstraction rather than climate change. Tornqvist et al is about groundwater and not surface water. (UNITED STATES OF AMERICA)	Revised
245	83543	24	10	6	10	7	Is it possible to specify more precisely the nature of this relationship? (Katharine Mach, IPCC WGII TSU)	Revised
246	56740	24	10	7	0	8	This sentence about the water crisis is not helpful; what water crisis? , the reader might ask. Is it a crisis of quality or quantity. Are the authors referring to water shortages in central Asia mentioned on the previous page? Delete this sentence. It is not helpful and adds nothing useful. (David Dudgeon, University of Hong Kong)	Revised
247	74754	24	10	7	10	8	This statement is weak and needs some additional discussion (and citations) given the importance of the interaction between management (and other non-climate factors) and climate-related factors. This needs further explanation especially because there is not a crisis in all Asian countries. Also, 'poor management' needs elaboration. There is a lot of waste throughout the system including by end-users. Does 'poor management' cover that? (UNITED STATES OF AMERICA)	Revised
248	83544	24	10	8	10	11	It would be helpful to specify the timeframe of the described water crisis. (Katharine Mach, IPCC WGII TSU)	Revised
249	67913	24	10	11	10	37	There is much discussion about water scarcity throughout Chapter 24, but no discussion about projected risks regarding the quality of water, which will be greatly impacted by increased floods occurring as a consequence of climate change. Therefore, inclusion of projected risks of degraded water quality is requested. (JAPAN)	In observed impacts parts, water quality is discussed. In future projection, few peer-reviewed references are founded.
250	57872	24	10	13	0	0	The following article may be suitable for this paragraph since the results from the 20-km and 60-km mesh AGCMs are used in AR5 WG I. for the regional climate projections: Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Added now.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
251	67914	24	10	13	10	37	"An increase in frequency and intensity of torrential rainfall, an increase in number of dry days, and a decrease in maximum snow depth are projected for the end of the twenty-first century (Japan Meteorological Agency, 2013). These changes will worsen the floods and droughts risks in Japan." should be added. Reference: (Japan Meteorological Agency, 2013: Global Warming Projection, Vol. 8. (in Japanese)) (JAPAN)	Peer-reviewed reference is emphasized.
252	67915	24	10	13	10	37	"A decrease of drought river discharges is projected in western Japan (TACHIKAWA et al., 2011)" should be added. Reference: (TACHIKAWA et al., 2011: PROJECTION OF RIVER DISCHARGE OF JAPANESE RIVER BASINS UNDER A CLIMATE CHANGE SCENARIO, Journal of Japan Society of Civil Engineers, B1, Vol. 67, No. 1, pp. 1-15.) (JAPAN)	The reference suggested is added.
253	67916	24	10	13	10	37	"In Japan, a decrease of river discharge is projected from March to June when water demand for irrigation is crucial (MLIT, 2007; SATO et al., 2012; SATO et al., 2013)" should be added. Reference: Ministry of Land, Infrastructure, Transport and Tourism, 2007: White Paper on Water Resources in Japan. SATO et al., 2012: Estimates of Climate Change Impact on River Discharge in Japan Based on a Super-High-Resolution Climate Model, Terr. Atmos. Ocean. Sci., Vol. 23, No. 5, pp. 527-540. SATO et al., 2013: Assessment of climate change impacts on river discharge in Japan using the super-high-resolution MRI-AGCM, HYDROLOGICAL PROCESSES, wileyonlinelibrary.com. (JAPAN)	Sato et al., 2013 is added now.
254	67917	24	10	13	10	37	"Increases of flood scale and frequency are projected in Japan (HATTORI et al., 2012; TACHIKAWA et al., 2011, HIGASHI et al., 2006, ISHIKAWA et al., 2013, WADA et al., 2008)" should be mentioned. Reference: HATTORI et al., 2012: MACRO-EVALUATION OF CLIMATE CHANGE IMPACT ON FLOOD CONTROL MEASURES IN JAPAN, Advances in River Engineering, Vol. 18, pp. 481 - 486, Japan Society of Civil Engineers. TACHIKAWA et al., 2011: PROJECTION OF RIVER DISCHARGE OF JAPANESE RIVER BASINS UNDER A CLIMATE CHANGE SCENARIO, Journal of Japan Society of Civil Engineers, B1, Vol. 67, No. 1, pp. 1-15. HIGASHI et al., 2006: IMPACTS OF GLOBAL WARMING ON HEAVY PRECIPITATION FREQUENCY AND FLOOD RISK, Journal of Hydroscience and Hydraulic Engineering, Vol. 50, pp. 205-210, Japan Society of Civil Engineering. ISHIKAWA et al., 2013: Estimation of a possible maximum flood event in the Tone River basin, Japan caused by a tropical cyclone (Accepted Article), John Wiley & Sons, Ltd WADA et al., 2008: Study on the Flood Risk Assessment of Global Warming by Regional Climate Model and High Resolution General Circulation Model, Journal of Japan Society of Hydrology and Water Resources, Vol. 21, No. 1, pp. 12-22. (JAPAN)	Flooding is covered in other parts.
255	57471	24	10	14	10	14	Water availability differ not only among river basin but also among the rainfall seasons. (So Kazama, Tohoku University)	Added now.
256	74755	24	10	16	10	17	This statement needs a citation and a confidence level. (UNITED STATES OF AMERICA)	The statement has been deleted.
257	83545	24	10	16	10	17	The role of climate change for this expected outcome should be clarified, given the preceding sentences. (Katharine Mach, IPCC WGII TSU)	Deleted now.
258	74756	24	10	21	10	21	This line suggests that increased precipitation leads to increased water availability. That conclusion depends on the definition of water availability - precipitation could increase, but if the spatial and temporal changes do not correlate with the time of greatest need (e.g. growing season for crops) or the locations where water storage or access points are located, then it is questionable whether this really represents availability. Do the author mean to imply that it is unknown whether the change in net precipitation will increase or decrease. (UNITED STATES OF AMERICA)	Revised now
259	74757	24	10	21	10	24	It would be more accurate to say that the projection in question, which was generated by a GCM, was down-scaled using PRECIS, and hence it may not be accurate to define the projection with respect to PRECIS, which does not generate projections independent of GCM boundary conditions. Also, if this is the first mention of PRECIS in the chapter, please describe briefly (perhaps in a footnote) and note it is a regional model. This discussion would benefit from a discussion of the reliability of results. (UNITED STATES OF AMERICA)	Revised now
260	67918	24	10	22	10	22	"insufficient water for agriculture in 2020s and 2040s." What about the 2030s? The 30's had sufficient water? (JAPAN)	2020s are actually average of 2011-2030 and 2040s are average of 2031-2050.
261	74758	24	10	27	10	29	Fung et al. includes caveats about seasonality and uncertainties around the monsoon which are not noted here. (UNITED STATES OF AMERICA)	Added now.
262	74759	24	10	27	10	29	Is the large increase in demand referring to demand for freshwater and the offset to expected increases in water availability from runoff? (UNITED STATES OF AMERICA)	Revised now
263	57875	24	10	28	0	0	Nakaegawa et al. (2013) supported the increased river discharge in the Ganges River (please see Table III): Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Added now.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
264	57871	24	10	33	0	0	The following fact may be useful in this paragraph: riverdischarges at Amu Darya and Syr Darya are projected to change differently in seasonal variations in Nakaegawa et al. (2013): Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Added now.
265	56742	24	10	35	0	37	Text suggests that freshwater reources (note: not fresh water resources) will be reduced in coastal areas but not those in Southeast Asia. This does not seem likely. Salinization in the Mekong Delta and saltwater intrusion is already affecting agriculture, and this is likely to get worse in the foreseeable future under all GCC scenarios. Same applies in the Chao Phraya (Syvisiki et al. have noted that this delta is shrinking) and there is likely cause for concern elsewhere in the region. Line 36 on page 18 and lines 47-48 on page 21 also suggests salinization will increase, and there needs to be some cross-referencing or rewriting to remove apparent contradictions. (David Dudgeon, University of Hong Kong)	Deleted now.
266	74761	24	10	35	10	0	Is it the authors intent to conclde that SE Asia will NOT experience a decrease in freshwater resources in coastal areas (as suggested here)? Is that true for all of SE Asia? Are there no other published studies for SE Asia? What about interaction of changes in rainfall, temperature, and sea level rise / storm surge? Would that not increase salinity in some coastal areas especially deltas and lagoons - and hence the availability of freshwater resources? (UNITED STATES OF AMERICA)	Deleted now.
267	74760	24	10	35	10	36	This statement about coastal areas could use some explanation and additional citation. It would benefit from reference to literature on the relationship between subsidence, saltwater intrusion, and freshwater availability in the Mekong Delta, e.g.? (UNITED STATES OF AMERICA)	Deleted now.
268	74762	24	10	40	10	49	It is suggested that the authors expand this section, which does not do justice to the key freshwater-related vulnerabilities in the region. Also note that initially glacial melting produces excess runoff but eventually will result in water deficits. (UNITED STATES OF AMERICA)	Limited literature makes this a challenge for Asia.
269	57873	24	10	42	0	0	Future river discharges in the cold zone are projected in Nakaegawa et al. (2013): the Amur, Lena, Ob, Yenisei Rivers: Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	Added now.
270	74763	24	10	42	10	42	Do the authors intend this statement to apply across the region? The cited study is only about the Amur River. This is an example of a pervasive problem throughout the chapter, in which a single source applying to one location is used to justify regional conclusion. (UNITED STATES OF AMERICA)	Revised
271	68188	24	10	42	10	43	Include Nakaegawa et al. (2013) as a cite after Hirabashi et al. (2008). The corresponding reference is: T. Nakaegawa, A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs-overview. Hydrological Processes. 27 DOI:10.1002/hyp. 9831. (José Fábrega, Universidad Tecnológica de Panamá)	Added now.
272	57472	24	10	42	10	49	Regarding vulnerabilities to key drivers, it mentions only river discharge influenced by rainfall. For more information, high evapotranspiration and groundwater resources should be stated here, too. (So Kazama, Tohoku University)	Revised
273	66101	24	10	43	10	45	Sentence started from "Snowfall..." need to be rephrased as it is not clear what author wants to communicate (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Deleted now.
274	74764	24	10	43	10	45	This statement needs a citation and an explanation of what is included under Monsoon Asia. (UNITED STATES OF AMERICA)	Deleted now.
275	74765	24	10	44	10	45	The point about sensitivity is not clear. Is the idea that mean or minimum temperatures in the parts of Monsoon Asia where there is snow pack hovers around 0 degrees C and so the snowpack itself will melt quickly with just a slight warming? (UNITED STATES OF AMERICA)	Deleted now.
276	83546	24	10	47	10	47	This statement could be reworded to avoid interpretation of prescription given the word "needs." (Katharine Mach, IPCC WGII TSU)	Revised
277	74766	24	10	47	10	49	This point about coordinated (and one could add 'integrated) water (and river basin) management could be made for most if not all the region's major basins. Also, does this point (which is important) really fit here? Instead it may better fit under the next section on adaptation options. Unless, the point is nuanced to say that LACK of coordination increases vulnerability especially in transboundary river basins. (UNITED STATES OF AMERICA)	Moved as suggested.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
278	74767	24	10	47	10	49	Water management is an adaptation option more than a vulnerability. Many other examples from the region exist and could be cited. Also, is there any estimate of how many transboundary river basins exist in the region? A brief mention of the number of basins would emphasize the importance of this topic as this will likely be one of the most difficult adaptation topics in the region. (UNITED STATES OF AMERICA)	This is just an example.
279	74768	24	11	1	11	12	The authors should mention that Korea and Japan use water re-use and recycling extensively, even in urban areas. (UNITED STATES OF AMERICA)	Water reuse in China is added as example.
280	74769	24	11	1	11	29	This section ignores the substantial amount of work done on groundwater; as the primary buffer available in most locations, and as a storage mechanism, it will be critical in adapting to climate change. It also ignores the extensive documentation on the limitations of hard structural water control measures, particularly given the design uncertainties inherent with climate change. And it also misses the extensive work that has been done around water harvesting and watershed management. A review of work by IWMI, the SACI Waters Program, the British Geological Survey, etc is suggested. (UNITED STATES OF AMERICA)	Added now.
281	74770	24	11	1	11	29	This summary of adaptation options for freshwater systems is organized confusingly, with a mix of approaches at different scales contained in the various paragraphs. For instance, the third paragraph moves from a discussion of infrastructure to policies and institutions. It would be helpful to reorganize according to category, scale, or another relevant characteristic. Also, the summary is missing a number of basic ideas ranging from river basin management (wrongly placed in the previous section) to support for local institutions that have been implemented across Asia and discussed widely in the gray literature. Authors may wish to cross-reference the appropriate section in chapter 3 on adaptation options. (UNITED STATES OF AMERICA)	Revised. The discussion is now based around sub-regions, as much as allowed by availability of peer reviewed literature.
282	57473	24	11	3	11	29	Changing or shifting crop calendar should be one option to cope with climate change. (So Kazama, Tohoku University)	Crop system change is added now.
283	67919	24	11	3	11	29	"River improvement works, construction of reservoirs, enhancement of flood projection technique, promotion of safer ways of residing, retention of rain water run off, construction of drainage pumping stations, and so on, have been continuously executed for flood disaster mitigation in Japan (MLIT, 2008)." should be mentioned. Reference: MLIT, 2008: Climate Change Adaptation Strategies to Cope with Water-related Disasters due to Global Warming. (JAPAN)	The focus of this section is not on flooding, which is covered in another section and in other chapters.
284	74771	24	11	6	11	7	It would be helpful to elaborate on the types of socioeconomic change referred to here and also to the interaction of these changes with anticipated climate change impacts. (UNITED STATES OF AMERICA)	Deleted now.
285	74772	24	11	7	11	10	The adaptation measures listed are already being implemented. This point should be emphasized and any lessons that can be drawn from the experiences should be also summarized here if space allows. (UNITED STATES OF AMERICA)	Revised
286	74773	24	11	7	11	21	It is suggested that the authors consider a discussion of zoning and other 'soft' adaptation measures including insurance schemes for dealing with damage from extreme events as well as any 'ecosystem-based' approaches that emphasize natural regulation of water flow through forests and wetlands. (UNITED STATES OF AMERICA)	Regulation is added, not insurance which is lacking literature support to adapt climate change.
287	74774	24	11	14	11	21	Authors should note the uses of vulnerability mapping (e.g., Eriyagama et al. 2010. Impacts of Climate Change on Water Resources and Agriculture in Sri Lanka; Yusuf, A. A.; Francisco, H. A. 2009. Climate change vulnerability mapping for Southeast Asia; Heltberg and Bonch-Osmolovskiy. 2011. Mapping Vulnerability to Climate Change. Policy Research Working Paper 5554. The World Bank, Sustainable Development Network, Social Development Unit.) (UNITED STATES OF AMERICA)	Vulnerability mapping is deleted now due to page limitation.
288	74775	24	11	19	11	21	The degree to which storage in the Himalayan region could supplement low flows is debatable as is their effectiveness for flood control. See, e.g. Water in Nepal (Himal Books, Kathmandu 2001). Also, this example goes better with the following paragraph since it is an example of water storage and management, not mapping. (UNITED STATES OF AMERICA)	Revised
289	74776	24	11	23	11	29	This paragraph only mentions the need to increase water storage and it fails to describe the type of storage options. Note should be made of rainwater harvesting, conjunctive use of surface and groundwater, etc. (UNITED STATES OF AMERICA)	Revised
290	74777	24	11	25	11	25	This discussion would benefit from an example or two of informal institutions. (UNITED STATES OF AMERICA)	More reference and examples are added now.
291	74778	24	11	26	11	27	These are very general statements which are made based on single sources. Do they apply more broadly across the region? If so, what is the basis for that conclusion? In short, please place these statements in context. (UNITED STATES OF AMERICA)	Revised to add more examples. Whether they apply in broader context is unknown.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
292	56743	24	11	27	0	29	What does 'legal aspects of water management' mean? Don't they have to be considered everywhere and not just in South Asia? What aspects are special and specific to South Asia? (David Dudgeon, University of Hong Kong)	Revised
293	74779	24	11	27	11	29	Transboundary water management is highly relevant across Asia, as has been pointed out on the previous page. Additional citations would help to support this point. (UNITED STATES OF AMERICA)	Revised where supported by literature.
294	83547	24	11	32	0	0	Section 24.4.2 This section is strong but too long. The chapter team should aim to tighten ensuring the section as much as possible, ideally by 50%. In preparing the final draft of this section, the chapter team should continue to prioritize coordination with and cross-referencing of the key findings of chapter 4, as well as the working group 1 contribution to the 5th assessment report. (Katharine Mach, IPCC WGII TSU)	We have considerably shortened this section, but we are constrained by requests for additional material from reviewers.
295	74780	24	11	36	11	51	This is a reasonable summary, but it would be good to have at least 1 citation. Terrestrial ecoregions of the Indo-Pacific would be one possible citation. (UNITED STATES OF AMERICA)	We could not find a good citation: The suggested one only includes 10% of Asia. This section is background not assessment so we think it is OK to just state the obvious.
296	74781	24	11	44	11	45	In general the dominance of evergreen rain forests in SE Asia is a valid point, but if one considers the Mekong countries, dry, semi-deciduous, and deciduous forests and grasslands are also important. (UNITED STATES OF AMERICA)	We have re-worded this section.
297	74782	24	11	47	11	0	Myanmar also has some alpine and high elevation forests and areas that presumably are above the treeline and have ice. (UNITED STATES OF AMERICA)	We have removed all this detail to save space.
298	56744	24	11	48	0	51	It seems odd that the main freshwater systems of Asia are listed only after the section dealing with climate change effects on freshwater resources has been covered on pages 9 through 11. It might be better to move this text to the start of the section beginning on page 9. (David Dudgeon, University of Hong Kong)	But they are not mentioned further in the resources section.
299	74783	24	12	1	14	30	There is very little assessment of South and Southeast Asia in these sections. Does this accurately reflect the state of the literature? (UNITED STATES OF AMERICA)	Yes, it reflects the state of the literature.
300	83548	24	12	3	12	4	This statement is relevant to previous sections of the chapter and is not needed here. (Katharine Mach, IPCC WGII TSU)	This was removed.
301	74784	24	12	3	12	11	Suggest explaining whether the 'very few reports' (line 8) is a result of lack of studies, lack of well-designed studies, lack of results consistent with expectations, or something else. As written, the few reports could be interpreted in many ways. The point about attribution (line 10) is related and important and could be part of the explanation for the lack of observed impacts. Alternatively, it could be that the tropical parts of Asia really have not experienced discernible impacts. (UNITED STATES OF AMERICA)	This is now explained in the text.
302	83549	24	12	9	12	9	"high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Corrected.
303	74785	24	12	15	12	17	The 'problems with the NDVI data and its interpretation' should be briefly explained. Otherwise, the reader is left to question the findings highlighted in the rest of the paragraph. (UNITED STATES OF AMERICA)	We are already over the word limit for this chapter so we have referred instead to the explanation in Chapter 4.
304	74786	24	12	15	12	34	"greening" used throughout this paragraph needs some explanation. Perhaps this is a technical term pertaining to interpretation of NDVI data analysis. But, regardless, it is difficult to understand what a 'greening trend' for Asia as a whole (lines 17-19) means in practical terms. Does this mean that compared with say 1980, the region is now greener? Or that the parts of the region with natural vegetation get green earlier in the year? This concept needs clarification. (UNITED STATES OF AMERICA)	We are already over the word limit for this chapter so we have given a brief explanation and then referred to the explanation in Chapter 4.
305	83550	24	12	18	12	29	The timeframe for most of these statements needs to be clarified--all since the 1980s? (Katharine Mach, IPCC WGII TSU)	These have been clarified.
306	65329	24	12	26	0	28	In agreement with the assessment of confidence levels of detection and attribution of Chapter 18 (See Table 18-7) (Lourdes Tibig, The Manila Observatory)	Done.
307	83551	24	12	27	12	28	"high confidence" and "medium confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Done.
308	80639	24	12	28	12	28	Add the latest studies in the phenology review: Tao et al. (2012a; 2012b). Tao et al., 2012. Crop phenology is shifted at about 40% of investigated stations in China due to climate change. Tao F., Zhang S, Zhang Z. 2012. Spatiotemporal changes of wheat phenology in China under the effects of temperature, day length and cultivar thermal characteristics. European Journal of Agronomy, 43, 201-212. (Jiahua PAN, Chinese Academy of Social Sciences)	These are more relevant to agricultural yields than the natural vegetation covered here.
309	65330	24	13	1	0	3	Same comment as above (Lourdes Tibig, The Manila Observatory)	Done.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
310	67920	24	13	1	13	3	The geographical areas to which this statement applies are ambiguous, and should be clarified. And any prominent findings from Asia, should be added to TS page 9, under line 46, as an example of impacts on terrestrial and inland water systems. (JAPAN)	This has been clarified.
311	78584	24	13	1	13	6	The first sentence may be accurate. But it appears that you are partly supporting it with the second sentence. But the second sentence depends on assuming a tree-ring/temperature relationship, and so cannot be used to support the existence of such a relationship. (Dáithí Stone, University of Cape Town)	This has been rewritten for clarity.
312	83552	24	13	2	13	3	"high confidence" and "medium confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Done.
313	83553	24	13	4	13	4	Is "800" the intended year here? (I assume so but am just checking.) (Katharine Mach, IPCC WGII TSU)	Yes, this is correct.
314	78583	24	13	5	0	0	Is "statistically significant" the appropriate term here, or rather "within the uncertainty". There is a difference. (Dáithí Stone, University of Cape Town)	Yes. Following the reference cited, this is the appropriate term.
315	58802	24	13	6	13	11	Let me introduce one research paper, which shows clear tree growth with snow decline on a high mountain in Japan: Yasuda & Okitsu (2007). The following sentence may be added at the end of this series of examples: "in snowy alpine zones in Japan, alpine dwarf pine trees showed increase of tree growth in accordance with decline snow depth (Yasuda & Okitsu 2007)". Reference: Yasuda M. and Okitsu S. 2007. Fluctuation of Pinus pumila tree-ring width and influence of climatic change at Hiragatake moor, central Japan. Japanese Journal of Forest Environment 49: 9-18 (in Japanese with English abstract) (Tetsuya Matsui, Forestry and Forest Products Research Institute)	We have had to cut the length of this section by 2000 words and cannot add any more case studies unless they change the overall assessment.
316	83554	24	13	16	13	16	It would be preferable to specify the nature of the "problems." (Katharine Mach, IPCC WGII TSU)	Done.
