

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
1	36037	26	0	0	0	0	Chapter is inconsistent and would benefit greatly from a general editing. It is pretty easy to see where one author's section ended and another begins due to the inconsistencies in language. (Michael Brewer, NOAA)	We are making the chapter more internally consistent.
2	36038	26	0	0	0	0	Need consistency in naming. Ex. United States vs US vs U.S. vs USA. Same for North America throughout the chapter. (Michael Brewer, NOAA)	We already addressed some of these, but think this can be addressed in the final draft
3	36040	26	0	0	0	0	Need consistency with placing of parentheses for citations throughout document. (Michael Brewer, NOAA)	We anticipate the TSU will edit the chapter
4	36041	26	0	0	0	0	Throughout document, some citations are given in their long form, including titles and author initials. Needs consistent fix. (ex. Ch26, page 10, lines 32-33. (Michael Brewer, NOAA)	We agree and will do what we can to shorten the citations
5	38278	26	0	0	0	0	Looking at figures and tables made for the different chapters, there are similarities (e.g. magnitude of temperature and rainfall changes, impacts on ecosystems...) between chapters because they have they deliver similar information, but for different regions. (Guillaume Simioni, INRA)	We alone in Ch 26 cannot address this
6	38279	26	0	0	0	0	Having a similar layouts (i.e. same styles and legends, symbols, columns, colors, ...) across the chapters, would help the comparison between regions. Not sure it is important, especially if the readership is different from one chapter to another. It's just a suggestion. (Guillaume Simioni, INRA)	We alone in Ch 26 cannot address this
7	38583	26	0	0	0	0	See attached file "Infrastructure-Wright.docx" for comments relevant to chapter. (Richard Wright, Retired, U.S. National Institute of Standards and Technology)	We do not have attachments
8	41045	26	0	0	0	0	Nowhere in this chapter do I recall seeing mention of the loss of of glaciers and icefields which play such an important role in regulating water discharge during periods of low precipitation. As an example predictions of loss of all glaciers in Glacier National Park Montana within the coming century is often used to illustrate the point http://nrmsc.usgs.gov/research/glacier_retreat.htm . Likewise glacier loss in the Canadian Rockies is projected to impact discharge patterns to both the east and west and towards the Arctic via the Mackenzie..one possible reference http://pubs.cwra.org/doi/abs/10.4296/cwrj3602823 . These watersheds impact a large part of the continent. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We refer to changes in snow pack in section 26.2.2.1 an to water related impact in section 2.4]
9	41212	26	0	0	0	0	There appears to be a bias towards the extent to which the US and Mexican literature has been covered in this chapter especially in sections 26.4 and 26.6.4. Some sections present an assessment of associated adaptation strategies or responses while others do not (e.g. 26.8, 26.9, 26.11). To provide a balanced review this inconsistency will need to be resolved. I think readers will expect to see a list of key vulnerabilities summarized for each country, presented in a table perhaps. If this is intended to be covered by examples given then increased attention to the Canadian context is necessary. (Susan Evans, WWF-Canada)	We respectively disagree. This is a regional assessment, not necessarily national scale. Indeed we are focusing on the integration of assessment of vulnerability and adaptation across the countries in North America
10	42055	26	0	0	0	0	General comment: this chapter seems to have been done as a rush and trying to put many things in sections.Very difficult to read. The references are US biased and many points are either too much integarted so it is difficult to read and in other places, not enough details. E.g. I am surprised not to see data and other information and references coming from D.S. Lemmen, F.J. Warren, J. Lacroix and E. Bush (Eds.). From Impacts to Adaptation: Canada in a Changing Climate 2007. Government of Canada, Ottawa, ON. (Liette Vasseur, Brock University)	In the second draft we are working on more careful writing and integration. We are comparing climate impacts, vulnerabilities and adaptations across and within countries in key sectors. We are examining national assessments from all three countries
11	42064	26	0	0	0	0	I have to admit that I didn't put too many comments because I felt it was a very rough draft, sometime very difficult to follow. Some of the sections should be grouped to make them more readable and less repetitive. (Liette Vasseur, Brock University)	We improved the presentation: we use a similar structure across sections focusing on observed and projected impacts, vulnerabilities and risks as well as adaptation practices and options in key sectors of the three countries.