317	74787	24	13	37	13	42	Explain why the region is a net carbon sink, if this is known. This finding is significant, if true, because deforestation rates are very high for much of tropical Asia. Does the cited source specify whether most of the sink is in the boreal forest? (UNITED STATES OF AMERICA)	We have removed this entire paragraph to help cut the length of the section.
318	65331	24	13	44	0	48	Same comment as above (Lourdes Tibig, The Manila Observatory)	Done.
319	67921	24	13	44	14	30	These paragraphs discussing the distributions of species and biomes refer only to vegetation change, while the first sentence says, "Also widely reported are changes in the distributions of plant and animal species: generally upwards in elevation." Changes in animal habitat should also be included. (JAPAN)	We have had to cut the length of this section but have briefly mentioned this.
320	67922	24	13	44	14	30	These paragraphs discussing the distributions of species and biomes could also include changes to agricultural and cultural landscape. A suggested addition is: "There is very high confidence that species composition and landscape structure are changing in cultural landscapes such as Satoyama in Japan or mixed forest, agricultural landscapes in Europe." (Chapter 4 page 22 lines 29-31) (JAPAN)	We have had to cut the length of this section and cannot duplicate information from other chapters.
321	58803	24	13	49	13	52	Allow me to suggest one research paper, which showed an excellent evidence of shrub invasion into adjacent alpine moor vegetation within the past 33 years in Japan by comparison of a series of aerial photographs: Yasuda et al (2007). Reference: Yasuda M., Daimaru H. and Okitsu S. 2007. Detection of Alpine Moor Vegetation Change by Comparison of Orthonized Aerophotographs at Different Times. Geographical Review of Japan 80: 842-856 (in Japanese with English abstract) (Tetsuya Matsui, Forestry and Forest Products Research Institute)	We have had to cut the length of this section by 2000 words and cannot add any more case studies unless they change the overall assessment.
322	74788	24	13	53	13	54	Is 388m between 1970 and 2006 the correct figure? That seems quite high. (UNITED STATES OF AMERICA)	Yes, it is the figure given, but we have no independent support so have removed this statement.
323	65332	24	14	2	0	19	It is suggested that a summary of the levels of confidence in detection and attribution of impacts to climate change be included. (Lourdes Tibig, The Manila Observatory)	We have done this where the evidence allows us to.
324	65333	24	14	21	0	30	Same comment as above (Lourdes Tibig, The Manila Observatory)	Done.
325	65334	24	14	32	15	38	Same comment as above (Lourdes Tibig, The Manila Observatory)	Done.
326	74789	24	14	32	15	38	It is suggested that the authors expand on the ecological consequences of permafrost melting and glacier loss (this section concerns ecosystems), otherwise this may belong better in the Freshwater section. (UNITED STATES OF AMERICA)	We have had to cut text from this section to stay within the Chapter word limit so this part has been rewritten.
327	83555	24	14	35	14	50	In addition to the cross-references to other chapters in the report, it would be preferable to provide citations to the underlying literature. (Katharine Mach, IPCC WGII TSU)	To save space, we have relied mostly on cross-referencing.
328	74790	24	14	47	14	50	It is suggested that the authors expand on the mechanism for the release of GHGs due to thawing permafrost. (UNITED STATES OF AMERICA)	We have now cited the sections in Chapters 4 and 19 on this.
329	78585	24	14	48	14	50	Are you referring to a climate-carbon feedback here? It does not come across like that though and thus does not make sense. (Dáithí Stone, University of Cape Town)	Yes. This was rewritten.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
330	74791	24	15	3	15	5	This statement is missing a citation, though it also illustrates the "literature review" approach to this chapter as opposed to an assessment. (UNITED STATES OF AMERICA)	The citation is in line 7.
331	64969	24	15	23	15	23	"to the Himalayas". Some Himalayan glaciers lie equatorward of 30°N, but none lie equatorward of the Tropic of Cancer. (J. Graham Cogley, Trent University)	Chapter 24 also includes New Guinea, which has tropical glaciers.
332	74792	24	15	23	15	25	It would be useful to specify the methodology used for calculating glacial mass from historical data - or perhaps, more appropriately, make reference to the appropriate section of WG1. (UNITED STATES OF AMERICA)	Topographic maps, aerial photography and ground-based surveys were used for calculating glacial area from historical data. Then Digital elevation models (DEM) were derived from the digitized topographic maps. Glacial mass was calculated as a product of volume and average ice density. More details are available from SHAHGEDANOVA et al., 2012. Changes in area and geodetic mass balance of small glaciers, Polar Urals, Russia, 1950–2008. Journal of Glaciology, Vol. 58, No. 211: 953-964. This reference is cited in the paragraph, however there is no space for description of the methodology in the Chapter.
333	56906	24	15	23	15	38	Given that the case study (24.9.3) is restricted to glaciers in Central Asia (mainly Tien Shan), this section 24.4.2.2 is the location in the chapter where the authors could provide an overview of recent glacier change in Asia as a whole, not only Central Asia. The Box from WGII Chap3 is restricted to glaciers in Himalaya just a fraction of all glaciers in Asia. What about the status of glaciers in the Karakoram, in Hindu Kush, and in South East of China (Hengduan Shan)? This is really the good place for this short summary. Furthermore, the section should not focus only on area change but also provide some estimates of the mass balance. After the 2007 blunder about Himalaya glaciers disappearing by 2035 it seems essential that this Asia chapter include a short clarification about the status of those glaciers, even if the Box in Chapter 3 has a detail focus on Himalaya. Recent comprehensive papers by [Bolch et al., 2012] and [Gardner et al., 2013, in press] are probably good basis for this overview. Such an addition would also help reducing a bias of this chapter toward Tien Shan. This is not the only vulnerable region due to glacier change. The Indus basin is also a highly populated region where the retreat of glacier may also have some serious hydrological consequences. Bolch, T., et al. (2012), The State and Fate of Himalayan Glaciers, Science, 336(6079), 310-314. Gardner, A. S., et al. (2013, in press), A consensus estimate of glacier contribution to sea level rise: 2003 to 2009, Science. (Etienne Berthier, LEGOS)	A cross-reference to WG2 AR5 Box 3-1 has been added, the results of Bolch et al., 2012 are included there. Reference to results of Gardner et al. (2013) on glacier mass loss for Asian High Mountains has been added.
334	74793	24	15	23	15	38	This section on glaciers carefully presents available data, but should provide error margins associated with the relevant findings from these studies. (UNITED STATES OF AMERICA)	These were not always available.
335	64970	24	15	32	15	32	The English for Russian makrosklon is "flank". "macroslope" is not an English word. (J. Graham Cogley, Trent University)	Corrected.
336	74794	24	15	35	15	36	It is stated: "In Papua, western Indonesia, the tropical mountain glaciers on Puncak Jaya." Please note that the Indonesian province of Irian Jaya (Papua) lies to the east in the Indonesia archipelago. The statement was likely intended to read "in western Papua, Indonesia." (UNITED STATES OF AMERICA)	Corrected.
337	64971	24	15	38	15	38	In fact the Himalayan glaciers are discussed only briefly in AR5 WGI chapter 4. A better citation would be AR5 WGII chapter 3 Box 3-1. (J. Graham Cogley, Trent University)	A cross-reference to Box 3-1 has been added.
338	74795	24	15	41	18	53	Be careful with use of 'will' in this section since these are projected or expected impacts. "Will" implies certainty. (UNITED STATES OF AMERICA)	We have reworded these sentences.
339	74796	24	15	47	15	53	What is the probability that air temperatures will continue to rise? See page 16, line 10. This is an example of the need for assessment rather than summary. What is concluded from two two divergent findings? (UNITED STATES OF AMERICA)	According to WGI the probability is high. We don't think this is the appropriate place to discuss this issue.
340	74797	24	16	10	16	10	Avoid making generalizations about "Asia" as a single region; note important subregional and national differences, particularly when they are examined in the WG1 report. (UNITED STATES OF AMERICA)	We have been more careful on this.
341	83556	24	16	12	16	12	Given the preceding 2 lines, it would be helpful to clarify whether the "relatively predictable changes" are for warming or precipitation? (Katharine Mach, IPCC WGII TSU)	This section has been rewritten.
342	83557	24	16	14	16	14	This statement could be more direct if "likely" were instead placed after "will" in both parts of the sentence. (Katharine Mach, IPCC WGII TSU)	This section has been rewritten.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
343	80640	24	16	17	16	17	Add the latest study Tao and Zhang (2010) at the end of line 8. Tao and Zhang, 2010. the expansion of grassland to present forests areas in northern and northeastern China and to present barren areas in western China and the Tibetan Plateau is projected. The expansion of temperate broad-leaved summer green to northern and northeastern China is also projected. Tao Fulu, Z. Zhang. 2010. Dynamic responses of terrestrial ecosystems structure and function to climate change in China. Journal of Geophysical Research, 115: G03003, doi:10.1029/2009JG001062. (Jiahua PAN, Chinese Academy of Social Sciences)	We now cite this study.
344	83558	24	16	20	16	23	For these projections, it would be preferable to specify the relevant climate/socio-economic scenarios. (Katharine Mach, IPCC WGII TSU)	The TSU also wants us to cut the length of this section so we cannot add details that are accessible in the cited literature.
345	83559	24	16	38	16	40	Instead of "up to" it would be preferable to specify the full range for the projected outcome. Additionally, the chapter team should consider specifying the relevant climate/socioeconomic scenario here. (Katharine Mach, IPCC WGII TSU)	This has been changed, but as explained above we cannot add to the text.
346	80594	24	16	41	16	41	"increasing aridity may expand the deserts of China" not exact. In contrast, rainfall and humidity in northern China (in particular northwest part) are increasing in recent years. Where deserts are gradually being withdrawn in light of nationwide desertification monitoring since 1990s. (chaozong xia, academy of forest inventory and planning)	We have removed this statement.
347	62766	24	16	44	16	44	In this section (24.4.2.3. Projected Impacts - Distributions of species and biomes), there is less description about the impacts of climate change on temperate forests which are one of the main biomes in Asia. There are some papers that assessed the impact of climate change on the distributions of the dominant or common species in the temperate forests of East Asia (mostly Japan); Matsui et al. (2009) on a Japanese beech (<i>Fagus crenata</i>), Tsuyama et al. (2011, 2012) on dwarf-bamboo species (<i>Sasa nipponica</i> and <i>Sasamorpho borealis</i>) in Japan, Tanaka et al. (2009) on five fir (<i>Abies</i>) species in East Asia and Higa et al. (2013) on 19 edible plants in Japan. (Ikutaro Tsuyama, Forestry and Forest Products Research Institute)	We had already exceeded our word limit for this section and had to cut even the existing text.
348	83560	24	16	45	16	47	Is this an outcome expected across all scenarios of climate change? (Katharine Mach, IPCC WGII TSU)	All scenarios covered by the literature.
349	67923	24	16	45	17	5	The paragraph should include more discussion of projected changes in animal distribution and on damage caused on farmland by intruding animals. (JAPAN)	We already cover projected changes in animal distributions but this is not the appropriate place to consider impacts on farmland. In any case, we can find no evidence that this is a significant issue.
350	67924	24	16	45	17	5	It is suggested that the paragraph include impacts on cultural and agricultural landscapes. A suggested addition is: "There is very high confidence that species composition and landscape structure are changing in cultural landscapes such as Satoyama in Japan or mixed forest, agricultural landscapes in Europe." (Chapter 4 page 22 lines 29-31) (JAPAN)	We have had to make drastic cuts in the length of this section and cannot add text from other chapters.
351	83561	24	17	7	17	9	The relevant scenario of climate change should be specified for this statement. (Katharine Mach, IPCC WGII TSU)	Now specified.
352	74798	24	17	7	17	20	Suggest including mention of findings by Trisurat et al. 2009 Journal of Ecology and Natural Environment Vol. 1(3), pp. 055-063, June, 2009. Available online at http://www.academicjournals.org/JENE (UNITED STATES OF AMERICA)	We don't think this adds strong enough support.
353	74799	24	17	7	17	20	This is an extraordinary statement, for which one reference is provided in support. This citation was again mentioned in Section 24.8, page 43, line 32. Using one citation to come to this conclusion and its implications is not appropriate. It is a matter of interest how these climates will be distinguished from all observed climates, particularly for such climatically complex regions as India and SE Asia, and more detail should be provided and, if possible, corroborating research. Also, the statement should be caveated by revising it to read: "In the tropics and subtropics (<30 deg. N), many areas, including much of the Arabian Peninsula, India, southeastern China and Southeast Asia, are expected to have climates by 2080 that do not occur anywhere on earth at present UNDER CERTAIN GROWTH SCENARIOS." This is also a potential opportunity to address projections in changes to monsoon patterns. (UNITED STATES OF AMERICA)	This has been re-written and extra references added.
354	74800	24	17	13	17	15	This conclusions needs a citation and some explanation of why these are most vulnerable. (UNITED STATES OF AMERICA)	We have removed these details from the final version.
355	83562	24	17	15	17	17	The relevant scenarios of climate change should be specified for this projection. Additionally, casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	We have re-written this section to avoid these problems.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
356	74801	24	17	22	17	42	Suggest including findings of Bickford et al. 2010 (Biodiversity Conservation vol 19) for amphibians and reptiles in SE Asia. (UNITED STATES OF AMERICA)	We have added this.
357	68133	24	17	30	17	30	"Taiwan" should be changed to "Taiwan, Province of China". (CHINA)	We are using this as a geographical term with no political implications.
358	74802	24	17	44	18	46	It is suggested that the authors expand on the ecological consequences of permafrost melting and glacier loss (this section concerns ecosystems), otherwise this may belong better in the Freshwater section. (UNITED STATES OF AMERICA)	We'd like to, but we cannot add more text since we have already exceeded our word limit.
359	83563	24	17	48	17	48	For directness and clarity of wording, "likely" could be placed after "will" in the sentence. (Katharine Mach, IPCC WGII TSU)	We have changed the wording.
360	74803	24	18	2	18	2	Should the Romanovsky citation should go at the end of this sentence? (UNITED STATES OF AMERICA)	We have moved it.
361	74804	24	18	22	18	46	During consultations for the USAID-funded Asia-Pacific Regional Adaptation Assessment, Chinese officials noted very significant losses of lakes in Western and Northwestern China. If appropriate documentation of this conclusion is available, its inclusion would be beneficial to this discussion. (UNITED STATES OF AMERICA)	An interesting point but we can find no clear statement in the peer-reviewed literature.
362	74805	24	18	22	18	46	There is no mention of groundwater in this section. Groundwater has, however, been the primary buffer against drought and variability in locations such as India since the initiation of the Green Revolution. See: Drawing down the Buffer: Science and Politics of Ground Water Management in India, Marcus Moench, Economic and Political Weekly, Vol. 27, No. 13 (Mar. 28, 1992), pp. A7-A14 Published by: Economic and Political Weekly. See also: Environmental Research Letters Volume 4 Number 3 Tushaar Shah 2009 Environ. Res. Lett. 4 035005 doi:10.1088/1748-9326/4/3/035005 Climate change and groundwater: India's opportunities for mitigation and adaptation. (UNITED STATES OF AMERICA)	Ground water is covered in the water resources section. .
363	74806	24	18	22	18	46	This section is unwieldy, due to its length and the way it jumps from impacts on water temperature and regimes to consequent impacts on inland water ecosystems in different parts of the region. (UNITED STATES OF AMERICA)	This has been re-written.
364	74807	24	18	22	18	46	This would be a good place to mention that the inland fisheries are among the most vulnerable in the world (FAO, SOFIA 2011) and that changes in these areas will likely impact these fisheries in addition to aquaculture. (UNITED STATES OF AMERICA)	This is included in the food section.
365	56745	24	18	24	0	0	Both chapters 3 and 4 cover some of these points. (David Dudgeon, University of Hong Kong)	These chapters are now cited.
366	74808	24	18	24	18	26	Note that Hamilton says increases in water temperature will be only one of the three most important changes. (UNITED STATES OF AMERICA)	Yes, but it is the most pervasive.
367	74809	24	18	26	18	39	Regarding the sentence from line 26-27, is there only one reference on this point? This is surprising given the significance for food supplies and ecosystem health. The statement in lines 38-39 on the difficulty to "disentangle" impacts is true in places with insufficient data and analyses, but do the two examples that follow support this argument or are they exceptions? (UNITED STATES OF AMERICA)	Surprising but true: this issue has been neglected in Asia.
368	74810	24	18	30	18	35	Suggest adding findings of a case study in part of the Mekong basin in LeQuesne et al 2010 (Flowing Forward - available at www.flowingforward.org). Also suggest adding findings in a new USAID sponsored analysis of the entire lower Mekong basin - available for download at http://www.mekongarcc.net/resource/mekong-arcc-draft-final-report-ccia-study (UNITED STATES OF AMERICA)	We have updated this section.
369	56746	24	18	39	0	0	Cite Vorosmarty et al. (2010) here; it is mentioned earlier in the chapter but is especially relevant here. (David Dudgeon, University of Hong Kong)	We have now added this reference.
370	56747	24	18	45	0	0	Are Arctic lakes and rivers really relevant here? (David Dudgeon, University of Hong Kong)	Yes, they are part of Asia as defined by the IPCC.
371	74811	24	18	48	18	53	Is there no other research to report on state shifts, e.g. changes in forest type? Are species extinctions really the most likely irreversible change (only one citation is provided for this statement). And are all threshold changes irreversible? The authors are encouraged to expand their discussion of thresholds and to provide more citations. (UNITED STATES OF AMERICA)	The Asian literature on this is weak and speculative.
372	66102	24	18	52	18	52	The word "resulted" may be replaced with "result" (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	Corrected.
373	74812	24	19	2	19	2	This discussion could be improved if it began by identifying the key drivers and then providing more detail about them. In this and similar sections in the document, it is not always clear what the purpose of the section is nor is there adequate summary (i.e., assessment) beyond the listing of findings. (UNITED STATES OF AMERICA)	We have re-written this section to minimize these problems.
374	83564	24	19	4	19	4	It could be helpful to specify more precisely what is meant by "the most pervasive climate impact." (Katharine Mach, IPCC WGII TSU)	We have re-written this section.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
375	58804	24	19	7	19	10	By cheking the papers referenced in this sentence, I believe that the mountains mentioned here should not only be "tropical, subtropical, and warm-temperate", but also "tropical, subtropical, temperate and sub-alpine". At least Tanaka et al (2012a) studies trees growing in temperate (including warm-temperate, intermediate-temperate, and cool-temperate) and sub-alpine. (Tetsuya Matsui, Forestry and Forest Products Research Institute)	We have re-written this statement.
376	83565	24	19	18	19	18	If being used as a calibrated likelihood term, "likely" should be italicized, ensuring it reflects a probabilistic basis for its assignment. Casual usage should be avoided. (Katharine Mach, IPCC WGII TSU)	This has been re-worded.
377	74813	24	19	25	19	25	It is suggested that the role of fire also be considered in other sections of this chapter. (UNITED STATES OF AMERICA)	We have made a very brief addition but this section is already over length.
378	83566	24	19	34	19	37	This statement could cross-reference the relevant key findings of chapter 4. (Katharine Mach, IPCC WGII TSU)	This has now been done.
379	56748	24	19	40	0	0	Reference to Papua New Guinea here strains the geographic boundaries of this chapter to near breaking point (see previous comment and overall remarks on the chapter coverage). A few sentences later in the same paragraph we read of the forest-tundra ecotone. Phew! (David Dudgeon, University of Hong Kong)	PNG is part of Asia as defined by the IPCC and it is not included in any other chapter.
380	83567	24	19	47	19	51	Use of "the need" on line 47 and "are needed" on line 51 could be reconsidered in order to ensure potential interpretations of prescription are avoided. (Katharine Mach, IPCC WGII TSU)	Reworded to avoid prescription.
381	56749	24	19	51	0	54	What is the nature of these 'adaptation plans'? What do they envisage or involve. The mere mention of them raises such questions in this reader's mind. (David Dudgeon, University of Hong Kong)	This is now explained.
382	56750	24	20	0	0	0	This page ranges from sea ice and kelp forests to mangroves and the coral triangle, and from peat swamps and sea turtles to walrus and polar bears. Again, the boundaries of what are achievable within a single chapter appear to have been exceeded. Some of the text is so superficial as to be almost worthless or simple 'back of the envelope' common-sense projections rather than well-justified weight-of-the-evidence expert predictions. I am worried that the attempt to include so much within a single chapter tends to trivialise some very important issues because, within the wide range of things that need to be mentioned, they can be afforded very little attention. (David Dudgeon, University of Hong Kong)	We cannot narrow the boundaries of Asia to exclude the northern (or southern or western) margins. This is an issue to consider for the next IPCC report.
383	74814	24	20	2	20	4	It would be helpful to explain how species distribution models have been developed to consider climate change, and to acknowledge the problems/limitations with SDMs using relevant citations. (UNITED STATES OF AMERICA)	We are greatly over our space allocation already and have had to rely on the discussions in the sources we cite.
384	83568	24	20	16	0	0	Section 24.4.3. This section also assesses relevant material for the oceans, beyond coastal systems, and the title of the section could be considered. The chapter team should continue to coordinate key findings with chapter 6, 30, 5, and 28, as well as with the working group 1 contribution to the 5th assessment report. (Katharine Mach, IPCC WGII TSU)	We have minimized mention of oceans and cited other Chapters where possible.
385	66103	24	20	16	22	16	Section 24.4.3 is quite comprehensive and discussed almost all aspects regarding observed and projected impacts. It is better if author can report some studies relating to migration of people as climate change refugee from inundated coastal land due to sea level rise (GHAZANFAR ALI, GLOBAL CHANGE IMPACT STUDIES CENTRE (GCISC))	This section does not deal with migrations of people.
386	74815	24	20	18	20	36	Beaches should be mentioned in this list of key habitat types given their role in protecting habitat and biodiversity and their role in tourism. (UNITED STATES OF AMERICA)	Beaches are briefly mentioned but there is almost no Asian literature relevant to this section.
387	74816	24	20	28	20	29	Is there general agreement on the list countries in the "coral triangle"? USAID's Coral Triangle Initiative includes additional countries (Timor Leste and Solomon Islands) (UNITED STATES OF AMERICA)	We have now made this clear.
388	74817	24	20	28	20	29	The CT region contains 30% of the world's reefs including 75% of all known species and 3000 species of fish (twice as many as elsewhere in the world). Burke, L., K. Reyter, M. Spalding, and A. Perry, 2012: Reefs at Risk Revisited in the Coral Triangle. Washington, DC: World Resources Institute. http://www.wri.org/publication/reefs-at-risk-revisited-coral-triangle (UNITED STATES OF AMERICA)	Yes, but not all in Asia as defined for this report.
389	64585	24	20	29	20	29	24.4.3. There is no Box 30-3, reference to be corrected (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	This has been corrected.
390	74818	24	20	33	20	36	Also note the importance of and impacts on organisms associated sea-ice that provide food for mammals and fish (e.g., zooplankton). (UNITED STATES OF AMERICA)	We have had to abbreviate this section and refer to other chapters for the details.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
391	64588	24	20	39	21	12	24.4.3.2. This section lacks the data on rocky shores, e.g. around Hongkong during temperature extremes (studies by Gray Williams and colleagues). (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	Interesting studies, but we could not find anything to cite that could be directly related to observed or projected climate change and we cannot speculate on the basis of general statements.
392	57474	24	20	41	21	2	Here are not descriptions of lowland developments. Myat et al.(A comparison of historical land-use change patterns and recommendations for flood plain developments in three delta regions in Southeast Asia, Water International, Vol.37, No.3, pp.218-235, 2012) compared with three development stages of delta, the Mekong, Chao Phuraya, and the Irawaddy and concluded that urbanization is necessity but makes more damage cost by flood and tidal surge. Landuse control is needed for lowland management. (So Kazama, Tohoku University)	This topic is not part of this section.
393	74819	24	20	41	21	2	Are there any observed impacts from sea-level rise that can be reported? While changes in storm frequency/intensity may be unclear, as per p. 21, line 52, are there any observed changes that can be cited here? (UNITED STATES OF AMERICA)	We could find none.
394	62322	24	20	42	20	45	I suggest you talk about "large" rather than "major" deltas because size (for sediment volume) is the key variable. You may consider adding a new sentence after the Syvitski citation noting that the focus on large deltas, while entirely appropriate, has shifted global attention away from smaller ones, which are often equally densely populated. I would even suggest that knowledge of the vulnerability of non-large deltas in Asia (and elsewhere) is a significant data gap. (Patrick Nunn, University of New England)	We have now used 'large' but have no room to add more text.
395	65335	24	20	45	0	48	In agreement with the assessment of confidence levels in detection and attribution of Chapter 18 (Table 18-8) (Lourdes Tibig, The Manila Observatory)	Done.
396	74820	24	20	46	20	47	Is coral bleaching associated with temperature extreme events only, or also with the gradual warming of oceans? What about the relationship with ocean acidification? (UNITED STATES OF AMERICA)	Yes, extremes, according to our sources.
397	65336	24	21	4	0	12	Is it possible to summarize degree of confidence levels in detection and attribution of these impacts for the region? (Lourdes Tibig, The Manila Observatory)	Limited literature makes this a challenge for Asia.
398	74821	24	21	6	21	7	Reference to protection from ice-cover may be misleading given reference at the end of this paragraph to a decline in sea-ice. (UNITED STATES OF AMERICA)	This has been re-written.
399	74822	24	21	8	21	9	This statement needs to be supported by a citation. (UNITED STATES OF AMERICA)	Revised
400	74823	24	21	12	21	12	It seems too strong to say that impacts on ice-dependent species are "unclear." There is good evidence of effects even though uncertainties remain. Confirm that this is actually stated in sections elsewhere in AR5. (UNITED STATES OF AMERICA)	We think this is correct for the Asian arctic coast, but we now cite Chapter 28 for the broader picture.
401	64586	24	21	17	21	17	24.4.3.3. for the statement that "It is likely that there will be an overall increase in marine biodiversity at temperate latitudes" ch6 p 4 L 22-23 has high confidence (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	Corrected.
402	67925	24	21	17	22	16	"The magnitudes of severe storm surge anomalies around Japan are projected to increase (NOGUCHI et al., 2011, MURAKAMI et al., 2011, YASUDA et al., 2011, MURAKAMI et al., 2012)" should be mentioned. References: NOGUCHI et al., 2011: Variation Characteristics of Typhoon Surge in the Future of Three Major Bay Calculated by Using Result of Climate Projection Model, Journal of Japan Society of Civil Engineers, B2, Vol. 67, No.2, pp. I_1186-I_1190. MURAKAMI et al., 2011: Distributions of Possible Maximum Storm Surges and High Waves in Tokyo Bay under Global Warming Affected Climate, Journal of Japan Society of Civil Engineers, B2, Vol. 67, No. 2, pp. I_396-I_400. YASUDA et al., 2011: Evaluation of Storm Surge Risk Directly Based on Climate Change Projection, Journal of Japan Society of Civil Engineers, B2, Vol. 67, No. 2, pp. I_1171-I_1175. MURAKAMI et al., 2012: Storm Surges in Mikawa Bay Caused by Maximum Possible Typhoons Based on the SRES A1B Scenario, Journal of Japan Society of Civil Engineers, B2, Vol. 68, No. 2, pp. I_286-I_290. (JAPAN)	We have decided to follow the WGI report on this issue since we are not experts in this field.
403	67926	24	21	17	22	16	"A significant increase of extreme wave heights is projected in tropical cyclone areas around Japan (MORI et al., 2010a; MORI et al., 2010b; YASUDA et al., 2010)" should be mentioned. References: MORI et al., 2010a: Projection of Extreme Waves under a Global Warming Scenario, Journal of Japan Society of Civil Engineers, B2, Vol. 66, No. 1, pp. 1231-1235. MORI et al., 2010b: Projection of Extreme Wave Climate Change under Global Warming, Hydrological Research Letters, 4, pp. 15-19, www.jstage.jst.go.jp/browse/HRL. YASUDA et al., 2010: Projection of future typhoons landing on Japan based on a stochastic typhoon model utilizing AGCM projections, Hydrological Research Letters, 4, pp. 65-69, www.jstage.jst.go.jp/browse/HRL (JAPAN)	We have decided to follow the WGI report on this issue since we are not experts in this field.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
404	67927	24	21	17	22	16	"Under the condition of 60 cm sea level rise, low lying areas below the average sea levels of the three major bays in Japan are projected to increase 1.5 times, and the number of the people living in these areas is projected to increase 1.5 times (MLIT, 2008)" should be mentioned. Reference: MLIT, 2008: Climate Change Adaptation Strategies to Cope with Water-related Disasters due to Global Warming. (JAPAN)	We have decided to follow the WGI report on this issue since we are not experts in this field.
405	74824	24	21	28	21	30	"Another modeling study" is very vague and makes it difficult to assess the statement that is being made about potential changes to marine fish size. At the least, this would benefit from a citation. (UNITED STATES OF AMERICA)	This has now been clarified.
406	74825	24	21	30	21	32	This statement needs a confidence level, which may be obtained by cross-referencing with chapter 30. (UNITED STATES OF AMERICA)	This has now been done.
407	80759	24	21	30	21	34	It might be useful to add links to chapter 5 (5.4.2.4) and the cross-chapter box CC-CR. (Jean-Pierre Gattuso, Centre National de la Recherche Scientifique)	We have added these links.
408	64587	24	21	37	21	38	This is a broad statement that does not reflect the complexity of emerging knowledge on effects of ocean acidification and the confidence in projected effects as discussed in chapter 6. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	We now cite the cross-chapter box on this issue.
409	80760	24	21	37	21	38	This sentence on the impacts of ocean acidification is very weak. Kroeker et al. (2013) is a much better reference to cite. If space is not available to expand, then I suggest to link to cross-chapter box CC-OA. (Jean-Pierre Gattuso, Centre National de la Recherche Scientifique)	We now cite the cross-chapter box on this issue and added the suggested reference.
410	62323	24	21	40	21	40	After "large", I would add "and confidence in projections is generally low-medium" to emphasise the nature of the uncertainty, which could otherwise be misinterpreted. (Patrick Nunn, University of New England)	We have changed this.
411	74826	24	21	40	21	40	Suggest a better qualification of the statement about large uncertainties in sea level rise projections. While the amount may be uncertain (especially given variability in local conditions such as subsidence), there is nonetheless good evidence that the rate of rise is accelerating. This statement should be updated to reflect quantitative findings from WG1 report. (UNITED STATES OF AMERICA)	We have done this.
412	83569	24	21	40	21	40	Here, it would be better to also indicate what is known about these changes. (Katharine Mach, IPCC WGII TSU)	We have now done this.
413	74827	24	21	40	21	48	This would be a good place to mention the role of wetlands and reefs in protecting the coasts from storms and possible impacts to this protective mechanism, particularly since the next paragraph deals with cyclones. (UNITED STATES OF AMERICA)	We have now briefly mentioned this.
414	74828	24	21	42	21	42	There is also literature that takes into account reefs adjacent to less stable shorelines where greater rates of coastal erosion and re-suspension of seabed sediments due to SLR in combination with more intense storms and rain events can negatively impact reefs. [Field et al 2011 Eos, Transactions, American Geophysical Union 92(33)273-274 & Storlazzi et al 2011 Coral Reefs 30(Supp 1) 83-96]. So while growth may keep up with SLR strictly speaking, there are secondary impacts to a subset of reefs due to SLR. (UNITED STATES OF AMERICA)	We cannot find any source to cite that is directly relevant to Asia.
415	74829	24	21	44	21	44	Forbes 2011 seems to be an Arctic-related paper and thus irrelevant here. (UNITED STATES OF AMERICA)	We cover the Asian Arctic.
416	67928	24	21	50	22	3	"Tropical cyclones" should be used instead of "cyclones" in this paragraph. Reasoning being that "Cyclones" consist of "tropical cyclones" (which include typhoon) and "extratropical cyclones." (JAPAN)	We have now cited the tropical cyclone Box CC-TC on this.
417	74830	24	21	51	21	51	It is suggested that the authors provide an expanded discussion of why and how "natural coastlines are resilient". (UNITED STATES OF AMERICA)	We have re-written this section to make it more clear.
418	83570	24	21	52	21	52	Here it would be better to also indicate what is known about these changes. (Katharine Mach, IPCC WGII TSU)	We have now cited Box CC-TC for this.
419	62785	24	21	54	0	0	Please include the assessment results by the UN ESCAP/WMO Typhoon Committee Expert Team on the future changes in tropical cyclone activities in the western North Pacific basin. Reference : - Ying, M., T. R. Knutson, H. Kamahori, and T. C. Lee, 2012: Impacts of Climate Change on Tropical Cyclones in the Western North Pacific Basin. Part II: Late 21st Century Projections. Tropical Cyclone Res. Rev. 1, 231-241. (Sai-ming Lee, Hong Kong Observatory)	We have now cited Box CC-TC for this, rather than having cross-chapter disagreements on this issue.
420	74831	24	22	12	22	16	Are all of these statements supported by the Pavlidis et al. citation? (UNITED STATES OF AMERICA)	Yes.
421	74832	24	22	13	22	13	It would be more accurate to say that modeling studies "project". (UNITED STATES OF AMERICA)	We have changed the wording.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
422	74833	24	22	27	22	27	It is suggested that the authors provide a discussion of why expanding human activities in the Arctic is potentially a "problem". It may be true, from an ecosystem conservation perspective, but this is not stated. (UNITED STATES OF AMERICA)	We have now made this clear.
423	83571	24	22	27	22	27	In addition to being an additional problem, are there also associated opportunities? (Katharine Mach, IPCC WGII TSU)	None in the literature for coastal systems.
424	67929	24	22	32	22	43	"Amount of future sea level rise should be incorporated when renewing coastal facilities (MLIT, 2008)" should be mentioned. (MLIT, 2008: Climate Change Adaptation Strategies to Cope with Water-related Disasters due to Global Warming.) (JAPAN)	We did not include infrastructure in this section.
425	64589	24	22	33	22	34	24.4.3.5. A crucial point is how adaptation is defined. A species moving away to cooler waters according to its thermal preference evades the temperature effects, however, a species able to stay is the one displaying adaptation to warming in an evolutionary sense. The fact that marine species can move along large gradients is beneficial, however, then the species composition of communities and ecosystems will change putting organisms under new adaptative pressures due to changing species interactions. These principles have been addressed in WGII ch. 6. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	We are following the definition in the glossary here and are in agreement with the treatment in WG II Ch 6.
426	74834	24	22	35	22	37	Assisted colonization might be applicable for very small areas of high value reefs, but it has limited utility. Consider discussing the need to assess the vulnerability of different reefs and to develop management strategies to address the vulnerabilities where there is an ability to thereby increase the resilience of reefs [McClanahan et al 2012 PLoS ONE 7(8)]. (UNITED STATES OF AMERICA)	We have removed this since we agree that it will be rarely if ever applicable.
427	83572	24	22	37	22	37	The logic of why this option is only a last resort could be clarified. (Katharine Mach, IPCC WGII TSU)	We have removed this.
428	74835	24	22	37	22	39	On MPAs, add E. McLeod et al, 2009, "Designing MPA networks to address the impacts of climate change," <i>Frontiers in Ecology and the Environment</i> 7: 362-370. (UNITED STATES OF AMERICA)	We now cite a more recent paper by McLeod.
429	64676	24	22	39	22	40	Adaptation measures for coasts include planning, regulation, land use change, hard measures and soft measures. 'Soft' and 'policy' measures should be included especially where these have been practised in Asia. Mangrove replanting in conjunction with other measures (e.g. bambo stakes, geotubes) are used in SE Asia. In the deltaic area of Bangladesh natural processes of sedimentation are used to raise the land elevation level. (Poh Poh Wong, National University of Singapore)	We have now re-written this section, but we could find very little evidence for the efficacy of these measures.
430	74836	24	22	39	22	40	It would be good to draw attention to the fact that maintaining the natural shoreline (mangroves, seagrass beds, coral reefs) achieves multiple goals in that the habitats are maintained and in addition these habitat structures provide wave dampening and shoreline protections. This use of ecosystem-based adaptation options is increasing in the coral triangle countries and elsewhere in the region. [Tobey et al 2010 <i>Coastal Management</i> 38:3 317-335; Villanpy et al 2012 <i>Climate Change</i> 112:493-505] (UNITED STATES OF AMERICA)	We have now added this and cited Tobey et al. 2010.
431	62324	24	22	40	22	40	After "cost of", I would add "both damaging nearshore ecosystem productivity and" (Patrick Nunn, University of New England)	We could not find any regional literature in support of this, although it sounds likely.
432	62325	24	22	42	22	42	Why is this option rarely practical? I can think of numerous places in Asia where it is so. I suggest this statement is qualified. (Patrick Nunn, University of New England)	We have changed this statement.
433	83573	24	22	46	0	0	Section 24.4.4. In developing the final draft of this section, the chapter team should aim to reduce its length as much as possible. Additionally, the chapter team should continue to coordinate with and cross-reference the key findings of chapter 7, as well as chapter 6 and 30. (Katharine Mach, IPCC WGII TSU)	Agree. Text length reduced by half.
434	74837	24	22	48	22	49	Do the authors intend to suggest that climate change is not already affecting food security globally and in the region? (UNITED STATES OF AMERICA)	I don't think so as observed impacts indicate some effect at present.
435	74838	24	23	1	23	9	Suggest including discussion of the diverse agricultural and food systems within the region here (not just the diversity of expected impacts on different crops and systems). There are significant differences between cereal crops grown in upland areas, and coastal rice production elsewhere in Asia. (UNITED STATES OF AMERICA)	There is no space for this.
436	83574	24	23	3	23	3	The geographic scope of the described "regional differences" could be specified--Asia, presumably. (Katharine Mach, IPCC WGII TSU)	Agree. Text revised.
437	83575	24	23	7	23	8	It could be helpful to specify the range of levels of climate change for which such gains would be observed. (Katharine Mach, IPCC WGII TSU)	This is specified in the following text.
438	78586	24	23	12	23	41	I believe there has also been research on Indian agriculture, e.g. http://www.pnas.org/content/103/52/19668.abstract (Dáithí Stone, University of Cape Town)	This literature cited

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
439	76899	24	23	14	0	0	Cross reference should be made to chapter 7 findings (Food and Agriculture Organization of the United Nations (FAO))	Agree. Text revised.
440	74839	24	23	14	23	16	This is another example of the need to address the variability of the response of system to climate change. The consensus includes specific impacts of climate on food production. The certainty and uncertainty of this conclusion vary with region. (UNITED STATES OF AMERICA)	Text revised
441	57741	24	23	14	23	41	authors may wish to refer to chapter 7, section 2, which includes observed impacts for crops in Asia (David Lobell, Stanford University)	Agree. Text revised.
442	74840	24	23	14	23	41	This section should also indicate sea-level rise impacts, as appropriate, and include citations. (UNITED STATES OF AMERICA)	Text on this included
443	62912	24	23	18	0	0	The first word 'among' is suggested to be replaced with 'during'. In the same line, what is the 'that zone'? (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
444	83576	24	23	19	23	19	"high confidence" and "low confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Agree. Text revised.
445	65337	24	23	20	0	21	Study is done at experimental stations. (Lourdes Tibig, The Manila Observatory)	Agree
446	62913	24	23	23	0	0	The phrase 'when they were also positively related' is suggested to be replaced with 'and'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	"When" is the correct word here.
447	83577	24	23	25	23	25	Both instances of "high confidence" should be italicized. (Katharine Mach, IPCC WGII TSU)	Agree. Text revised.
448	62914	24	23	29	0	0	The word 'at' is suggested to be replaced with 'by'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
449	65338	24	23	29	0	35	Is it possible to summarize the results of the Japan study and use confidence levels of detection and attribution of the impacts? (Lourdes Tibig, The Manila Observatory)	We checked again and this is not possible.
450	74841	24	23	29	23	30	The Japanese study cited here sounds useful, but it is hard to tell since nothing is said about the outcomes. It would be helpful to add at least brief mention of what was learned from this. (UNITED STATES OF AMERICA)	No space for this
451	67930	24	23	29	23	31	"In Japan, where mean air temperature has risen at 1 degrees Celsius per the past 100 years" should be revised as follows; "In Japan, where mean surface temperature has risen at 1.15 degrees Celsius per the past 100 years" based on the latest publication from Japan Meteorological Agency ("Climate Change Monitoring Report 2011": http://www.jma.go.jp/jma/en/NMHS/ccmr/CCMR2011_chap2.pdf , page 19) (JAPAN)	This data is from the paper cited
452	62915	24	23	32	0	0	The phrase 'comparing those data to literature on' is suggested to be replaced with 'comparing these data with those on'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	This sentence deleted.
453	74842	24	23	37	23	41	The Mongolia example is best described as showing the importance of a combined understanding of short-term weather and longer-term climate change; it is not local knowledge per se, but local knowledge of weather that is important. Also, this is one of the few mentions of local and indigenous knowledge and the potential value of combining with scientific knowledge. More attention could be paid to this elsewhere in this chapter and elsewhere in the WG2 report. (UNITED STATES OF AMERICA)	This sentence deleted.
454	74843	24	23	44	28	24	Many model studies are cited which quantify the likely impacts of CO2 fertilization, which in most cases act to offset other yield-reducing impacts of climate change (e.g., temperature and water stress). What is missing is an acknowledgement that crop physiology simulation models may over-state the impact of CO2 fertilization. In particular, free atmosphere carbon exchange (FACE) experiments tend to show that measurable CO2 fertilization effects are typically far less than those predicted by theory (many references see for example, Ainsworth and Long, various dates). This is worth mentioning here even if it was adequately addressed in the AR4 and/or AR5 (draft) Chapter 7. (UNITED STATES OF AMERICA)	Agree. Text revised to include this.
455	74844	24	23	44	28	24	Suggest adding reference to G. Nelson, et al., 2010, Food Security, Farming and Climate Change to 2050: Scenarios, Results, Policy Options, IFPRI, Washington, DC. (UNITED STATES OF AMERICA)	Not peer-reviewed journal paper
456	74845	24	23	44	28	24	The food section has a very strong focus on production and productivity. It would be useful to include some consideration of other aspects of food security (sustainability, nutrition, etc.) within the region. (UNITED STATES OF AMERICA)	Will consider this
457	74846	24	23	44	28	24	This section has too much detail from each cited reference, and seems largely a literature review without much synthesis or critical commentary (i.e., assessment). This is a problem in many parts of this chapter. (UNITED STATES OF AMERICA)	Text revised

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
458	74847	24	23	44	28	48	A new publication from the World Bank (Sutton et al. "Looking Beyond the Horizon") was just released on projected climate change impacts and response approaches in the agricultural sector, including one case study in Uzbekistan (other cases in Europe). This is a major and recent publication and should be referenced, with approaches and conclusions contrasted with others in the document. (UNITED STATES OF AMERICA)	Not peer-reviewed journal paper
459	74848	24	23	46	25	23	Knox et al. 2012, listed in the references, discusses potential reductions in maize and sorghum yields in South Asia and should be mentioned in this section. (UNITED STATES OF AMERICA)	Text cited
460	57742	24	24	1	24	3	the large increases are very weird for wheat. A reason for this should be given, or if not available then numbers from the paper should probably not be cited as they could be easily misunderstood. (David Lobell, Stanford University)	Paper cited deleted
461	77240	24	24	1	24	3	Additionally, an experimental studies using the two FACE facilities in Japan showed that grain yield enhancement by elevated [CO ₂] (+200ppm above the ambient) was limited under both high temperature conditions (Hasegawa et al 2013). Hasegawa, T., Sakai, H., Tokida, T., Nakamura, H., Zhu, C., Usui, Y., Yoshimoto, M., Fukuoka, M., Wakatsuki, H., Katayanagi, N., Matsunami, T., Kaneta, Y., Sato, T., Takakai, F., Sameshima, R., Okada, M., Mae, T., and Makino, A. 2013: Rice cultivar responses to elevated CO ₂ at two free-air CO ₂ enrichment (FACE) sites in Japan. Functional Plant Biology 40, 148–159 [online] http://www.publish.csiro.au/?act=view_file&file_id=FP12357.pdf (Hasegawa Toshihiro, National Institute for Agro-Environmental Sciences)	This is incorporated in the text
462	74849	24	24	18	24	45	While many of the most important impacts of climate change on rice production and productivity are cited, an explicit discussion of the impact of sea level rise on the extent of areas suitable for rice cultivation (and currently used in rice cultivation) is missing. This is an extremely important consideration, as low-lying areas such as river deltas and coastal plains are at once among the most highly productive rice producing regions of Asia; and are (via land subsidence and sea level rise) among the most vulnerable to climate change/sea level rise. Research has been done to estimate these impacts (including: ADB and IFPRI 2009: Building climate resilience in the agriculture sector in Asia and the Pacific, cited earlier) and it would be useful to cite these studies. Unlike any of the other projected impacts, the impacts from lost growing area will be large particularly in countries such as Viet Nam and Thailand) and unlike e.g., changes in rainfall patterns are not subject to the same extent of uncertainty. Likewise, these losses are not even potentially offset by CO ₂ fertilization. (UNITED STATES OF AMERICA)	Text on this included
463	57533	24	24	27	24	28	The words "air temperature" should change to "global mean temperature" in order to avoid the inappropriate expression in the context. (Ying Li, National Climate Center)	This text deleted
464	80641	24	24	27	24	28	The terminology "air temperature" is inconsistent with the original source. SUGGESTION: change as "global mean temperature". (Jiahua PAN, Chinese Academy of Social Sciences)	This text deleted
465	80642	24	24	31	24	31	Add the latest study results of Tao et al. (2013) from different perspective at the end of line 31 and(or) in Table 24-6. Tao and Zhang (2013) "a new ensemble-based probabilistic projection show rice yield in southeastern China would change on average by 7.5% to 17.5% (–10.4% to 3.0%), 0.0% to 25.0% (–26.7% to 2.1%), and –10.0% to 25.0% (–39.2% to –6.4%) during the 2020s, 2050s, and 2080s, respectively, in response to climate change, with (without) consideration of CO ₂ fertilization effects, relative to 1961–1990 levels." Tao F., Zhao Zhang, 2013. Climate Change, High Temperature Stress, Rice Productivity and Water Use in Eastern China: A New Super-ensemble-based Probabilistic Projection. Journal of Applied Meteorology and Climatology, 52,531-551. (Jiahua PAN, Chinese Academy of Social Sciences)	This reference has been added.