12	42085	26	0	0	0	0	Some effort should be made to provide the confidence level of the statements made in the chapter. There are hardly any statement that provide the corresponding level of confidence. This is not consistent with how the information is presented in other chapters. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Confidence levels are only needed for Executive Summary statements
13	42086	26	0	0	0	0	When referring to GCM simulations the full and correct name (and version) of the model should be mentioned. Currently there are many parts of the document where models cannot be identified (e.g. UKHadley model does not exist) (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We will attempt to do so or at least be sure to include the citation for the model
14	42087	26	0	0	0	0	Although I am aware that this is a first order draft, the way to present references within the text is really confusing, sometimes affecting the correct interpretation of a sentence. Furthermore it would have been useful to have all references and not generic ones like Anonymous. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We improved presentation of the citations, and will make sure it is even better in the last draft.
15	44563	26	0	0	0	0	Section 26.2.2: Temperature and precipitation observations and projections – It is pleasing to see good cross-referencing with relevant WGI AR5 chapters here. In regards to observed and projected changes in extremes, and changes in cyclones, reference to chapter 3 of the SREX should be made (Thomas Stocker, IPCC WGI TSU)	We cross reference WG I
16	44564	26	0	0	0	0	FAQ 26.2: FAQ2 "Will changing patterns of precipitation be experienced in NA and if so, in what ways?". We have serious concern with the focus of this FAQ as the assessment needed to answer such a question is primarily within WG and the evidence future precipitation changes in the regions is covered in the WGI contribution to AR5. With the current focus of this FAQ, there is a serious risk here of cross-working group inconsistency and overlap that is best avoided. We thus suggest this FAQ to focus on the consequences of this for exposure, vulnerability, impacts, etc. (Thomas Stocker, IPCC WGI TSU)	Our chapter has a well published and respected climate scientist. With respect we disagree

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17	44933	26	0	0	0	0	The chapter has progressed significantly from the ZOD. While much improved, the logic behind the current structure remains unclear, as is the alignment to the outline approved at IPCC-31. Recognizing that there is no ideal structure for the chapter, it would be useful to add a short paragraph to the Introduction explaining why it is organized the way it is. Also recognizing that it is impossible for the report to be comprehensive, it would be useful if individual sections clearly state why they focus on some issues (e.g. why is ecosystems and biodiversity focused on forests and coasts at the exclusion of other climatically-sensitive ecosystems). Mixing of observed and projected impacts in some sections compromises the logic. (Don Lemmen, Canada National Study)	We describe the structure of the chapter in the introduction (section 26.1), and give the reason why attempt to take a more integrative and innovative approach that among other things, contrasts climate impacts, vulnerabilities and adaptations across and within the three countries in key sectors; explores the factors and processes associated with differences and commonalities in vulnerability, risk and adaptation between urban and rural settlements; and illustrate and contrast the nuanced challenges and opportunities adaptation entails at the city, the state and the national level.
18	44934	26	0	0	0	0	For the most part the chapter reads as more of a literature review than an assessment, and there is no clear narrative of key ideas. Hopefully that narrative will emerge in the SOD, guided in part by the content of the Concluding Remarks section. There are still large parts of the FOD where it reads like a random listing of findings from individual papers, rather than contributing to higher level conclusions that you can be meaningfully framed with levels of confidence. Rarely is it evident what volume of evidence exists that is supportive of any given conclusion. Many statements are lacking supporting references. (Don Lemmen, Canada National Study)	We have organized the chapter among key themes. To be sure, there are many topics and a lot of literature to cover. It is difficult to write a narrative per se because to do so would mean focusing on a limited number of impacts.