466	57743	24	24	33	24	38	this paragraph isn't very clear. It seems to say that temperature increases help yields, but then says that this is really just an artifact of more radiation countering negative effects of temperature. I think the latter is true, but the first sentence of the paragraph is easily misinterpreted (David Lobell, Stanford University)	This part deleted
467	74850	24	24	33	24	38	Zhang et al. (2010) is cited as finding a positive yield response of rice with respect to temperature. Many of the yield impacts of increasing temperatures on rice relate to critical thresholds (many are particular to specific growing stages), so additional information should be given about the range over which a positive yield-temperature relationship is observed, to avoid mis-conception. The following paragraph does address this point albeit indirectly. (UNITED STATES OF AMERICA)	This part deleted
468	74851	24	24	40	24	45	Wassman et al. also looks at drought stress for Bangladesh, parts of India, Myanmar and Thailand; as well as sea-level rise in deltas and changes in glacial runoff on the Indo-Gangetic Plain. It would be helpful to capture other issues. (UNITED STATES OF AMERICA)	Reference added
469	65510	24	24	52	24	52	Delete word "a" between "on" and "wheat" (Arif Goheer, Global Change Impact Studies Centre (GCISC))	Disagree with this

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
470	62916	24	25	1	0	0	10% in (RYC 10%) is suggested to be deleted. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	This was revised
471	80644	24	25	5	25	5	Add latest study results at line 25 and (or) Table 24-6. "A new ensemble-based probabilistic projection show that maize yield is projected to change by -9.7 to -9.1%, -19.0 to -15.7%, -25.5% to -24.7% in the North China Plain during 2020s, 2050s, and 2080s in percent of 1961–1990 yields, respectively (Tao et al., 2009). In contrast, winter wheat yields could increase with high probability in future due to climate change (Tao and Zhang, 2013). Tao F., Z. Zhang, J. Liu, M. Yokozawa. 2009. Modeling the Impacts of Weather and Climate Variability on Crop Productivity over a Large Area: A new super-ensemble-based probabilistic projection. Agricultural and Forest Meteorology, 149: 1266-1278. Tao F., Zhao Zhang. 2013. Climate change, wheat productivity and water use in the North China Plain: A new super-ensemble-based probabilistic projection. Agricultural and Forest Meteorology, 170. 146-166. (Jiahua PAN, Chinese Academy of Social Sciences)	These references added
472	62917	24	25	6	0	0	Please see if the word 'beneficial' can be added before 'impact of irrigation'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	This text deleted
473	80643	24	25	6	25	6	Add the latest study results of Tao et al. (2013) at the end of line 6 and(or) in Table 24-6. "The median values of projected decreases in the yields of irrigated maize without (with) consideration of CO2-fertilization effects ranged from 1.4% to 10.9% (1.6% to 7.8%), 9.8% to 21.7% (10.2% to 16.4%), and 4.3% to 32.1% (3.9% to 26.6%) for global mean temperature (GMT) changes of 1°C, 2°C, and 3°C, respectively (Tao and Zhang,2011). For rain-fed maize, median values of projected changes in yields without (with) consideration of CO2-fertilization effects ranged from -22.2% to -1.0% (-10.8% to 0.7%), -27.6% to -7.9% (-18.1% to -5.6%), and -33.7% to -4.6% (-25.9% to -1.6%). The median values of projected wheat yield under irrigated (rain-fed) conditions with CO2 fertilization effects increased by 6.00–9.36% (6.00–15.05%), 12.98–18.08% (10.21–39.42%) and 9.06–26.38% (9.06–48.71%) for GMT changes of 1°, 2°, and 3°C, respectively. Tao, F., Z. Zhang. 2011. Impacts of climate change as a function of global mean temperature: maize productivity and water use in China. Climatic Change, 105,409-432 Liu, Yujie, Fulu Tao, 2013: Probabilistic Change of Wheat Productivity and Water Use in China for Global Mean Temperature Changes of 1°, 2°, and 3°C. J. Appl. Meteor. Climatol., 52, 114–129. (Jiahua PAN, Chinese Academy of Social Sciences)	These references added
474	77241	24	25	16	25	17	Additionally, hot summer events in Japan did induce high temperature sterility in rice (Hasegawa et al, 2011). High night tempereare reduces the stimulatory effect of elevated [CO2] (Cheng et al 2009). Hasegawa, T., Ishimaru, T., Kondo, M., Kuwagata, T., Yoshimoto, M., and Fukuoka, M. 2011: Spikelet sterility of rice observed in the record hot summer of 2007 and the factors associated with its variation. Journal of Agricultural Meteorology, 67, 225–232. https://www.jstage.jst.go.jp/article/agrmet/67/4/67_67.4.3/_pdf Cheng, W., Sakai, H., Yagi, K., and Hasegawa, T. 2009: Interactions of elevated [CO2] and night temperature on rice growth and yield. Agricultural and Forest Meteorology 149, 51–58. http://linkinghub.elsevier.com/retrieve/pii/S0168192308002037 (Hasegawa Toshihiro, National Institute for Agro-Environmental Sciences)	Reference added
475	62918	24	25	19	0	0	The following point is suggested to be added: In Pakistan, 2010-floods caused a total damage of \$10 billion, of which the damage to irrigation, agriculture and livestock sectors was \$5.1 billion. The floods destroyed thousands of acres of crops and agricultural lands, caused 1,980 deaths, destroyed 1.6 million homes and rendered over 20 million homeless. The damage to public infrastructure was enormous; 25,088 km of roads, 10,436 education centres and 515 health facilities were damaged (Agriculture Cluster. 2010. Preliminary Damage Assessment in the Agriculture Sector for Flood-Affected Areas of Pakistan, 9-14 August, 2010 (http://www.pakresponse.info/assessments/AgricultureCluster_Preliminary%20Damage%20Assessment%20in%20the%20Agriculture%20Sector_Sep2010.pdf) (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Not referred journal source
476	57745	24	25	25	26	53	this whole section lacks any synthesis statements, using ipcc terminology (e.g. likely, very likely) (David Lobell, Stanford University)	Synthesis statements added
477	74852	24	25	25	26	53	Some synthesis - specifically, looking at overarching issues such as temperature vs. precipitation, irrigated vs. rainfed agriculture, etc. - would be beneficial in addition to (or in place of?) the presentation of various country projections. (UNITED STATES OF AMERICA)	Synthesis statements added

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
478	67931	24	25	25	27	28	The projected impacts of saltwater intrusion as a result of seawater level rises, which are discussed in subsections 24.4.2 Terrestrial and Inland Water Systems and 24.4.3 Coastal Systems and Low Lying Areas, should also be discussed in subsection 24.4.3 Food Production Systems and Food Security as agricultural production in Asia will be greatly impacted as a result of saltwater intrusion, especially in deltas. (JAPAN)	Saltwater intrusion included
479	74853	24	25	30	25	33	This paragraph is very general and would benefit from some additional information before the country-specific examples. (UNITED STATES OF AMERICA)	Statements added
480	62919	24	25	33	0	0	The phrase '-- security such as high population growth rates, water scarcity, and land degradation' is suggested to be changed to 'food security through water security and land degradation'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Statement from author cited
481	62920	24	25	35	0	0	The word 'to' between could and lead is suggested to be deleted. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	This text deleted
482	62921	24	25	37	0	0	The word 'during' is suggested to be replaced with 'in'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
483	62922	24	25	39	0	0	The word 'the' is suggested to be added between by and country. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	This text deleted
484	74854	24	25	44	25	26	Is Central Asia and Caucasus recognized as a single region, as suggested in the text? (UNITED STATES OF AMERICA)	This text deleted
485	74855	24	25	45	25	47	There is some literature that considers the environmental tolerances of honey bees and possible impacts of climate change, though perhaps not specific to Asia -- including a recent report from the US Environmental Protection Agency. (UNITED STATES OF AMERICA)	This text deleted
486	62923	24	25	52	0	0	The word 'the' between in and most is suggested to be replaced with 'this'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Disagree with this
487	62924	24	25	53	0	0	Please see if the phrase 'in this area' needs to be added after 'About 200 million people'. Also, the word 'statistics' is suggested to be added in the brackets after population. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
488	74856	24	26	2	26	3	The statement about tea production would benefit from additional explanation and needs a citation. (UNITED STATES OF AMERICA)	Citation is Eriyagama et al (2010)
489	62925	24	26	5	0	0	The phrase 'the value of' is suggested to be added after 'The total impact on '. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
490	83578	24	26	5	26	6	It would be helpful to clarify the timeframe relevant for these monetary estimates, as it is not completely clear. (Katharine Mach, IPCC WGII TSU)	Not cited in the literature.
491	57744	24	26	8	26	12	there are many more studies than this of north china plain. See e.g. Tao, F., & Zhang, Z. (2010). Adaptation of maize production to climate change in North China Plain: Quantify the relative contributions of adaptation options. European Journal of Agronomy, 33, 103-116 Xiong, W., Matthews, R., Holman, I., Lin, E., & Xu, Y. (2007). Modelling China's potential maize production at regional scale under climate change. Climatic Change, 85, 433-451 (David Lobell, Stanford University)	Reference added
492	74857	24	26	8	26	12	Is the whole paragraph referring to the North China Plain, or other parts of China? Other studies, e.g. Wang et al 2009, Agricultural Economics 40:3, are not as positive about projected impacts on cereals elsewhere in China. (UNITED STATES OF AMERICA)	Yes it refers to N China Plain
493	83579	24	26	8	26	12	Are these patterns expected across scenarios and levels of climate change? (Katharine Mach, IPCC WGII TSU)	Text revised to include this
494	62926	24	26	9	0	0	The phrase 'but emerges' is suggested to be changed to 'but also emerge'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
495	62927	24	26	10	0	0	The word 'will' is suggested to be added between yields and suffer. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Agree. Text revised.
496	62928	24	26	14	26	15	increasing water temperature'. Of sea water or irrigation water? (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Irrigation water. Text revised.
497	62929	24	26	17	0	0	The word 'resulting' is suggested to be changed to 'results'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Disagree with this
498	60764	24	26	19	26	19	Comment: "...cool-summer damage in northern Japan and ..." should read "...cool-summer damage and related rice insurance payouts in northern Japan (Iizumi et al., 2008) and ..." Reference: Iizumi, T., M. Yokozawa, Y. Hayashi, 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)	Reference added

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
499	74858	24	26	23	26	25	This discussion of monsoon timing would be placed better in a section earlier on the chapter on observed and projected changes in the monsoon; here, it needs to be connected back to potential implications for agriculture. (UNITED STATES OF AMERICA)	Text deleted
500	62930	24	26	25	0	0	later in the crop year' is suggested to be changed to 'late in the crop season'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Text deleted
501	62931	24	26	26	0	0	later' is suggested to be changed to 'late'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Text deleted
502	62932	24	26	32	0	0	two seasons'. Which ones? (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Text deleted
503	74859	24	26	32	26	32	This statement needs a supporting citation. (UNITED STATES OF AMERICA)	Text deleted
504	83580	24	26	42	26	42	Where "increases in water demand for non-agricultural uses" are mentioned, is there also a role identified for climate change in these projections? (Katharine Mach, IPCC WGII TSU)	Yes there is
505	62933	24	26	51	0	0	---- a narrow temperate zone'. Which one? Extending from? (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Text deleted
506	74860	24	26	51	26	53	There are other studies covering climate change and fruits elsewhere in Asia that could be cited here, e.g. Luedeling et al, 2011, Climate change affects winter chill for temperate fruit and nut trees, PLoS One 6(5). (UNITED STATES OF AMERICA)	Text deleted
507	62934	24	26	53	0	0	Many parts of these districts may become unfavourable for apple cultivation by the 2060s. Why? Due to rising temperatures, low rainfall, shortening of growing season, or -- ? (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Text deleted
508	83581	24	27	1	0	0	Subsection on fisheries and aquaculture. The material in this section should coordinate with and cross-reference the key findings of chapter 6, 30, and 7. (Katharine Mach, IPCC WGII TSU)	We have cut the length of this section and it now has hardly any overlap with the key findings in ch 6, 30 and 7.
509	64590	24	27	1	27	28	24.4.4.3. The chapter team may look into adding summary terms of evidence, agreement and confidence in their assessment as discussed in WGII chapter 6. (Lena Menzel, Alfred Wegener Institute for Polar and Marine Research)	We do not have enough literature support for such an assessment for Asian fisheries.
510	74861	24	27	1	27	28	This section is adequate and captures most of the major impacts, but the authors should consult the FAO State of the World's Fisheries Report (2011) for a slightly different framing of the issues. They may also wish to mention invertebrate and seaweed fisheries/aquaculture since these are particularly important to Asia. In particular, the molluscan populations may suffer from ocean acidification. The authors may wish to also consider the role of large-scale seaweed farming as a possible adaptation strategy for ocean acidification. (UNITED STATES OF AMERICA)	We have had to shorten this section to stay within word limits for the chapter so we have not been able to expand the text.
511	56751	24	27	5	0	7	This sentence would benefit from being rephrased along the line of "The Asian region has" (David Dudgeon, University of Hong Kong)	This has now been re-written.
512	76900	24	27	10	0	0	I wonder if the paragraph's discussion is specific to the region or global in nature. If the latter, move it to chapter 7. (Food and Agriculture Organization of the United Nations (FAO))	We have now cut it down to Asia-specific material.
513	74862	24	27	12	27	13	Allison et al. specifies that Bangladesh, Cambodia, Yemen, and Pakistan are among the most vulnerable countries to these impacts. (UNITED STATES OF AMERICA)	Yes, but we have had to shorten the text.
514	56753	24	27	13	0	0	Suggest specify RIVER fishes. Might also mention that breeding and migration are linked. (David Dudgeon, University of Hong Kong)	The sentence also deals with rising water temperature which is as much a problem in lakes.
515	62935	24	27	13	0	0	The word 'to' is suggested to be added between expected and affect. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Corrected.
516	74863	24	27	14	27	15	Saltwater intrusion also has potential impacts on aquaculture production in coastal areas. (UNITED STATES OF AMERICA)	We have now added a reference on this.
517	74864	24	27	15	27	28	Suggest that the authors move this text to the first paragraph, to accompany the other discussion of marine fisheries. Also, consider moving the previous discussion of Cheung et al. from p. 21 to this section, as it relates to food production in particular. (UNITED STATES OF AMERICA)	We have combined the text into a single paragraph and shortened it.
518	74865	24	27	19	27	23	This section could say more about changes in ocean patterns and nutrient availability for the region, cross-referencing the two chapters on Oceans where appropriate. (UNITED STATES OF AMERICA)	This is dealt with in other chapters and is only of marginal relevance to Asia.
519	80761	24	27	22	0	0	A link to CC-OA and CC-CR would be useful here. (Jean-Pierre Gattuso, Centre National de la Recherche Scientifique)	We have added a link.
520	56752	24	27	24	0	28	It is not immediately obvious to me why some of this material on marine fishes is included here; presumably related to sustainability of coastal communities? (David Dudgeon, University of Hong Kong)	We have now cut out the unnecessary information.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
521	74866	24	27	31	27	33	This statement needs a confidence level and cross-reference with Chapters 7 and 9 of the WG2 report. Additionally, there is more recent published literature using CMIP5 results that can be cited throughout this section. (UNITED STATES OF AMERICA)	Confidence statement added
522	62936	24	27	43	0	0	Please see if the phrase 'for agricultural households' can be changed to 'in agricultural households'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	This text deleted
523	74867	24	27	49	27	52	Please provide the baseline for this projected population increase. (UNITED STATES OF AMERICA)	This is total population in the region compared to the present
524	56754	24	28	0	0	0	Any scope for mentioning the adaptation options that might be available to compensate for affects of climate change (+ dams) on river fisheries? Aquaculture maybe? Even if only to say that aquaculture is unlikely to compensate for the loss of a highly productive multispecies fishery based around migratory species (as in the Lower Mekong). (David Dudgeon, University of Hong Kong)	We found this impossible to do with the literature available.
525	74868	24	28	1	28	3	Do these projections for Siberia relate to the statement about food security in Russia at the bottom of p. 27? Is there any information to augment these projections with potential yields for key crops? Might shifts in crop types be needed, both to respond to climate and perhaps because of increasing pressures for higher caloric/productivity crops? (UNITED STATES OF AMERICA)	Yes its related. No other information available though.
526	62937	24	28	2	0	0	--- to come for the year 2020' is suggested to be changed to '--- to come in the year 2020'. (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Text revised
527	62938	24	28	10	0	0	The following point is suggested to be added: In the northern mountainous areas, wheat yield was projected to increase by 50% under SRES A2 and by 40% under B2 scenario whereas in the sub-mountainous, semi-arid and arid areas, it is likely to decrease, by 2080s (Iqbal, M.M., M.A. Goheer and A.M. Khan. 2009. Climate change aspersions on food security of Pakistan. Science Vision, 15(1): 15-23 (2009). (Muhammad Mohsin Iqbal, Global Change Impact Studies Centre)	Reference added
528	57746	24	28	10	28	11	this statement should be clarified. Is this just for a small fraction of wheat farmers at high elevations, or for the majority of wheat farmers. I think it is the former, and that most farmers are projected to lose, but I am not familiar with the reference. also the "may provide" is not very informative, better to use the ipcc language (e.g. low evidence, medium agreement) (David Lobell, Stanford University)	Agree. Text revised.
529	65511	24	28	11	28	11	Just to support the postive effects of climate change in mountain areas one more reference may be cited; Iqbal, M M. , M. A. Goheer and A. M. Khan. 2009. Climate chnage aspersions on food security of Pakistan. Science Vision, 15, 15-23. (Arif Goheer, Global Change Impact Studies Centre (GCISC))	This references is cited.
530	76901	24	28	27	0	0	Section 24.4.4.5 needs to be rewritten. The section provides only a table and mentions a couple of studies in the Philippines. The section should not rely on the table alone but should provide a balanced text on adaptation options in the region. (Food and Agriculture Organization of the United Nations (FAO))	Text deleted due to page limitation.
531	74869	24	28	29	28	48	The text in this section is inadequate, and too focused on the Philippines. The authors of this section could refer to AR4 chapter 7 and subsequent results to strengthen this section. (UNITED STATES OF AMERICA)	Text deleted due to page limitation.
532	74870	24	28	43	28	48	The discussion of local government and its role in adaptation is useful, but is lost here. It would be better served in a dedicated section on adaptation elsewhere in the WG2 report. (UNITED STATES OF AMERICA)	Text deleted due to page limitation.
533	74871	24	29	1	33	32	This section is overly dependent on UN agency sources and would benefit from additional references if possible. (UNITED STATES OF AMERICA)	Peer reviewed literature limitation is a challenge.
534	56755	24	29	6	0	0	I do not care for the term 'sustainable development' here as text implies that we currently have a sustainable tragectory that will be challenged by climate change. There is no evidence at all to suggest the current development is sustainable - the opposite is more likley to be true. Either reword or delete the sentence. If the reader has got this far, she will be aware of the self-evident fact that climate change will make things worse for the envirnment. (David Dudgeon, University of Hong Kong)	The sentence has been deleted.
535	65364	24	29	31	29	31	The word 'Korea' need to check up whether it is only South Korea or the Republic of Korea. (REPUBLIC OF KOREA)	South Korea has been meant. But the sentence has been deleted.
536	74872	24	29	37	30	5	This section discusses only floods but should also reference observed impacts from other extreme events such as droughts, storms, fires. (UNITED STATES OF AMERICA)	At relevant places, we also discusses other hazards within section 24.4.5. Due to page-limits, it is not possible to expand this paragraph.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
537	74873	24	29	39	30	5	This could be a good place to highlight the importance of stronger Hydromet services. See, for example, the relatively recent UNISDR report on "The Role of Hydrometeorological Services in Disaster Risk Management" available at: http://www.unisdr.org/files/27645_webrestheroleofhydromet.pdf (UNITED STATES OF AMERICA)	We point to lack of early warning systems which is directly hinting at strong hydro-met services.
538	78587	24	29	41	29	42	A reference to Ch10 would be appropriate too. (Dáithí Stone, University of Cape Town)	This section is now revised.
539	57475	24	29	49	29	49	The 2011 flood in Chao Phraya River basin, Thailand, should state here because of the 4th largest damage from natural disaster by World Bank. (So Kazama, Tohoku University)	Good point. Due to space limits, we could not add more examples.
540	74874	24	29	49	29	50	Is this list the global top ten (given the inclusion of Sudan) or is it limited to "Asia"? (UNITED STATES OF AMERICA)	Due to limited space, this sentence is now removed.
541	65365	24	29	50	29	50	The word 'Korea' need to check up whether it is only South Korea or the Republic of Korea. (REPUBLIC OF KOREA)	This sentence is removed now.
542	74875	24	29	51	30	1	The text is confusing since it begins by crediting climate and non-climate factors but subsequently lists only the latter. Also, the text conflates non-climate factors which actually influence flood magnitude and severity (extreme rainfall, poor or impaired urban drainage, etc.) with those that influence the severity of flood impacts (e.g., lack of rain gauges and early warning systems). The distinction is not trivial and should not be lost. Are examples available from other Asian cities such as Jakarta and Bangkok? (UNITED STATES OF AMERICA)	The sentence has been clarified add changed according to the review comment.
543	56756	24	30	20	0	26	The material in this pragrpah seems to repeat points made earlier in the chapter. (David Dudgeon, University of Hong Kong)	This section is now revised.
544	74876	24	30	22	30	24	Suggest that the authors note that water shortages also result from changes in seasonal flows and availability. (UNITED STATES OF AMERICA)	This section is now revised.
545	83582	24	30	24	30	25	The author team should specify which weather and climate extremes are meant here. (Katharine Mach, IPCC WGII TSU)	This sentence is removed.
546	62326	24	30	28	30	28	Instead of the rather vague "coastal areas", could your chapter use LECZ as they do to good effect in Chapter 5 (WGII)? (Patrick Nunn, University of New England)	LECZ is also used wherever relevant.
547	74877	24	30	28	30	28	How are coastal areas being defined for the purposes of this chapter? Is there a common definition from Chapter 5? (UNITED STATES OF AMERICA)	Coastal areas are in the preceding section.
548	74878	24	30	28	30	49	Suggest that the coastal section address the high vulnerability of "floating slums," especially in megadeltas, to rapid onset extreme events (e.g., cyclones) that occur in context of slow-onset SLR, which exacerbates the effects of storm surge, etc. Such events could result in catastrophic losses of vulnerable populations in the absence of adaptation (e.g., relocation of floating slum populations). (UNITED STATES OF AMERICA)	These two paragraphs are shortened in final draft. Due to space constraint, specific example such as 'floating slums' could not be mentioned.
549	83583	24	30	29	30	30	The author team should take care with the wording here, as climate change will not affect the risk of each of these types of extremes uniformly. (Katharine Mach, IPCC WGII TSU)	This section has been rewritten.
550	83584	24	30	33	30	34	Could "any" be deleted? As is, the statement seems overstated given the role of other factors such as exposure. (Katharine Mach, IPCC WGII TSU)	Accepted
551	57006	24	30	34	30	37	The indicated damage cost of US\$3 billion in Tokyo bay is considered too small. It should be noted that the damage cost in New York caused by Super-Storm Sandy in 2012 is reported almost US\$100 billion. The quoted figures should be reviewed carefully. A government committee of Japan, which may have referred to the same paper, commented clearly that the research assumed limited damage area, resulting in small damage cost. (Tsuneyoshi Mochizuki, Japan River Association)	This sentence is removed.
552	74879	24	30	39	30	41	Suggest including intermediate projections if they are available; 2070 may seem too far off to motivate action. (UNITED STATES OF AMERICA)	In general this is a valuable comment. However, the cited study unfortunately only provides the 2070 step.
553	74880	24	30	45	30	54	It seems that the same study is cited twice, first via IPCC 2012 (presumably the SREX) and in the next paragraph as Nicholls et al. 2008. (UNITED STATES OF AMERICA)	Yes, correct. Both sentences ultimately make referece to Hanson et al. 2011. The text has been changed accordingly.
554	74881	24	30	47	30	49	Considering the importance of ports to this region (and the world which depends on Asia for much of its import/export), the slight mention of ports is surprising. More attention should be paid to this if it is not addressed elsewhere. (UNITED STATES OF AMERICA)	In fact, the current version devotes an entire paragraph to port cities. Given the word restrictions, more detailed analysis cannot be provided here.
555	74882	24	30	52	30	54	Asia has 9 of the top 10 global cities in terms of population exposure. This is worth highlighting as it shows how important urban adaptation issues will be in this region. (UNITED STATES OF AMERICA)	Valuable comment. This aspect has now been included.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
556	56757	24	31	20	0	27	See previous comment: this entire section seems to repeat points made earlier relating to threats to landscapes other than settlements. It is difficult to see how this repetition can be avoided given the sectional structure of the text, but it does make reading it a bit of a chore. (David Dudgeon, University of Hong Kong)	This section has been revised to remove repetition..
557	74883	24	31	20	31	27	It is important to clearly distinguish these issues as non-climate, though they are completely relevant in terms of how they interact with climate stresses. (UNITED STATES OF AMERICA)	Good comment. In 24.4.5, we mention more than once that there are abundant non-climate factors in human settlements, infrastructure in developing countries of Asia. Climate stresses will further make the impacts worse.
558	74884	24	31	20	31	27	With regard to the impacts of over-extraction of groundwater in coastal regions: among the most important impact with respect to climate change is the relationship between fall in groundwater head and saline intrusion of coastal aquifers, described via the Ghyben-Herzberg principle (many references; see Kundzewicz and P. Doll, 2009 among others, with specific emphasis on climate change) which describes how even modest changes in the freshwater head of an aquifer lead to greatly amplified changes in the freshwater-saltwater interface. It may be useful to emphasize this point as it has strong policy (water resources management) implications. (UNITED STATES OF AMERICA)	Page limitation prevents this.
559	83585	24	31	29	0	0	Subsection on industry and infrastructure. The material in this section should be coordinated with and cross-reference the key findings of chapter 10, especially for example on lines 51-52. (Katharine Mach, IPCC WGII TSU)	line 51-52 is removed from this section
560	74885	24	31	29	31	42	The discussion effectively treats "infrastructure" as identical with "things built out of concrete," and while much, e.g., transport and flood control infrastructure meets this description, there are many other aspects of infrastructure that should be included in this discussion. Among these are transport (metro rapid transport systems; bridges, tunnels); energy (thermal plants; hydroelectric); irrigation infrastructure, communications infrastructure, pipelines and so on. A wider discussion is recommended here. The Asian Development Bank (ADB) has produced some studies that look at impacts and adaptation options in several of these sectors. (UNITED STATES OF AMERICA)	Good comment. Due to word-limits, it was not possible to go into wider discussion.
561	74886	24	31	29	32	2	This section treats industry, infrastructure, and tourism quite superficially. In particular it would be helpful to present more detailed information on infrastructure impacts, which could be considerable. A few sentences of introduction to the section on how climate and non-climate factors may interact to increase vulnerability would be helpful, to better explain the examples given from Ranger, Sinha, Moench, et al. (UNITED STATES OF AMERICA)	Good comment. However, due to word-limits, it was not possible to go into wider discussion.
562	74887	24	31	31	31	33	It is far from clear that the impacts of climate change on infrastructure can be addressed in the manner described. Questions exist over the viability of some types of infrastructure (such as sea walls) in many areas. In addition, many key infrastructure systems are interlinked so that failures can cascade. It is inappropriate to conclude, as a result, that the types of changes cited are likely to be sufficient. In addition, this statement implies that it is relatively straightforward to address risks to infrastructure; by modifying design, but this is only true of new infrastructure; it is much more difficult to climate-proof infrastructure that is already in place and this should be acknowledged, with citations and perhaps an example. (UNITED STATES OF AMERICA)	Good comment. However, due to word-limits, it was not possible to go into wider discussion.
563	74888	24	31	31	31	33	The text here seems to focus on protecting basic structural integrity of infrastructure impacted by climate change. It does not consider the overall impact of changes in storm intensity and flooding on the sizing and capacity of storm drain systems, road gutters, and height of building foundations. Additionally, the ability to balance capital costs against increasingly uncertain risks of flooding is an issue that is central to infrastructure design and construction which will be exacerbated by climate change. (UNITED STATES OF AMERICA)	Good comment. However, due to word-limits, it was not possible to go into wider discussion.
564	69743	24	31	36	31	49	most losses are attributed due to general events and not something that can be ascertained to Climate change. These are due to either institutional failure or due to naturally recurring seasonal events that have led to losses.. (NETHERLANDS)	This paragraph is substantially shortened.
565	83586	24	31	42	31	42	Casual usage of "likely" should be avoided, as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Revised.
566	83587	24	31	43	31	43	Instead of "exposed" is "vulnerable" a more accurate descriptor, recognizing also that there are different forms of vulnerability? (Katharine Mach, IPCC WGII TSU)	Accepted.
567	83588	24	31	44	31	44	Casual usage of "likely" should be avoided as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
568	74889	24	31	44	31	46	This does not mention that the embankments failed during extreme seasonal floods. Though this cannot necessarily be attributed to anything more than climate variability, should make the climate issue more explicit here. (UNITED STATES OF AMERICA)	This paragraph is modified.
569	74890	24	31	48	31	48	What does "interlinked physical and institutional infrastructure systems" mean? (UNITED STATES OF AMERICA)	Revised.
570	74891	24	31	51	31	54	Although tourists may not be making decisions currently based on climate-change knowledge, there have been studies which suggest this may occur more in the near future. A quick online search revealed a body of recent literature on the topic. For example: A. Huebner, 2012, Public perceptions of destination vulnerability to climate change and implications for long-haul travel decisions to small island states," Journal of Sust Tourism, 20:7. (UNITED STATES OF AMERICA)	Asia specific studies were not available.
571	64677	24	31	54	32	2	For some Asian countries, coastal tourism is important, e.g. Thailand, Sri Lanka, Indonesian islands of Bali and Lombok, Okinawan islands, Cheju, etc. Increasing coastal erosion from SLR and other climate-related events affect negatively these areas. (Poh Poh Wong, National University of Singapore)	Agree. However, there is lack of peer-reviewed studies.
572	83589	24	32	28	32	30	This statement should be qualified further indicating which extreme events are meant, and also acknowledging that not all are changing uniformly in frequency and intensity. (Katharine Mach, IPCC WGII TSU)	The sentence has been erased due to overall cuts.
573	74892	24	32	38	34	33	The list of adaptation options are overly-focused on infrastructure. Suggest a more balanced treatment with the inclusion of human settlements. (UNITED STATES OF AMERICA)	Revised.
574	83590	24	32	40	32	51	The use of quoted material should be reduced, with further assessment provided instead. (Katharine Mach, IPCC WGII TSU)	Revised.
575	74893	24	32	42	32	44	Is this projected increase in losses due to an increase in "heavy precipitation" (i.e. increased exposure to higher intensity storm events)? To increases in population and development (i.e. there are more people and they have more wealth that could be damaged)? Or both? It would helpful to clarify this point since many people may assume that this is due strictly to the number of intense storm events, which paints a different picture than a denser, wealthier city that experiences a little bit more flooding. (UNITED STATES OF AMERICA)	Revised.
576	74894	24	32	53	32	54	Consider including a citation to Tyler, S. and M. Moench: A framework for urban climate resilience, Climate and Development, 4(4) 311-326. (UNITED STATES OF AMERICA)	Very relevant suggestion. The citation has been added.
577	83591	24	33	1	33	16	This paragraph could be shortened, with focus maintained on Asia. (Katharine Mach, IPCC WGII TSU)	Revised.
578	74895	24	33	10	33	12	This is an important point that is of broader relevance to the chapter: that adaptation efforts must be situated within the broader development context. Currently, it is somewhat lost here. (UNITED STATES OF AMERICA)	This is correct. Revised.
579	74896	24	33	18	33	25	The authors may wish to mention the use of deep seawater (i.e. OTEC) for cooling and energy production. (UNITED STATES OF AMERICA)	Due to word-limits, this could not be incorporated.
580	74897	24	33	35	37	26	Suggest adding a sentence/paragraph on climate change as a "stressor"/"force multiplier" that can accelerate a volatile mix of underlying causes that erupt into conflict/revolution. See: Caitlin E. Werrell and Francesco Femia (eds). The Arab Spring and Climate Change: A Climate and Security Correlations Series. Center for American Progress, Stimson Center, and Center for Climate and Security. Feb 2013. Additionally, E3G's Underpinning the MENA Democratic Transition: Delivering Climate, Energy and Resource Security might also be worth a reference: http://www.e3g.org/images/uploads/E3G_MENA_Report_Final_130221.pdf (UNITED STATES OF AMERICA)	Peer reviewed literature limitation poses a challenge
581	74898	24	33	35	37	26	This section on Human Health, Security, Livelihoods, and Poverty tries to capture too much. Human health issues are different from those affecting livelihoods, and particularly as linkages between the two are not drawn, it might make more sense for them to be separate sections. Otherwise, the authors should be more selective and focus on the linkages rather than the disparate topics. (UNITED STATES OF AMERICA)	Agree, but page limitation prevents its separation.
582	74899	24	33	37	34	5	This section could benefit from a more nuanced disussion of the region's diversity through differentiated analysis, e.g. statements on lines 40-44 are very coarse. (UNITED STATES OF AMERICA)	Revised as much as possible based on available literature.
583	74900	24	33	39	33	40	Much of Asia is still largely rural and agrarian, but it is urbanizing rapidly as described in the previous section. (UNITED STATES OF AMERICA)	Agreed, small modification will be done to this effect

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
584	74901	24	33	39	33	46	This may over-emphasize the relative impact on rural populations versus urban. While urban areas are more wealthy, the poor within them often have low levels of wage labor mobility and are heavily affected by food prices and extreme events. As a result, although rural livelihoods are often directly influenced by climate related sources of disruption, urban lives and livelihoods may be vulnerable in equally important -- though slightly more indirect - ways. The impact of food price rises in the Middle East and other areas a few years ago is illustrative. See: The poverty implications of climate-induced crop yield changes by 2030; Hertel, Burke, and Lobell as well as: The World Food Situation: New Driving Forces and Required Actions, Joachim Von Braun IfPRI. (UNITED STATES OF AMERICA)	Agreed. Reference introduced to include the urban angle.
585	74902	24	33	48	33	53	Identify which indicators are being referred to. HDI? Others? (UNITED STATES OF AMERICA)	Agree. Revised.
586	74903	24	34	1	34	5	Suggest that the authors mention transboundary water conflict as a particularly challenging issue for regional security. See, for example T. Bernauer et al, 2012, "Climate change and international water conflict in Central Asia," Journal of Peace Research 49(1). (UNITED STATES OF AMERICA)	Page limitation prevents this.
587	83592	24	34	8	0	0	Section 24.4.6.2. This section in particular is one that may be better titled as "observed trends, sensitivities, and impacts" given the nature of the material assessed. (Katharine Mach, IPCC WGII TSU)	Discussed and retained.
588	74904	24	34	8	35	23	Observed Impacts addresses largely health, missing the opportunity to assess livelihoods and security. Suggest that the authors clarify that these are observed impacts of relationships between climate variability and health outcomes -- not linked to climate change. (UNITED STATES OF AMERICA)	A summary paragraph which linked to climate variability (not to climate change) has been added in the end of the section.
589	65354	24	34	10	34	10	Although floods have various impacts on health in terms of diseases and mental health, the biggest impact is fatality. Therefore, scale and trend of fatality caused by meteorological disasters including floods should be dealt with in AR5. (Source: Causes of death and demographic characteristics of victims of meteorological disasters in Korea from 1990 to 2008. Environmental Health 2011, 10:82) (REPUBLIC OF KOREA)	The attribution of deaths to flood events which is not Asia-specific issue is described in Human Health chapter (11.4.2) which can be cited here.
590	74905	24	34	10	34	13	This discussion would be enhanced by a list of the countries where epidemics have been reported. (UNITED STATES OF AMERICA)	Page limitation prevents this.
591	65353	24	34	10	35	23	While AR4 covered health impacts that atmospheric change can make including pollen allergy, AR5 left those out. Since those impacts are important in terms of health and draw much attention from the public, they should be included in AR5 as well. (Source: Impact of meteorological variation on hospital visits of patients with tree pollen allergy. BMC Public Health. 2011 Nov 24;11:890) (REPUBLIC OF KOREA)	Health impacts of aeroallergens which is not Asia-specific issue are described in Human Health chapter (11.5.3.3) which can be cited here.
592	65355	24	34	19	34	26	Researches on heat-related illness which is important in correlation between heat and morbidity are left out. In Korea, the following theses were published regarding this issue: The effects of temperature on heat-related illness according to the characteristics of patients during the summer of 2012 in the republic of Korea. J of Preventive Medicine and public health 2013;46:19-27. Characteristics of summer heat wave victims in Korea during 2011. The journal of the Korean Society of Emergency Medicine 2012;23:687-695. (REPUBLIC OF KOREA)	The effects of heat on morbidity have been included and some of the publications were already cited in the section. No action.
593	74906	24	34	19	34	26	It would be advisable to add something about urban heat islands. (UNITED STATES OF AMERICA)	From Human Health chapter, a citation about heat islands which is not specific to Asia can be added.
594	78588	24	34	22	0	0	Do you mean "temperature rise", i.e. trend, or "higher temperatures"? (Dáithí Stone, University of Cape Town)	Changed to higher temperatures.
595	68134	24	34	23	34	23	Taiwan should be deleted from "China and Taiwan", or "China" be changed to "Chinese mainland". (CHINA)	Revised.
596	57476	24	34	36	34	45	Flood and drought magnitude affect the infection risk accelerated by climate change (Amano, et al., Spatial-temporal distribution of waterborne infectious diseases risk, River Systems, 2013: http://masetto.ingentaselect.co.uk/fstemp/e7ef244977a056ac4dc0310e82bbaa5b.pdf) (So Kazama, Tohoku University)	Flood-related infection risks have already been included in "Floods and health" section with citations. No action.
597	65356	24	34	41	34	41	Taiwan should be corrected to the Republic of Korea. (REPUBLIC OF KOREA)	Agree and corrected.
598	68135	24	34	41	34	41	It is suggested to change "in Israel and Taiwan" to "in Israel and Taiwan Province of China". (CHINA)	Revised.
599	65357	24	34	47	35	7	There have been a lot of researches theses on correlation between re-emergence of malaria and meteorological factors including temperature and seasons. Theses on vector-borne diseases and climate change, in particular, mite-carried disease and meteorological elements, spread of diseases to areas of higher latitude were also published. These results should be reflected in AR5. (REPUBLIC OF KOREA)	The description on malaria re-emergence has already been included with a citation of a study in China.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
600	74907	24	35	9	35	23	The livelihoods section is extremely aggregate and would benefit from a more detailed analysis of impacts to livelihoods in the region (assuming literature is available) including references to observed impacts at a local level, with reference to the anthropology and geography literature. (UNITED STATES OF AMERICA)	Agree. Page limitation prevents this.
601	74908	24	35	15	35	23	Suggest that the authors reconcile the comment that growth in agriculture has contributed to poverty reduction with the comments on high vulnerability of rural livelihoods to climate change. What if anything does this imply for adaptation? (UNITED STATES OF AMERICA)	Revised. Page limitation prevents expansion.
602	57477	24	35	44	35	44	It is better to highlight both the malaria and dengue. (So Kazama, Tohoku University)	Agree. A sentence was added on page 35.
603	74909	24	36	4	36	6	The authors' conclusion seems does not represent the heterogeneities in the countries and and communities under consideration. First, both Indonesia and the Philippines can be either net importers or exporters of important commodities such as rice; and when prices are high and/or unstable, as during the 2007-08 rice crisis, the impacts on poverty within these countries (which had to import) were high. A second consideration is that while countries on aggregate may be either importers or exporters, households within those countries will cover the full spectrum. For example, research in Indonesia shows clearly that the rural households owning little or no land must purchase much of their food, and as such would be losers as climate change raised prices. It is only the larger landowners who generate regular, significant income from the sale of rice (production net of what is consumed in-house) and would benefit from such increases. The urban poor in all countries are vulnerable to such price increases. The authors are encouraged to consider a more nuanced treatment of this subject. (UNITED STATES OF AMERICA)	Revised
604	74910	24	36	17	36	19	Isn't this a problem in South and West Asia as well? (UNITED STATES OF AMERICA)	Revised.
605	74911	24	36	18	36	19	This reference to transboundary security threats should mention South Asia, which also has significant conflict over water resources. (UNITED STATES OF AMERICA)	Revised.
606	74912	24	36	31	36	33	While not doubting that the role of institutions is important, it would help the reader if the authors would explain how they are important. (UNITED STATES OF AMERICA)	Revised.
607	74913	24	36	37	37	23	Authors are encouraged to mention ecosystem-based approaches to adaptation. These approaches can help people to adapt especially in areas where livelihoods are largely dependent on natural resources and ecosystem services. There is literature on these approaches at a global level and also regionally. "Box CC-EA" presumably referring to these approaches is mentioned on p. 38 but does not appear in the draft. (UNITED STATES OF AMERICA)	Agreed. The related text added.
608	83593	24	36	39	36	39	Rewording of this statement should be considered in order to ensure a potentially prescriptive formulation is avoided. (Katharine Mach, IPCC WGII TSU)	Revised.
609	74914	24	37	17	37	22	This brief mention would benefit from references to the rich literature on community-based adaptation based on experiences in countries like Nepal and Bangladesh. Also, this seems to be a strange observation as there is no reason why top-down interventions can't achieve the same results if they are done correctly. Almost any effective adaptation planning effort will have top-down and bottom-up elements. (UNITED STATES OF AMERICA)	Agreed. Related references are added.
610	69744	24	37	21	37	23	Please explain briefly or rephrase (NETHERLANDS)	Revised.
611	74915	24	37	22	37	23	The authors are encouraged to move or delete this sentence as it focuses on vulnerability not adaptation. (UNITED STATES OF AMERICA)	Revised.
612	74916	24	37	29	38	15	Suggest including key information on this issue from a recent World Bank publication on projected climate change impacts and response approaches in the agricultural sector (Sutton et al). (UNITED STATES OF AMERICA)	Revised.
613	74917	24	37	29	38	17	It is suggested that the authors add a reference to the report of the Economics of Climate Adaptation Working Group on "Shaping Climate-Resilient Development". (UNITED STATES OF AMERICA)	Included the suggested reference
614	74918	24	37	31	37	46	Additional studies exist that focus on the economic impacts of climate change in food and agriculture, including the ADB/IFPRI (2009) study referred to in earlier comments; and William Cline (2007); Global Warming and Agriculture: Impact Estimates by Country. These and related studies might usefully be included in this review. (UNITED STATES OF AMERICA)	included the suggested reference of ADB and IFPRI (2009) but found not much relevant data from William Cline (2007) so not included.
615	74919	24	37	33	37	33	How are costs defined? Capital? Capital plus O&M? Annualized costs? Annual costs? (UNITED STATES OF AMERICA)	Now specified.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
616	74920	24	37	36	37	44	These sectoral studies should be complemented by multi-sectoral research that unpacks the relationships between and across sectors, particularly in a context of resource scarcity and competition. Suggest that if this is a research gap, the authors identify it as such. (UNITED STATES OF AMERICA)	Addressed as a research gap
617	74921	24	37	48	37	51	If the impacts are not in traditional economic sectors, which sectors are being impacted? It is difficult to believe this statement. Strongly suggests the authors include an explanation of how the ADB 2009 publication reached its conclusion. (UNITED STATES OF AMERICA)	Revised.
618	74922	24	38	6	38	8	This is one perspective on the relative benefits of coastal protection (sea walls); other research shows that sea walls, dike heightening and strengthening, and other 'hard' approaches can lead to mal-adaptation and damage to ecosystems, which ends up costing more in the long-term than other approaches (e.g. ecosystem-based or soft approaches). Presenting more than one study/perspective would provide a more complete view of the problem. This is particularly noticeable given that these issues are treated in a balanced fashion elsewhere in the chapter. (UNITED STATES OF AMERICA)	Addressed in other sections of this chapter
619	74923	24	38	6	38	15	This paragraph notes that adaptation cannot entirely remove the projected damage of climate change, and thus must be complemented with global mitigation of CO2. The same argument applies to the implementation of programs to manage and spread residual risks; such as insurance (including micro- and index crop insurance). This would be an appropriate place to mention these options. (UNITED STATES OF AMERICA)	Addressed in other sections of this chapter
620	74924	24	38	13	38	15	The point about adaptation needing mitigation needs a stronger emphasis. Without deep cuts in emissions in the very near term, many adaptation options will become infeasible because thresholds will be exceeded and hence damage will become unavoidable. It is more than just a matter of complementing adaptation with mitigation. (UNITED STATES OF AMERICA)	This is an important point but not our job to make it in the Asia chapter.
621	74925	24	38	13	38	15	While the authors make a global-sounding conclusion, two references of the references that they site seem specific to Malaysia. Suggest taking a more representative approach or making the conclusions more specific to the cited studies. (UNITED STATES OF AMERICA)	Cited other global studies
622	83594	24	38	14	38	14	Clearer wording could be adopted here, also ensuring that a prescriptive formulation is avoided. (Katharine Mach, IPCC WGII TSU)	Adopted clearer word
623	74926	24	38	18	38	18	It is not clear why the following subsections were chosen. A brief introduction to this section would help to explain and contextualize. (UNITED STATES OF AMERICA)	It is part of the plenary approved topic
624	74927	24	38	20	38	32	It is suggested that the authors note here the distinction between ecosystem-based adaptation and the protection of biodiversity for its intrinsic value. (UNITED STATES OF AMERICA)	We now make this distinction.
625	74928	24	38	22	38	32	This section (i.e., non-climate pressures) needs stronger emphasis. The qualifier 'even without climate change' does not give sufficient emphasis to the non-climate pressures ecosystems in Asia are facing. Nor does it acknowledge the substantial contribution of land use change (resulting from these non-climate pressures) to climate change itself. In many parts of tropical Asia especially land use change makes up a majority of the GHG emissions. Furthermore, as these ecosystems are degraded, their resilience to changing climate also diminishes. The CBD's Technical Series volumes 41-43 discuss these linkages at length and could be referenced here. (UNITED STATES OF AMERICA)	We have briefly made these points.
626	57478	24	38	25	38	25	Is it possible to add Kanae et al, 2001, "Impact of deforestation on region precipitation over the Indochina peninsula"(Journal of Hydrometeorology, No.2, pp.51-70, 2001 in reference? Because this paper mention shifting of seasonal rainfall due to deforestation over area of concerned. (So Kazama, Tohoku University)	We can't add a 2001 reference in conflict with WG1 views.
627	74929	24	38	28	38	29	This statement would benefit from a citation. (UNITED STATES OF AMERICA)	This statement is to be understood in contrast to the next one, for which there is strong support.
628	62327	24	38	30	38	30	I suggest you replace the phrase "climate change" in this sentence - it sounds vague. You could use "sea-surface temperature increase" in acknowledgement of this as the principal climate stressor and then add "among others" after the word "acidification". (Patrick Nunn, University of New England)	We have changed this as suggested.
629	80762	24	38	31	38	32	Link to 5.4.2.4 and CC-CR (Jean-Pierre Gattuso, Centre National de la Recherche Scientifique)	We have now done this.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
630	74930	24	38	48	39	3	It would be useful to identify a few of the most important tools and/or references to their use. For instance, see the USAID/Cascadia project in Hue, Vietnam (http://www.cascadiaconsulting.com/experience/projects/152); and, Rockefeller/ISET's work in Quy Nhon, Vietnam -- see Digregorio (2013) "LEARNING FROM TYPHOON MIRINAE: Urbanization and Climate Change in Quy Nhon City, Vietnam." Accessed via http://www.i-s-e-t.org/images/pdfs/ISET_LearningFromTyphoonMirinae_Final... Also, the authors should explain how a downscaled tool could be designed to implement climate change policy. (UNITED STATES OF AMERICA)	We have added some citations regarding the tools. Unfortunately, we couldn't identified the paper or report of USAID/Cascadia project. As for Vietnam, we idetified a peer-reviewed paper of Storch et al. (2011). We do not necessarily focus on a downscale tool, but we have added explain about how the tools are of assistance of formulating adaptation options at the final sentence of the paragraph.
631	56758	24	39	5	0	17	The paragraph seems largely gratuitous as if focuses on mainly telling the reader what community-based approaches are rather than their utility in managing flood risk. Shorten. The text is already long and wearying. (David Dudgeon, University of Hong Kong)	We have made a deletion of most of what community-based approaches are meanwhile we have added some utility of them at the second sentence of the paragraph.
632	74931	24	39	5	39	17	This is an opportune place to emphasize the importance / need for integrated approaches to adaptation. See, for example, a paper published by ELAN and available at http://www.careclimatechange.org/files/adaptation/ELAN_IntegratedApproach_150412.pdf (UNITED STATES OF AMERICA)	We have added some citations regarding the integrated approaches at the final sentence of the previous paragraph. These are proven which have been applied in some cities and regions. The suggested report looks very interesting but still in just a framework so that we pass over.
633	74932	24	39	5	39	17	Counterexamples can be offered to contest these assertion - e.g., bottom-up approaches don't resolve uncertainties in vulnerability assessments? The paragraph suggests that vulnerability assessments are associated with top-down approaches, which is an unfair generalization. Current adaptation planning often involves stakeholder processes to incorporate local input, traditional knowledge, etc. Consider moving this discussion, as an overall discussion of how to plan and implement adaptation, an overview chapter such as Ch 13 or 14. (UNITED STATES OF AMERICA)	We have rearranged the former part of the paragraph in accordance with Ch 14 to incorporate your suggestion.
634	74933	24	39	20	39	37	Suggest adding reference to: World Bank, 2010, Social Dimensions of Climate Change, eds. R. Mearns and A. Norton. (UNITED STATES OF AMERICA)	Included the suggested reference
635	74934	24	39	20	41	51	The authors should consider including useful, country-related information on adaptation needs and approaches from Asian countries receiving support from the Climate Investment Funds; in particular the Pilot Program for Climate Resilience (Bangladesh, Cambodia, Nepal and Tajikistan) and Forest Investment Program (Indonesia and Lao PDR). The URL is: https://www.climateinvestmentfunds.org/cif (UNITED STATES OF AMERICA)	Its more appropriate for the subsection 24.5.4. Mainstreaming and Institutional Barriers
636	56759	24	39	22	0	37	As previous comment; these rather general remark do not seem to add anything. (David Dudgeon, University of Hong Kong)	Revised
637	83595	24	39	28	39	28	It could be helpful to specify the nature of this "greater risk"--in terms of loss of life, livelihoods, etc. (Katharine Mach, IPCC WGII TSU)	Specifid the greater risk
638	74935	24	39	29	39	30	It is not immediately clear why these countries are at greater risk. The authors should consider explaining the conclusion. (UNITED STATES OF AMERICA)	Revised
639	74936	24	39	40	39	52	This section would benefit from additional references that come from outside the Phillippines. (UNITED STATES OF AMERICA)	Philippine is given as an example due to limited space
640	74937	24	39	45	39	46	It is not clear how broadly this statement relates to Asia, given the diversity of countries therein. For instance, Bangladesh is often cited among the better achieving countries in this regard. Also see Lebel et al, 2012, Mainstreaming climate change adaptation into development planning, Stockholm Environment Institute; Saito, 2012, "Mainstreaming CC Adaptation in LDCs in South and Southeast Asia," Mitigation and Adaptation Strategies for Global Change, 2012. (UNITED STATES OF AMERICA)	Text revised
641	74938	24	39	47	39	50	This sentence does not reflect the current situation in Philippines where there are investments in a massive adaptation planning effort in 2009-2010 with GTZ support and introduced legislation on the management of climate change. While documentation may not yet appear in the formal scientific literature, it should be available in other sources. (UNITED STATES OF AMERICA)	This is only given as an example of what happened in the past. Of course now there are more but not yet in the lit. Text revised to emphasize that this was past.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
642	77352	24	39	47	39	50	Major barriers to mainstreaming climate and ODA concerns extend to insufficient data availability, erosion of institutional memory and lack of inter-institutional coordination, as shown for the example of Mozambique (Sietz et al. 2011). The opportunities identified in this study reveal important aspects of how climate concerns could be integrated into decision-making for development assistance including procedural, organisational and normative aspects of mainstreaming. Reference: Sietz, D., Boschütz, M. and Klein, R.J.T. (2011) Mainstreaming climate adaptation into development assistance: rationale, institutional barriers and opportunities in Mozambique. Environ. Sci. Policy 14(4): 493-502. (diana sietz, Wageningen University)	This reference is for Africa
643	74939	24	40	1	40	4	This list should also include cultural and social barriers. See Adger et al., Are there social limits to adaptation to climate change?, 2009, Climatic Change 93: 335-54. Also see Jones and Boyd 2011, in references. (UNITED STATES OF AMERICA)	Text revised.
644	74940	24	40	4	40	4	It should be mentioned that regional approaches also are needed for a number of other issues such as water and coastal management. (UNITED STATES OF AMERICA)	Outside the scope of the section.
645	83596	24	40	4	40	4	The phrase "are necessary" to be interpreted as prescriptive and alternative wording should be considered. (Katharine Mach, IPCC WGII TSU)	Text revised.
646	74941	24	40	8	40	10	Additional references are available and would be useful on these governance issues, such as Dovers and Hezri 2010 (not specific to Asia). (UNITED STATES OF AMERICA)	Additional references added.
647	83597	24	40	17	40	19	Wording on these lines ("it is of utmost importance" and "the need") could be interpreted as prescriptive, and alternative wording should be considered. (Katharine Mach, IPCC WGII TSU)	Accepted. Changes have been made as requested
648	70448	24	40	32	40	32	Add text before: "The first study to assess interactions between adaptation and mitigation across different economic sectors in the context of an Asian country was Dang et al. (2003)". Full reference: Dang, Hanh; Michaelowa, Axel; Tuan, Dao (2003): Synergy of adaptation and mitigation strategies in the context of sustainable development: the case of Vietnam, in: Climate Policy, 3, Supplement 1, p. S81-S96 (Axel Michaelowa, University of Zurich)	We do not have room for history and are supposed to avoid pre-2007 citations.
649	83598	24	40	32	40	34	This statement addresses an important point, but the logic of the presentation could be refined slightly. (Katharine Mach, IPCC WGII TSU)	Text revised.
650	74942	24	40	32	40	43	The text presents energy efficient air conditioning as an adaptation option with mitigation co-benefits. This is questionable, since the impact of more affordable air conditioning on demand could outweigh the energy-savings per unit if the introduction led to a large increase in the use of air conditioning (that is, number of units in operation). This is not an argument against it as adaptation policy, but a caution with respect to mitigation impact. (UNITED STATES OF AMERICA)	Text revised.
651	83599	24	40	32	40	43	More citations could be provided for these statements. (Katharine Mach, IPCC WGII TSU)	Text revised.
652	83600	24	40	35	40	37	It seems that increasing both efficiency and affordability will not necessarily reduce carbon emissions if usage increases. (Katharine Mach, IPCC WGII TSU)	Text revised.
653	83601	24	40	52	40	52	Wording here could be adjusted to ensure that "often needed" is not interpreted as potentially prescriptive. (Katharine Mach, IPCC WGII TSU)	Text revised.
654	74943	24	41	4	41	7	Avoiding forest loss and degradation (through e.g., REDD mechanisms) is not mentioned here but should be. The authors are encouraged to seek balance between considering approaches that store new carbon with exotic monocultures and those that continue to store old carbon in extant forests, especially those that are biologically diverse and still are sequestering new carbon. The resilience benefits of conserving and better managing these older forests should be mentioned beyond the Diaz and Sasaki references. CBD Technical Series 43 discusses the linkages at length. (UNITED STATES OF AMERICA)	This section has been re-written and some of these points have been added.
655	74944	24	41	12	41	14	REDD+ and risk reduction of negative consequences of biofuels needs clarification. As written, the sentence almost implies that REDD+ would allow for biofuels without the negative consequences alluded to in the previous sentence. Authors are encouraged to explain that REDD+ should provide incentives to retain carbon-dense forests so that they're not perversely cleared for biofuel production - if that is what was intended. (UNITED STATES OF AMERICA)	We have now clarified this.
656	74945	24	41	16	41	24	The text states that it has also been suggested that indigenous people can provide a bridge between biodiversity protection and climate change adaptation. This point could be emphasized as it appears to be missing in the current discourse on ecosystems-based adaptation. (UNITED STATES OF AMERICA)	Agree. It has been revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
657	74946	24	41	22	41	24	There is a contrasting perspective within the forestry and climate communities that should be represented here. That perspective is that REDD+ can also work in forests managed for timber production. See the following articles for examples of this perspective: Sasaki and Putz 2009 (Conservation Letters), Guariguata et al. 2007 (Mitigation and Adaptation Strategies for Global Change), and Putz et al. 2012 (Conservation Letters). (UNITED STATES OF AMERICA)	Agree. This perspective will be referred and added.
658	74947	24	41	26	41	27	It should be mentioned in addition that there are also GHG emission issues associated with the fabrication and installation of infrastructure. (UNITED STATES OF AMERICA)	Text revised.
659	62771	24	41	26	41	28	This sentence that describes the drawback of hard defences is really one-sided, therefore well-founded literatures should be referred. (Motoki Nishimori, National Institute for Agro-Environmental Sciences)	We only say they 'may have' negative consequences, which is certainly true.
660	56760	24	41	28	0	0	The end of this sentence needs a reference, as it is an assertion. Or refer to the earlier sections of the chapter (since similar points have been made already). (David Dudgeon, University of Hong Kong)	We now refer back to the earlier section of the chapter.
661	74948	24	41	29	41	30	The authors should explain why set asides will be difficult in practice. Alternatively, it could be stated that human-built infrastructure, politics, and other considerations make these approaches challenging. This will enable the reader to understand the reasons for the assertion. (UNITED STATES OF AMERICA)	We have removed this statement.
662	74949	24	41	30	41	32	Nevertheless, peat forests are being cleared in Indonesia, as reported elsewhere in this report and see Yule, 2010. "Loss of biodiversity and ecosystem functioning in Indo-Malayan peat swamp forests," Biodiversity Conservation 19; and Hirano et al, 2012, "Effects of disturbances on the carbon balance of tropical peat swamp forests," Global Change Biology 18(11). The authors may need to qualify this statement. (UNITED STATES OF AMERICA)	This is not the place to describe clearance of peat forest.
663	74950	24	41	30	41	32	Progress is being made in the measurement and monitoring of carbon storage in mangroves. See Mitra et al, 2011, "Standing biomass and carbon storage of above-ground structures in dominant mangrove trees in the Sundarbans," Forest Ecology and Management 261(7). (UNITED STATES OF AMERICA)	Our current reference is better since most carbon is stored underground in mangroves.
664	61651	24	41	34	41	51	Decarbonizing of electricity production in India and China is discussed, along with other technological developments. Focus is on Indian and China, but are other parts of the region making progress in these directions? (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	Text revised.
665	74951	24	41	49	41	51	This sentence seems to be out of context in this paragraph as it relates to adaptation, not to mitigation. (UNITED STATES OF AMERICA)	Agreed. This should be shifted to the adaptation section 24.4.6.5.
666	83602	24	42	1	0	0	Section 24.7. The relevant key findings from chapter 19 on transboundary and long-distance risks could be considered here, to ensure appropriate consistency and cross-referencing. (Katharine Mach, IPCC WGII TSU)	Text revised.
667	61652	24	42	3	42	15	Trans-boundary pollution issues are discussed here. Are any mechanisms in place to tackle this problem? Only the issues are discussed, not solutions. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	There are currently no effective mechanisms in place to tackle this.
668	56761	24	42	5	0	14	This section would have more force if countries where pollution originated and those that it affected were mentioned by name. Perhaps there are political sensitivities here, but Indonesia and Singapore come to mind as examples of originators (of smoke) and affected nations. (David Dudgeon, University of Hong Kong)	We do not think it appropriate to name country sources in the Chapter, but the names can easily be found in the literature cited.
669	74952	24	42	5	42	15	Haze is not the only big trans-boundary pollution problem. Water pollution via lack of control of run-off, over-use of pesticides and fertilizers, lack of integrated management, impoundments and dams, etc. are also serious transboundary problems in the Mekong Basin. Since there is a case study on the Mekong, it could be referred to here. (UNITED STATES OF AMERICA)	This is undoubtedly true as we can find no literature that relates this to climate change.
670	62772	24	42	18	0	0	On the first paragraph of 24.7.2, the description of on the political frameworks such as AFTA and IJEP and their superiority/inferiority is thought to be inadequate, because it would be impossible to further inspect. (Motoki Nishimori, National Institute for Agro-Environmental Sciences)	The description is obtained from the literature where an assessment has been made.
671	61653	24	42	18	42	34	This section refers to impacts of regional trade agreements on increasing emissions in some countries - how does this relate to UNFCCC targets for these countries? (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	There is no literature linking regional trade agreements on increasing emissions to UNFCCC targets

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
672	74953	24	42	20	42	27	The authors are encouraged to reconsider this paragraph. The text states that a well-functioning international trading system can support adaptation by reducing GHG emissions globally. However, the only empirical study cited supports the opposite conclusion. The example cited concerns mitigation, not adaptation, and in fact that article says trade is less useful for mitigation purposes. If the authors keep the initial statement they need to provide empirical evidence to support it. In particular, if expanded international trade supports higher levels of consumption, as the following paragraph indicates, then its benefits as "adaptation" may be questionable. Also, this is an ideological statement -- some would argue that international trade is mal-adaptive if trade routes are increasingly vulnerable to extreme events, plus it can be energy-intensive and thus contribute to GHG emissions. (UNITED STATES OF AMERICA)	Excluded the statement and written as research needs
673	83603	24	42	25	42	26	The timeframe for this example could be clarified. (Katharine Mach, IPCC WGII TSU)	Timeframe added
674	56762	24	42	30	0	34	I could not quite follow this: first, it would help if the notion of virtual water was introduced. Once that is done, the reader can understand how northern China exports water in crops, but it is not clear how northern China accepts wastewater. The part dealing with southern China made no sense to me at all. Does the author mean the 'exports' are creating pollution (i.e. not imports as written)? (David Dudgeon, University of Hong Kong)	Added text for more clarification.
675	83604	24	42	37	0	0	Section 24.7.3. Material in this section should be carefully coordinated with the assessment and key findings of chapter 12. (Katharine Mach, IPCC WGII TSU)	Agreed. Will have to refer Chapter 12 and so as to see that they are coordinated.
676	74954	24	42	42	42	44	Note that some of IDPs return to vulnerable areas, as in example of 2010 Asian floods that is cited; this is a serious concern and should be noted (UNITED STATES OF AMERICA)	Agreed. Will be added.
677	64678	24	43	5	44	41	Research and Data Gaps : The lack of mention on research and data gaps for coastal areas shows that there is already sufficient information on adaptation measures for coasts (apart from agriculture) and application of these is more a question of policy, funding and local conditions. (Poh Poh Wong, National University of Singapore)	Text revised.
678	74955	24	43	6	43	8	It's an exaggeration to say that the negative outcome would be overcome; rather, it might be mitigated or reduced through safeguards. Such a sweeping statement should be supported by more than a single citation. Also, relocation from coastal areas (coastal retreat) could be mentioned here. (UNITED STATES OF AMERICA)	Agreed. Text Revised.
679	74956	24	43	7	43	7	While it is true that construction of dams can be viewed as an adaptation option, climate change has not been the motivation for dam construction in virtually all cases. Please clarify. (UNITED STATES OF AMERICA)	Text revised.
680	74957	24	43	10	43	12	The section should also address the complex but critical issues of free and informed consent, participation, etc. (UNITED STATES OF AMERICA)	Text revised.
681	74958	24	43	15	43	15	The discussion of research and data gaps could be used to help the the reader to understand why many vulnerabilities in Asia are not addressed comprehensively in the chapter. Some useful gaps are identified here, but the reader would benefit from more synthesis and explicit recognition of where there is limited data and knowledge. (UNITED STATES OF AMERICA)	Text revised and considerably shortened due to page limitation. A coverage table has been introduced.
682	74959	24	43	15	44	41	Additional research is also needed from geographers and anthropologists on how people in Asia cope with climate variability as a bridge towards adapting to climate change; as well as how local knowledge can complement traditional science. (UNITED STATES OF AMERICA)	Text revised.
683	74960	24	43	17	43	19	The frequent lack of baseline information and even basic data on relevant weather and climate variables (using rain gauges, flow meters, etc.) in many parts of Asia could be mentioned here. (UNITED STATES OF AMERICA)	Text revised.
684	69745	24	43	17	43	24	This paragraph is not support by any references or so. References or reports can be cited here to support. (NETHERLANDS)	Text revised.
685	74961	24	43	17	43	24	A serious data limitation in places such as Central Asia is lack of digitized hydro-met records; these data are important for establishing baselines and determining trends. Digitization is a relatively easy fix. (UNITED STATES OF AMERICA)	Text revised.
686	74962	24	43	17	43	24	Additional priorities might include (i) detailed studies at river basin scale of the impacts of the progressive loss of high-altitude glacial and snowpack storage; (ii) detailed, location-specific studies of the impacts on sea level rise on coastal water resources; and (iii) regionally specific studies of the likely impacts of climate change on groundwater dynamics. These priorities reflect the importance of these three sources of water to the inhabitants and economies of Asia; as well as the relative scarcity of high-quality published studies in these areas. (UNITED STATES OF AMERICA)	Text revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
687	74963	24	43	17	43	24	Consider adding "glacial flow analyses" to the section, especially given the implications of decreased seasonal flows on agricultural production in Central Asia nations, which rely more on glacial-sourced waters in comparison to eastward flowing rivers (of the Tibetan plateau). (UNITED STATES OF AMERICA)	Text revised.
688	74964	24	43	17	43	24	Consider including discussion of critical question of hydromet observations that was elaborated in greater depth in a 2012 workshop report (see http://www.unisdr.org/files/27645_webrestheroleofhydromet.pdf). Hydromet strengthening is becoming a core element of the Pilot Program for Climate Resilience; first in Tajikistan where the lack of sufficient hydromet stations is particularly troublesome given that this country (and Kyrgyz Republic) is the "roof" for the Central Asian watershed; and the various concerns on resource conflicts. Lack of data means projections of glacial replenishment and melting are especially problematic. A good reference is: https://www.climateinvestmentfunds.org/cifnet/project/tajikistan-improvement-weather-climate-and-hydrological-service-delivery (UNITED STATES OF AMERICA)	Text revised.
689	56763	24	43	20	0	0	Sentence is not very clear. Redraft. "In terms of future availability of freshwater resources, more information is needed on" (David Dudgeon, University of Hong Kong)	Text revised.
690	74965	24	43	23	43	24	Information on water saving technologies is surprising as a research gap since there is a lot of information available on this topic. (UNITED STATES OF AMERICA)	Text revised.
691	56764	24	43	26	0	0	Add "... on land and in fresh water". From what I can see from this section, there are no suggestions of research needs for freshwater biodiversity under climate change. The literature is not silent on this point: there is great uncertainty, for example, on how changing climates and monsoonal flows might affect patterns of fish migration in, for instance, the Mekong, as both the timing and intensity of cues that initiate breeding migrations could change. There is also uncertainty over thermal tolerances of freshwater animals, and their ability to compensate for rising temperatures by range shifts (possible from frogs maybe - but see Bickford's work - and dragonflies) or by thermal adaptation. (David Dudgeon, University of Hong Kong)	The thermal tolerances of aquatic species are now mentioned.
692	83605	24	43	34	43	34	Is "dangerous" the most appropriate word here? (Katharine Mach, IPCC WGII TSU)	Replaced by 'impractical'!
693	74966	24	43	47	43	51	An additional priority is the need to better understand the impacts of a CO2-enriched atmosphere on stomatal conductance and hence on overall demand for water to support crops. The evidence to date is to some degree contradictory and the implications for water availability are potentially large. (UNITED STATES OF AMERICA)	Agreed: we have now added this.
694	56770	24	44	0	0	0	Section 2.4.9.1 may well be somewhat superseded by a Mekong Adaptation and Resilience to Climate Change (Mekong ARCC) report published by USAID in draft form earlier this year. While IPCC may prefer not to use information available in draft form the fact that this report is widely available on the internet suggests it would be wise to make use of it to include the latest thinking on climate change effects on the Mekong in this case study. If this is not done, this section of the IPCC reports will be out-of-date before it is published. (David Dudgeon, University of Hong Kong)	Unable to add this reference due to lack of space
695	74967	24	44	3	44	4	Studies on adaptive approaches to governance at and between scales (local, subnational, national) is a big gap within the region and globally and could be included. (UNITED STATES OF AMERICA)	Text revised.
696	74968	24	44	10	44	12	This proposed research should also consider tradeoffs, not just synergies and gains. (UNITED STATES OF AMERICA)	Text revised.
697	62328	24	44	22	44	23	Good opening sentence, but I think the point about location deserves at least one sentence of expansion. There are steep core-periphery gradients in many Asian countries, and the disparities in awareness and adaptive capacity reflect these gradients. See Nunn et al in Regional Environmental Change, 2013, DOI: 10.1007/s10113-013-0486-7 (Patrick Nunn, University of New England)	Agreed. The reference will be referred and necessary inclusions will be made.
698	84840	24	44	34	44	34	This could be read as being policy prescriptive. Is the point that mitigation efforts reduce risks in the long-term by avoiding some amount of climate change that would otherwise have occurred? Please clarify. (Michael Mastrandrea, IPCC WGII TSU)	Text revised.
699	56765	24	44	35	0	36	I am at a loss to understand the rule used for author citation sequence. It is neither chronological nor alphabetical. (David Dudgeon, University of Hong Kong)	Text revised.
700	62329	24	44	39	44	39	I would change "aspects" - perhaps to "tools"? (Patrick Nunn, University of New England)	Text revised.
701	62330	24	44	39	44	39	after "climate science", I would add "social science" (Patrick Nunn, University of New England)	Text revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
702	74969	24	44	44	49	40	It is not clear why these particular topics for the case studies were selected as the priority topics, nor the messages they wish to convey (in some cases). For example, the point of the second case study on peatlands is not very clear, just that peatlands are important. What is the lesson(s) for adaptation here, and why were peatlands selected over other ecosystems? There aren't very many solid recommendations or strategies in this case study. Also, given that this is a region that is highly urbanized and that it contains a high percentage of the mega-cities of the world, perhaps a case study on urban issues is merited. (UNITED STATES OF AMERICA)	The case studies were reviewed. The author team has retained only 2 and shortened them due to page limitation.
703	74970	24	44	46	46	35	Suggest that the authors consider reference to the following recent reports: Natural Heritage Institute, "Preserving the Flows that Nourish Life in the Mekong/Lancang River Basin in the Era of Intense Dam Development and Climate Change," Mar 2011; and Robert Costanza et. al. "Planning Approaches for Water Resources Development in the Lower Mekong Basin." Jun 2011. These are recent USAID-funded reports that include cost-benefit analyses. (UNITED STATES OF AMERICA)	One of the reports (Baran and Guerin, 2012) from Natural Heritage Institute is most relevant to this Section and has been cited to support the detailed impacts of dams on fishery. Robert Costanza et. al's paper has also been cited to support the potential impact from hydropower dams on fishery.
704	74971	24	44	46	46	35	The authors are encouraged to consider: Rasanen et al 2012, "Downstream Hydrological Impacts of Hydropower Development in the Upper Mekong Basin," Water Resources Management Volume 26, Issue 12, pp 3495-3513; Murphy et al 2013, The stress of climate change on water management in Cambodia with a focus on rice production, Climate and Development Volume 5, Issue 1. (UNITED STATES OF AMERICA)	Rasanen et al's paper has been cited to support the potential impact of hydropower development in the region. Murphy et al's paper has also been cited to support the climate forecast in the LMB, especially in Cambodia (line 23-25 in page 45).
705	74972	24	45	12	45	15	It is difficult to attribute these impacts to climate change, yet they are embedded in a paragraph about it. This paragraph should be carefully revised. (UNITED STATES OF AMERICA)	The author team has revised this paragraph by replacing "climate related events" with "intensified floods and droughts" with reference to Brooks and Adger's paper stating that flood and drought are two categories of events which are climatic in nature or may include a climatic component. The author team is not trying to attribute flood and drought to climate change since they are always existed. But the change in magnitude and frequency are largely due to climate change.
706	74973	24	45	23	45	25	Note that the newest study for the LMB offers a slightly different forecast including a lengthening of the wet season - see http://www.mekongarcc.net/resource/mekong-arcc-draft-final-report-ccia-study (UNITED STATES OF AMERICA)	Unable to add this reference due to lack of space.
707	74974	24	45	24	45	25	The ordering of sea level rise and salinity intrusion in the Delta can mislead readers into thinking that sea level rise and salinity will decrease because they come after 'decreases in dry season rainfall'. (UNITED STATES OF AMERICA)	The author team has reworded the sentence according to the suggestion.
708	74975	24	45	27	45	32	The Mekong ARCC study adds to this list by emphasizing impacts on different parts of the agriculture sector - crops and livestock in particular - but also on natural systems and non-timber forest products in particular. Shifts in 'ecozones' are forecast indicating some crops grown now in certain locations will become less productive over time. (UNITED STATES OF AMERICA)	The author team agree but unable to expand the list due to space limitation.
709	74976	24	45	32	45	32	This is largely due to dam construction rather than climate change. (UNITED STATES OF AMERICA)	The author team is trying to convey that reduced fish survival, growth and reproductive success is largely caused by hydrological change induced by dam construction - climate change though is exacerbating these negative impacts. But the author team has to remove this part due to the space limit.
710	56767	24	45	34	0	37	This paragraph is very generic; it would be more informative as a case study if (say) the information of Ziv et al. was cited in more detail so the reader can see exactly what the effects on fish production would be under different scenarios. (David Dudgeon, University of Hong Kong)	The author team has re-worded this paragraph, add specificity and relevant sources. On the other hand, the author team do not intend to dive in great details into the impacts of dam construction, as this case study focused on adaptation planning and management based on impacts from climate change. We will recognize though the interrelationships of climate change as an impact factor with dam building.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
711	74977	24	45	34	45	37	Consider including reference to a 2012 paper by Orr et al. that adds to the point that the dams will seriously compromise food security in the region because fish supply could be cut by around 40% if all the planned dams are built. The reference is in Global Environmental Change 22: 925-932 (UNITED STATES OF AMERICA)	Orr et al's paper has been cited as suggested.
712	83606	24	45	34	45	37	These statements could be qualified with calibrated uncertainty language to indicate the author team's degree of certainty in them. Additionally, casual usage of "likely" should be avoided. (Katharine Mach, IPCC WGII TSU)	The cited sources and studies do not provide sufficient information for the author team to make probabilistic assessments on the quantified likelihood of these future trends. It is therefore difficult to use a calibrated uncertainty language in accordance to IPCC guidelines.
713	56766	24	45	37	0	0	See above; this citation issue occurs at other places in the draft. (David Dudgeon, University of Hong Kong)	The author team has re-arranged the citation based on chronological sequence.
714	57479	24	45	39	45	27	Inundation area is important for flood management and landuse control for eco-friendly-development in view of agricultural production and groundwater recharge. (Kazama et al., Evaluation of flood control and inundation conservation in Cambodia using flood and economic growth models, Hydrological Processes, Vol.23, No.4, pp.623-632, 2009) (So Kazama, Tohoku University)	To the best understanding from the author team, the commentator wanted to suggest adding conservation of inundation area as one of the adaptation needs in line 39 of page 45. However, the author team consider conservation of inundation areas as part of the activities of "improving of water management" as mentioned in the context already. But the author team has to remove this sentence due to the space limit
715	61654	24	45	39	45	46	The case study of the Mekong basin is given here with some references to trans-boundary issues and actors involved with addressing climate change adaptation issues (e.g. UNDP and Asia Development Bank). But in general this chapter does not refer to international development action within Asia and whether this is having an impact upon adaptation. (European Union DG Research, Directorate Environment Climate Change & Environmental Risks Unit)	The author team agree to add a Section somewhere in this Chapter on the impact of international development actions on adaptation, such as actions on poverty reduction, education, healthcare, gender equity, environment and other foreign aid program from unilateral or multilateral organization. These actions will potentially have positive impact and facilitated the progress of climate adaptation. However, the author team couldn't go further to do a thorough research on these international development actions and their impacts since these topics fall outside of the scope of this case study.
716	74978	24	45	39	45	54	This section also needs to refer back to the discussion about non-climate pressures. Adaptation needs to be integrated with development planning. It will be difficult for focused adaptation projects to accomplish their goals if they don't consider the broader context adequately and if the bigger change drivers in the region - infrastructure, land use change, rapid economic growth with no regard for sustainable use of resources, a growing footprint, etc. - are not addressed as part of an overall integrated adaptation program embedded in 'good' sustainable development. (UNITED STATES OF AMERICA)	The author team has revised the paragraph here to more strongly reflect the reviewer's suggestion and also add one more reference to support the statement.
717	74979	24	45	40	45	40	Johnson et al. 2010 is missing from the references cited section. (UNITED STATES OF AMERICA)	Due to the space limit, the author team has to remove the sentence which this reference supports.
718	74980	24	45	48	45	54	Consider adding additional challenges: (i) lack of integrated approaches - most are sectoral or narrowly and artificially constrained to small areas rather than landscape scale (though part of this point is mentioned in line 46); and (ii) lack of translation of national adaptation strategies to provincial and sub-provincial scales so that actions can be effectively taken on the ground. (UNITED STATES OF AMERICA)	The author team has incorporated these challenges and rewritten the whole paragraph.
719	74981	24	45	53	45	54	Another factor is insufficient mainstreaming at the sub-national level, given decentralization of much decision-making in these countries. (UNITED STATES OF AMERICA)	The author team has incorporated this factor into the paragraph.
720	56768	24	46	0	47	0	Section 2.4.9.2 is rather superficial and much less detailed than the other case studies. I agree peat swamps are important, but the relevant information here could be folded into earlier sections of the main body of the text (as examples) and does not seem to warrant a special section. (David Dudgeon, University of Hong Kong)	Deleted
721	83607	24	46	6	46	6	It should be clarified how adaptation was defined here in determining that they were "truly adaptation efforts." (Katharine Mach, IPCC WGII TSU)	The author team has removed "truly adaptation efforts" and provided clarification.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
722	74982	24	46	31	46	35	The authors should mention that there is already an adaptation network for the larger Asia-Pacific region, supported by UNEP, USAID, ADB, Japan, etc. (UNITED STATES OF AMERICA)	The author team agree with this but we are unable to do it due to the space limit.
723	56907	24	47	12	0	0	I did not understand the logic in the organization of the section. Maybe a logical progression from North to South would be best? It would also be good to have an indication of the total glacier cover (km ²) in each region. (Etienne Berthier, LEGOS)	The Case Study has been edited and shortened. Care has been taken to ensure consistency with WgP 1 Report and other chapters in the Wgp 2 Report.
724	57930	24	47	12	0	0	Entire section 24.9.3: Building upon more studies would give a more balanced view. E.g. what about Narama C., Kääb A., Duishonakunov M., Abdrakhmatov K. (2010): Spatial variability of recent glacier area changes in the Tien Shan Mountains, Central Asia, using Corona (~1970), Landsat (~2000), and ALOS (~2007) satellite data Global and Planetary Change, 71:42-54. (Andreas Kaeab, University of Oslo)	As above
725	68136	24	47	18	47	18	It is suggested to change “Mongolia, Xinjiang and other north-western provinces of China” to “Mongolia, north-western provinces of China, including the Xinjiang Uygur Autonomous Region”. (CHINA)	As above
726	74983	24	47	18	47	51	The first paragraph is overly data dense; it is hard to interpret or draw cross-study conclusions. The text would benefit from less literature review and more assessment. The text is confusing from lines 31 through 35; what is 30th, 50th or 70th mean? Are these the decades? Text should emphasize any new information or research cited in AR5 that either supports or contradicts AR4. The retreat of the Fedchenko glacier is often cited as a visible example of climate impacts in CA yet the citation on retreat from 1958 to 2009 in line 49 (i.e. 755 m and 2 km ²) seems low. The original source for these data should be quoted; be it measured on the ground; remotely sensed, etc. Additionally, where is the assessment? In its current form, the text is simply a compilation of findings. (UNITED STATES OF AMERICA)	As above
727	64972	24	47	23	47	23	Clarify. What was the ending date of the measurements of area change in the Tien Shan and Pamir? (J. Graham Cogley, Trent University)	As above
728	64973	24	47	26	47	27	This error in glacier volume change, and other errors quoted in this section, are astonishingly small. The source for the error in volume change, Aizen et al. 2006, presents the errors with no documentation of how they were calculated. It does, however, give an error (in its Table 1) of ±8.2 m for surface elevation change of Akshirak glaciers from 1977 to 2000/03. Even if the error in the total area were zero, the error in the corresponding volume change (elevation change times area) would be about ±3.2 km ³ and not the ±0.016 km ³ given in the source table. In the percentage terms of this section, the error would be about 53% and not the 0.21% that is given. Some mistake has affected the calculations of uncertainty in volume change, and I have to conclude that this and probably also the other errors in this section are unreliable. They give a misleading impression of confidence, and unless the errors can be recalculated correctly for this assessment the best course is probably to omit them entirely. (J. Graham Cogley, Trent University)	As above
729	64974	24	47	27	47	27	"increased". (J. Graham Cogley, Trent University)	As above
730	64975	24	47	31	47	32	"three main warming phases, in the 1930s, the 1950s and the 1970s." (J. Graham Cogley, Trent University)	As above
731	64976	24	47	32	47	32	"trends", and delete "the" before "SE Mongolia". (J. Graham Cogley, Trent University)	As above
732	64977	24	47	33	47	34	"The analyses of Aizen et al. (2010) and Finaev (2004) showed that". (J. Graham Cogley, Trent University)	As above
733	64978	24	47	35	47	37	Do “surplus precipitation” and “precipitation deficit” have their usual respective meanings, “precipitation greater than evaporation” and “precipitation less than evaporation”? From the context it looks as though they should actually be “precipitation increase” and “precipitation decrease”. (J. Graham Cogley, Trent University)	As above
734	64979	24	47	40	47	40	"at the southern edge". (J. Graham Cogley, Trent University)	As above
735	64980	24	47	41	47	41	"from the 1960s". (J. Graham Cogley, Trent University)	As above
736	64981	24	47	42	47	42	"were caused". (J. Graham Cogley, Trent University)	As above
737	56908	24	47	44	0	0	Two recent papers are reporting positive mass balance in Pamir, one from field measurements and one from remote sensing methods. I think they deserve to be cited: Yao et al. (2012) and Gardelle et al. (2013); Yao, T., et al. (2012), Different glacier status with atmospheric circulations in Tibetan Plateau and surroundings, Nature Climate Change, 2(9), 663 - 667.; Gardelle, J., et al. (2013, submitted), Region-wide glacier mass balances over the Pamir - Karakoram - Himalaya during 1999-2011, The Cryosphere Discussion, 7, 975-1028. (Etienne Berthier, LEGOS)	As above

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
738	64982	24	47	44	47	44	"Darya" (not "Dariya"). (J. Graham Cogley, Trent University)	As above
739	64983	24	47	44	47	50	Shorten this sentence. At 947 km ² , Siachen Glacier in the Karakoram is larger than Fedchenko, and there are several even larger glaciers in southern Alaska and adjoining parts of Canada. (J. Graham Cogley, Trent University)	As above
740	64984	24	47	51	47	51	"Syr Darya". (J. Graham Cogley, Trent University)	As above
741	56769	24	48	0	49	0	I was a bit dubious about the relevance of the Aral Sea section to the chapter, since little of the shrinkage of th Aral Sea is attributable to climate change; lines 25-36 on page 49 make it clear that the climate change component is a VERY small contributor. The section heading also needs attention: in biodiversity terms the Aral Sea has been dead for some time! The biodiversity changes do not warrant a mention in this case study which is (a) a pity, and (b) undermines its authority. Sugegst deleting this and adsdng the climate change pararaph into the relevant text earlier in the chapter. (David Dudgeon, University of Hong Kong)	This case study has been deleted.
742	56909	24	48	2	0	0	The fact that it is an high elevated area is not an explanation by itself. A reference demonstrating this fact is needed. (Etienne Berthier, LEGOS)	As above
743	64985	24	48	2	48	2	"high-elevation". But there is a logical problem here. Glaciers with high maximum elevations also have low minimum elevations. Why do their lower reaches not suffer GREATER shrinkage than observed on glaciers with smaller elevation ranges? (J. Graham Cogley, Trent University)	As above
744	56910	24	48	4	0	0	The review paper by [Sorg et al., 2012] and the recent paper by [Pieczonka et al., 2013] should be cited also here. Pieczonka, T., et al. (2013), Heterogeneous mass loss of glaciers in the Aksu-Tarim Catchment (Central Tien Shan) revealed by 1976 KH-9 Hexagon and 2009 SPOT-5 stereo imagery, Remote Sensing of Environment, 130(213), 233-244. Sorg, A., et al. (2012), Climate change impacts on glaciers and runoff in Tien Shan (Central Asia), Nature Climate Change, 2(10), 725 - 731 (Etienne Berthier, LEGOS)	As above
745	64986	24	48	4	48	4	"than others in central Asia". (J. Graham Cogley, Trent University)	As above
746	64987	24	48	6	48	6	"decreased". (J. Graham Cogley, Trent University)	As above
747	83608	24	48	15	48	15	The acronym ELA could be clarified. (Katharine Mach, IPCC WGII TSU)	As above
748	64988	24	48	15	48	17	These are strange statements. First, simulation models make projections, not forecasts. Second, "degradation" is a vague term, but what is really unsettling is that evidently it does not become "significant" until the ELA has risen by 600 m. In fact very large mass losses will have occurred long before such a large ELA change is observed. Finally, all that is actually said is that a 600-m rise of the ELA, by some unspecified date, will be accompanied by shrinkage of 40% and volume loss of 60%. (J. Graham Cogley, Trent University)	As above
749	64989	24	48	15	48	28	This paragraph appears to rely on a single source that is six years old. It should instead take account of more recent work such as that of Radić, V., et al., 2013, Regional and global projections of 21st century glacier mass changes in response to climate scenarios from global climate models, Climate Dynamics, doi:10.1007/s00382-013-1719-7. One of the regions for which they offer projections is central Asia. (J. Graham Cogley, Trent University)	As above
750	74984	24	48	16	48	17	This statement needs a citation. (UNITED STATES OF AMERICA)	As above
751	74985	24	48	17	48	20	Why are scenarios from the TAR being used here instead of more recent ones? (UNITED STATES OF AMERICA)	As above
752	84841	24	48	19	48	19	Please specify what the parenthetical numbers represent (median values? Something else?). (Michael Mastrandrea, IPCC WGII TSU)	As above
753	84842	24	48	20	48	28	Please consider ways to more clearly present the range of possibilities expressed in words here. Could this be done in a table or figure, for example? (Michael Mastrandrea, IPCC WGII TSU)	As above
754	74986	24	48	25	48	42	It would be good to mention in line 25 what year "current glaciations will disappear" refers to. Presumably 2100, but this should be repeated. If there is trend information on what decades melting is especially rapid (perhaps yielding higher short term meltwater flows) then this information could be presented. The last section (lines 37-42) could raise some alarms. Might one imply that one/some set of projections for the year 2100 suggest fewer glaciers (number, area and/or volume) than in any time in the last 12,500 years? If yes, that is a very significant observation to be highlighted in the summary if not already. (UNITED STATES OF AMERICA)	As above
755	64990	24	48	26	48	26	Comma needed after the second "value". (J. Graham Cogley, Trent University)	As above
756	64991	24	48	28	48	28	Delete "of". (J. Graham Cogley, Trent University)	As above

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
757	64992	24	48	30	48	30	“will bring central Asia closer”. (J. Graham Cogley, Trent University)	As above
758	83609	24	48	30	48	35	In addition to the line-of-sight reference provided, it would be preferable to provide citations for these statements. (Katharine Mach, IPCC WGII TSU)	As above
759	64993	24	48	31	48	31	“and will contribute significantly to droughts”. (There seems to be no need for “progressive”). (J. Graham Cogley, Trent University)	As above
760	64994	24	48	32	48	33	I think this means “Where seepage and evaporation are the only other substantial components of the water balance, the loss of glacier meltwater implies salinization of soil water and groundwater. Many lakes will contract and ecosystems will be disrupted.” The assertion about salinization is not necessarily accurate, because it will depend on the balance of seepage and evaporation, and the statement about lakes contracting skips over the probable (and in fact documented; see, e.g., Zhang, G.Q., et al., 2013, Increased mass over the Tibetan Plateau: from lakes or glaciers?, Geophysical Research Letters, doi:10.1002/grl.50462) EXPANSION of lakes during the earlier stages of glacier mass loss. The statement about ecosystems is vague and could be dropped. (J. Graham Cogley, Trent University)	As above
761	64995	24	48	35	48	35	The reference to section 24.4.1 is not a true traceable account. Subsection 24.4.1.3 makes generalized statements similar to those here, based on only two references that appear to cover only Uzbekistan and Turkmenistan. Thus the statements here have little support, and may be exaggerated. (J. Graham Cogley, Trent University)	As above
762	64996	24	48	37	48	37	“Younger Dryas”. (J. Graham Cogley, Trent University)	As above
763	74987	24	48	37	48	37	Is BP the acronym for Bolling-Allerod? Or is this supposed to be Bolling-Allerod period - generally, if the acronym is not used again, it is not necessary to specify the acronym. (UNITED STATES OF AMERICA)	As above
764	64997	24	48	39	48	39	“7,600 BP) and the Medieval”. (J. Graham Cogley, Trent University)	As above
765	64998	24	48	40	48	40	“than the annual average temperature”. (J. Graham Cogley, Trent University)	As above
766	64999	24	48	40	48	42	Delete “Since that,”, and say something like “Based on these analogues, complete disappearance of present-day glaciers should be expected if the mean annual air temperature reaches at least 5°C above the modern value.”. (J. Graham Cogley, Trent University)	As above
767	74988	24	49	8	49	32	Characterizing water management practices as irrational seems judgemental. Is “irrational” defined in the context of water management? (UNITED STATES OF AMERICA)	This case study has been deleted.
768	83610	24	49	10	49	10	The meaning of the word “irrational” here seems perhaps not a perfect fit for what is meant, and intended statement could be clarified, also on line 25. (Katharine Mach, IPCC WGII TSU)	As above
769	81278	24	49	44	0	0	FAQs in the chapter are essentially providing potential impacts of climate change on specific sectors. They read a lot like ES without the specificities. Authors may wish to revise, restructure and perhaps combine some of these questions in a way to emphasize on specific issues unique to the region to provide an additional perspective to readers. (Monalisa Chatterjee, IPCC WGII TSU)	Text has been revised.
770	81273	24	49	45	0	0	FAQ 24-1 Use of confidence scale is perhaps too technical for FAQs. Authors may wish to explain the status of scientific knowledge in simple words. It is unclear how the 2050s time frame is applied for these different types of issues. For example it will be useful if specific projections available for 2050s for the glaciers in central Asia is provided. Moreover, the FAQ is trying to give a general point about too many aspects. For example, the focus of the question should be projected impact on freshwater resources but the answer also mentions adaptation options, etc. (Monalisa Chatterjee, IPCC WGII TSU)	Text has been revised in conjunction with a science editor.
771	74989	24	49	45	49	54	This answer ignores the impact of climate change on groundwater conditions, particularly magnified if pumping increases to compensate for variability. (UNITED STATES OF AMERICA)	Text has been revised.
772	83611	24	49	48	49	48	“low confidence” should be italicized. (Katharine Mach, IPCC WGII TSU)	Text has been revised.
773	83612	24	49	53	49	53	Use of the phrase “are needed” could be reconsidered in order to avoid potential interpretation of prescription. (Katharine Mach, IPCC WGII TSU)	Text has been revised.
774	81274	24	50	2	0	0	FAQ 24-2 The FAQ is about climate change impact on ecosystem and biodiversity. However, the answer implies a prominent role of other human activities in reducing the adaptive capacity of natural systems. Perhaps the question could reflect this aspect of the answer. (Monalisa Chatterjee, IPCC WGII TSU)	Text has been revised.
775	74990	24	50	2	50	12	It would seem appropriate to include mangroves in this discussion. (UNITED STATES OF AMERICA)	Text has been revised.
776	83613	24	50	11	50	11	Casual usage of “likely” should be avoided as it is a reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Text has been revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
777	81275	24	50	14	0	0	FAQ 24-3 Specific information on how permafrost regions have changed so far would be very useful. (Monalisa Chatterjee, IPCC WGII TSU)	Text has been revised.
778	76902	24	50	21	0	0	FAQ24.4: the answer to the FAQ does not discuss different dimensions of food security but focuses on food production. Suggest taking out "food security" from the title and line 27. (Food and Agriculture Organization of the United Nations (FAO))	Text has been revised.
779	81276	24	50	21	0	0	FAQ 24-4 Authors may wish to add a few words description to explain CO2 fertilization for the benefit of general audience. Moreover, since the FAQ is just on climate change impact on food, authors may wish to cover adaptation aspects. (Monalisa Chatterjee, IPCC WGII TSU)	Agree. Text revised.
780	74991	24	50	41	50	48	Suggest that the authors also note the vulnerability of the many island populations. (UNITED STATES OF AMERICA)	Text has been revised.
781	81277	24	50	50	0	0	FAQ 24-7 Size and diversity in the region plays a critical role, authors have mentioned this challenge a few time in FAQs. May be a more interesting question will be 'what aspects of Asia makes it challenging to plan for climate change'. (Monalisa Chatterjee, IPCC WGII TSU)	Text has been revised.
782	74992	24	50	50	50	53	Hydromet stations in mountainous areas are especially needed given their importance in tracking snowmelt and changes in glacier extent. (UNITED STATES OF AMERICA)	Text has been revised. Limited space prevents elaboration of this aspect.
783	74993	24	50	50	51	6	Given the size and diversity of the Asia region, generalizations for the entire region may be less helpful/informative than highlighting challenges for particular sub-regions. (UNITED STATES OF AMERICA)	Text has been revised to be specific to the sub-regions where it is supported by literature.
784	74994	24	51	9	51	54	This section includes few recommendations for building resilience, which seems to be the topic of this text according to the title. The brief description of adaptation measures seems inconsistent with the title of the box. (UNITED STATES OF AMERICA)	Text has been revised.
785	62786	24	51	19	51	29	Please include the assessments results by the UN ESCAP/WMO Typhoon Committee Expert Team on the impacts of tropical cyclones and future projections of tropical cyclone activities in the western North Pacific basin. References : - Lee, T. C., T. R. Knutson, H. Kamahori, and, M. Ying, 2012a: Impacts of Climate Change on Tropical Cyclones in the Western North Pacific Basin. Part I : Past Observations. Tropical Cyclone Res. Rev. 1, 213-230. http://tcrr.typhoon.gov.cn/EN/abstract/abstract30.shtml - Ying, M., T. R. Knutson, H. Kamahori, and T. C. Lee, 2012: Impacts of Climate Change on Tropical Cyclones in the Western North Pacific Basin. Part II: Late 21st Century Projections. Tropical Cyclone Res. Rev. 1, 231-241. (Sai-ming Lee, Hong Kong Observatory)	Relevant references are used in IPCC WG1. Therefore we did not refer to them.
786	62773	24	51	32	0	0	Terry and Chui, 2012 is not shown in CC-TC Rerefences. (Motoki Nishimori, National Institute for Agro-Environmental Sciences)	Revised.
787	58305	24	83	35	83	36	The information of reference Wang et al. (2013) is not completed. (Juqi Duan, National Climate Center, Chinese Meteorological Administration)	Revised.
788	80645	24	83	35	83	36	The citation Wang et al. (2013) is incomplete. (Jiahua PAN, Chinese Academy of Social Sciences)	Revised.
789	74995	24	85	0	0	0	Whole Page Comment: Yan 2008 does not appear to be the correct reference here. (UNITED STATES OF AMERICA)	Revised.
790	56318	24	88	0	0	0	In the column on Countries/ regions, under Wast Asia, Occupied Palestinian Territory to be changed to: Palestine. This is takiing into consideration UN General Assembly Decision: 67/19, Ref: A/RES/67/19. (Ministry of Environmental Affairs Environment Quality Authority (EQA))	Revised.
791	68137	24	88	0	0	0	In Table 24-1, in East Asia, "Hong Kong" should be changed to "Hong Kong SAR", and "Taiwan" to "Taiwan POC". (CHINA)	Revised.
792	68138	24	89	0	0	0	In Table 24-2,"Hong Kong" should be changed to "Hong Kong SAR", and "Taiwan" to "Taiwan, province of China". (CHINA)	Will be revised.
793	80433	24	89	0	90	0	Currently, Tables 24-2 and 24-3 provide an assessment of the physical science which is not linked to WGI AR5 at all. Please complement the tables with WGI AR5 material wherever possible, cross-reference to the relevant chapters/sections and ensure consistency. (Gian-Kasper Plattner, IPCC WGI TSU)	Revised in the main text.
794	67932	24	89	0	96	0	Tables 24-2 to 24-8 only provide summaries of relevant literature and fail to integrate or analyze findings for more comprehensive understanding. Other regional chapters include tables and figures which exhibit regional model simulations and assessments of key indicators; and therefore, such analysis should be provided in Chapter 24 as well. (JAPAN)	Regional assessments of key indicators is provided in main text.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
795	78589	24	89	1	94	1	Tables 24-2 to 24-6: These tables simply list the results of a literature survey for climate change and Asia. There is no assessment included, e.g. in terms of interpreting collections of local studies covering various periods in a regional context for the generic "recent past", an indication of confidence or likelihood in the existence of trends, their detection, and/or their attribution to climate change, the degree of agreement agreement e.g. across models and scenarios. This is the sort of information needed in this assessment chapter. (Dáithí Stone, University of Cape Town)	Tables 24-2 to 24-6 is now Supplementary Material.
796	68139	24	90	0	0	0	In Table 24-3, "Hong Kong" should be changed to "Hong Kong SAR". (CHINA)	Will be revised.
797	74996	24	90	0	0	0	Table 24-4 Comment: This table only deals with temperature and precipitation but SST, SLR, etc projections will also be very important to the region and should be emphasized. Omitting these parameters suggests that they are unimportant to the region. (UNITED STATES OF AMERICA)	SST and SLR is explained in the main text.
798	81308	24	90	0	0	0	Table 24.4 Confidence statements could be placed in a separate column to increase visibility. Other ways structuring the table to improve communication should also be considered. (Monalisa Chatterjee, IPCC WGII TSU)	Not accepted because current table can be still useful.
799	83614	24	90	0	0	0	Table 24-4. Where "less certain" is used for the 2nd example, it would be preferable to specify the direction of change. Later where precipitation changes are described as having "large uncertainties," it would be preferable to specify the nature of the uncertainties-- answering the question "uncertainty in what?"-- and an overall degree of certainty for the statement with calibrated uncertainty language. All instances of uncertainty language within the table should be italicized, for example the several examples of levels of confidence used. (Katharine Mach, IPCC WGII TSU)	Table 24-4 depends on WGI AR5 FGD.
800	67933	24	90	0	90	0	Table 24-4: In the last column of third row, the description of projected change for temperature in East Asia that "very likely increase by end of 21st Century, 'more in summer than in winter'" is inconsistent with the description that "Virtually certain increase significantly over East Asia by end of 21st century, with larger magnitude over northern China and 'in winter'." 'more in winter than in summer' would be appropriate considering the description of the IPCC WG1 AR5 SOD (14.7.9.1, p.81), which says "The projection for this century is further warming in all months of the year with median model temperature (deg C) values over land increasing from 1.4 and 1.2 in DJF and JJA, respectively in RCP2.8 to 5.4 and 4.9 in RCP8.5. In RCP4.5, by the end of the century (2080-2099), based on the 25% and 75% percentiles the projected temperature (deg C) change in DJF varies between 2.1 and 3.1 and in JJA between 1.8 and 3.0 (see Table 14.2, Figures AI.60 - AI.61 and the Supplementary Material for different time windows and four different RCPs)." (JAPAN)	Table 24-4 depends on WGI AR5 FGD.
801	67934	24	90	0	90	0	Table 24-3: The choice of reference periods is very important for assessing the statistical trends, so that such reference periods should be explicitly mentioned for each of citations, including Japan and Tibetan Plateau. Further, for Japan, the reference period 1898-2008, that is referred to in the cited literature (MEXT et al.(2009)), should be added to Table 24-3. (JAPAN)	Table 24-3 has been revised.
802	62774	24	91	0	0	0	Shinohara et al., 2009 in Table 24-5 is not shown in REFERENCES. (Motoki Nishimori, National Institute for Agro-Environmental Sciences)	Will be revised.
803	68140	24	91	0	0	0	In Table 24-5, "China (whole country)" should be changed to "China (mainland)", and "Taiwan (Mountains)" to "Taiwan, province of China (Mountains)". (CHINA)	Will be revised.
804	65339	24	91	0	92	0	Is it possible to do a summary of the impacts to climate change, including confidence levels in detection and attribution to climate change in each of the sub-regions? (Lourdes Tibig, The Manila Observatory)	Checked and revised. This is done where information is available.
805	81309	24	91	0	94	0	Table 24.5 and table 24.6 map figures can be added with this table to provide the geographical distribution of these changes. Table by itself is quite dense and will be difficult for the readers to follow. Some graphical way of representing some of the information in these tables could also be useful if a map figure is not possible. (Monalisa Chatterjee, IPCC WGII TSU)	Good suggestion but no appropriate maps can be found.
806	57874	24	93	0	0	0	Please see Table III in Nakaegawa et al. (2013) where projected changes in annual river discharges are summarized: Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 (Toshiyuki Nakaegawa, Meteorological Research Institute)	The information is added in the main text.
807	57876	24	93	0	0	0	Japan: A1B/AGCM should be MRI-AGCM3.2S; Taiwan: JAM/MRI TL959L60 should be MRI-AGCM3.2S. (Toshiyuki Nakaegawa, Meteorological Research Institute)	Will be revised.
808	58306	24	93	0	0	0	Please add reference of Tao and Zhang (2011) in table 24-6 (Juqi Duan, National Climate Center, Chinese Meteorological Administration)	Revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
809	68189	24	93	0	0	0	Table 24-6. The following line should be added (subtitles indicates column): Sub-Region. Global Countries/Regions (Area). 24 river basins around the world. Parameters: Projected Impact. Annual precipitation: Increase widely over most land areas. Annual evaporation: Increase as well. Annual total runoff: Tend to be less than the changes in precipitation or evaporation Scenario/GCM/Period (Base years). SRES A1B/MRI-AGCM3.1/2075-2099 (1979-2003) Reference. Nakaegawa et al. (2013) The corresponding reference is: T. Nakaegawa, A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs-overview. Hydrological Processes. 27 DOI:10.1002/hyp. 9831. (José Fábrega, Universidad Tecnológica de Panamá)	Will be revised.
810	80646	24	93	0	0	0	Add literature Tao and Zhang (2011) in Table 24-6 (Jiahua PAN, Chinese Academy of Social Sciences)	Cannot find o and Zhang (2011) because of lack of detailed information.
811	67935	24	93	0	93	0	Table 24-6: In the fourth column of third, 15th and 16th row, the names of GCMs are not appropriate. Both of "A1B/AGCM" for Japan (Tohoku and Hokuriku) and "JAM/MRI TL959L60" for China (Taiwan province) should be replaced with "MRI-AGCM3.2S". (JAPAN)	Will be revised.
812	57877	24	94	0	0	0	Please see also Nakaegawa et al. (2013) and Kitoh et al. (2008): * Nakaegawa, T., A. Kitoh, M. Hosaka. 2013: Discharge of major global rivers in the late 21st century climate projected with the high horizontal resolution MRI-AGCMs -overview-. Hydrological Processes. 27. DOI: 10.1002/hyp.9831 * 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)	Will be revised.
813	68141	24	94	0	0	0	In Table 24-6, "Asian Russia, China (Siberia and Tibet)" should be changed to "Asian Russia (Siberia), China (Tibet)". (CHINA)	Revised.
814	74997	24	95	0	0	0	Table 24-7 Comment: There should be a more explicit consideration of both the potential role of GMO's for plants and animals, as well as the need to rescue older varieties that are naturally adapted. (UNITED STATES OF AMERICA)	No data on this in Asia
815	74998	24	95	0	0	0	Table 24-7 Comment: This is a list of some options described in the literature, but not an exhaustive one. Also, some of the options may be useful in other countries or parts of the region than those in which they are described from the literature. Please clarify. (UNITED STATES OF AMERICA)	Title revised to "Examples..."
816	74999	24	95	0	0	0	Table 24-7 Comment: This table does not (but should) include a discussion of the growing importance of regional agreements and logistical arrangements to manage the impacts of the increasingly frequent and severe transient shortages in key foodgrains such as rice anticipated as consequences of climate change. Experience in Asia during the 2007-2008 rice crisis demonstrated that international trading systems are fragile to even modest changes in supply-demand conditions; and even to transient shortages in information concerning available and projected supplies. A number of potential approaches are described in R. M. Briones (2011): Regional Cooperation for Food Security: The Case of Emergency Rice reserves in the ASEAN Plus Three. ADB Sustainable Development Working papers, No. 18. The more general point that the authors are encouraged to include is that adaptation should not and cannot be limited to on-farm interventions. (UNITED STATES OF AMERICA)	Will consider this
817	81310	24	95	0	0	0	Tables 24.7 and 24.8 could be combined into a synthetic table on adaptation options. If other sectors such as freshwater management can be added then it would be even better. (Monalisa Chatterjee, IPCC WGII TSU)	Not possible for other sectors to have the same
818	83615	24	95	0	0	0	Table 24-7. Use of the word "recommended" in the header for the table could be interpreted as prescriptive, and this word would preferably be avoided. (Katharine Mach, IPCC WGII TSU)	Agree. Text revised.
819	56911	24	96	0	0	0	Title of Table 24.9. is not appropriate. Make it descriptive of the content of the Table. (Etienne Berthier, LEGOS)	Revised.
820	68142	24	96	0	0	0	In Table 24-8, "Tibet" should be changed to "Tibet, China". (CHINA)	Revised.
821	75000	24	96	0	0	0	Table 24-8 Comment: Remittances are critical for the economy of some Asian countries and should be included in the table or elsewhere in the text. (UNITED STATES OF AMERICA)	Revised.
822	75001	24	96	0	0	0	Table 24-9 Comment: It would seem more informative to the reader for this table (and its title) to summarize the percent change in glacier area. (UNITED STATES OF AMERICA)	Revised.
823	78590	24	96	0	0	0	Table 24-9: As with Tables 24-2 to 24-6 (These tables simply list the results of a literature survey for climate change and Asia. There is no assessment included, e.g. in terms of interpreting collections of local studies covering various periods in a regional context for the generic "recent past", an indication of confidence or likelihood in the existence of trends, their detection, and/or their attribution to climate change, the degree of agreement e.g. across models and scenarios. This is the sort of information needed in this assessment chapter.) (Dáithí Stone, University of Cape Town)	Revised.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
824	81451	24	96	0	0	0	Table 24-9: Author team may wish to present this data in a figure. (Yuka Estrada, IPCC WGII TSU)	Revised.
825	83616	24	96	0	0	0	Table 24-8. Use of the word "recommended" in the header for the table could be interpreted as prescriptive, and this word would probably be avoided. Additionally, where "assisted migration" is listed in the table, it should be clarified--assist migration of people versus ecosystems? (Katharine Mach, IPCC WGII TSU)	Revised.
826	56912	24	97	0	0	0	Figure 24-1. The figure has a poor quality and it should also show the geographic limit of the 6 different sub-regions that are consistently used elsewhere in the chapter (Etienne Berthier, LEGOS)	Figure 24-1 has been revised to improve its quality.
827	57480	24	97	0	0	0	Figure 24-1 is not clear enough to see the details and it is nice to increase its size. (So Kazama, Tohoku University)	Revised.
828	68143	24	97	0	0	0	Figure 24-1 contains a world map with national borders. It is suggested to use a map without borders to avoid unnecessary disputes. (CHINA)	United Nations approved borders are used for this figure.
829	56913	24	98	0	0	0	Figure 24-2. The source of the gridded data used in this figure was not 100% clear to me. Indeed, it is stated "For the CRU observations...", does it mean that there are other source of data than CRU? Brighter color could be used. (Etienne Berthier, LEGOS)	Revised.
830	81311	24	98	0	0	0	Figure 24.2 should be integrated with the physical climate discussions in the chapter. (Monalisa Chatterjee, IPCC WGII TSU)	Revised.
831	68144	24	99	0	0	0	Figure 24-3 contains a world map with national borders. It is suggested to use a map without borders to avoid unnecessary disputes. (CHINA)	The author team has removed the national borders as requested by the commentator.
832	81450	24	99	0	101	0	Figure 24-1 and 24-3: The author team should further develop the caption for these figures to provide guides for the reader in interpreting the information illustrated. The author team should include a sentence in the figure caption explaining the main message of each figure. (Yuka Estrada, IPCC WGII TSU)	For Figure 24-3, the author team intends to show the geographical boundary and a few major cities of the Lower Mekong Basin. Therefore, the caption of the Figure will be revised from "Map of Lower Mekong Basin" to "Geographical boundary and major cities of the LMB (MRC, 2009)".
833	56914	24	100	0	0	0	Figure 24-4. The countries boundaries are difficult to visualize. The authors should also indicate the name of the mountain range used in the text. Akshirazk Massif, inner / Central Tien Shan, northern and western Tien Shan, Eastern Tien Shan... (Etienne Berthier, LEGOS)	Revised.
834	68145	24	100	0	0	0	Figure 24-4 contains a world map with national borders. It is suggested to use a map without borders to avoid unnecessary disputes. (CHINA)	Revised.
835	83617	24	100	0	0	0	Figure 24-4. Can any publications be cited to support this figure? (Katharine Mach, IPCC WGII TSU)	Revised.
836	62331	24	101	0	0	0	Figure 24-5 is not easy to understand despite looking impressive. I would prefer a time series of maps (at least three should be possible) showing the size of the Aral Sea in 1960, then around 1980 (?), then in 2012. It would be much easier for the reader to compare readily. (Patrick Nunn, University of New England)	Revised.
837	68146	24	101	0	0	0	Figure 24-5 contains a world map with national borders. It is suggested to use a map without borders to avoid unnecessary disputes. (CHINA)	Revised.