19	44935	26	0	0	0	0	The regional balance, particularly at the country level, has improved in this draft, but further effort could improve this further. For example, the majority of the material related to Canada is from studies on the Prairies and BC, with some references to the Great Lakes. However there are very few references to Atlantic Canada or Quebec, the latter being particularly surprising. Lemmen et al. (2008) provides a good starting for broader Canadian literature. The chapter, particularly sections dealing with implementation of adaptation, could be strengthened by incorporation of more grey literature, realizing this places additional burden on the authors to thoroughly assess the quality of that information. Non-english literature should NOT be excluded from the chapter. (Don Lemmen, Canada National Study)	We have attempted to provide more geographic balance
20	44936	26	0	0	0	0	While the chapter appropriately places emphasis on primary information sources, the lack of reference to national / subnational assessments (e.g. USGCRP, 2009, 2013?; Lemmen et al., 2008) is surprising as those reports contain original conclusions that are not contained in any single primary reference. This is particularly true with respect to integrative findings, where conclusions from these other assessment reports regarding, for example, the importance and ubiquity of water resource issues; infrastructure vulnerability; the importance of risk assessment; and the vulnerability of resource-dependent and Aboriginal communities all seem to align well with the findings of this chapter. (Don Lemmen, Canada National Study)	We have included national assessments in our citations.
21	45907	26	0	0	0	0	I would like to congratulate the authors for preparing FOD with limited CMIP5 results. As more CMIP5 results (publications) have become available recently (http://cmip.llnl.gov/cmip5/publications/allpublications), these results should be included in the SOD. Particularly the main question: how does our future climate choice (e.g. RCP8.5 versus RCP4.5) will make difference for North America Climate projections. So that policy makers can see clear advantages of one choice over other. For example, in a recently submitted paper: Kumar S. , J. Kinter III P. A. Dirmeyer Z. Pan J. Adams 2012 : " Multi-decadal Climate Variability and the "Warming Hole" in North America – results from CMIP5 20th and 21st Century Climate Simulations " , Journal of Climate , SUBMITTED, ftp://cola.gmu.edu/pub/sanjiv/JCLI-S-12-00705.pdf we show that in RCP8.5 scenarios the "warming hole" will completely disappear, whereas in RCP4.5 scenario the "warming hole" will re-appear in the second half of 21st century, consistent with CO2 stabilization) . Also, this should be added in FAQ: how does climate choice will make a difference in future climate. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We include CMIP 5 data
22	47680	26	0	0	0	0	Why is there less attention in the North American chapter devoted to terrestrial impacts? There is a lot of research centered on modeling potential biodiversity impact across North America using many approaches (chapter 4 has many citations and this encompasses both species distribution models, and process based modeling), but these data are not presented as part of the chapter (as compared to chapter 23 where data from European studies are presented in a syntheses section. I feel this give Chapter 23 a solid grounding of the significances of the potential impacts. This would go nicely with the wonderful evidence of contemporary change observed in North America. (Stephen Matthews, Ohio State University)	We are addressing potential biodiversity impacts across North America. We are also cross referencing with ch 4. We address ecosystems services. We also address: CC impacts on forest growth, drought risk, increased CO2 and forest growing, changing phenology, tree crown defoliation, tree mortality, attack by beetles.
23	47893	26	0	0	0	0	The chapter is difficult because of the high contrasts between Mexico and US/Canada in so many ways. You've done quite well, but I encourage additional attention to balance and avoid making generalizations for one part of NA that does not pertain to the whole of NA. (Louis Iverson, US Forest Service)	We appreciate the comment
24	49449	26	0	0	0	0	When analyzing adaptive capacity—defined as the ability to adjust, take advantage of opportunities, or cope with consequences (IPCC, 2007)—consider that its relationship with vulnerability is not linear. Some experiences, for example Hurricane Katrina in the USA, provide evidence that countries with high adaptive capacity can have high level of vulnerability as a result of 'adaptation deficit' within their territories. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We have attempted to identify different levels of adaptive capacity and vulnerability
25	49546	26	0	0	0	0	The chapter needs a better balance among the lessons learned, sensibilities, adaptive capacity, and climate change impacts in USA, Canada and Mexico. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We have tried for a better balance
26	49547	26	0	0	0	0	More discussion is needed to clearly point out lessons learned, adaptation strategies already implemented, and those actions that still require to be developed by USA, Canada, and Mexico (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We have identified to the extent space allows, adaptation strategies implemented and lessons learned. We have not engaged in policy prescription on what needs to be implemented.

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27	49548	26	0	0	0	0	I wonder if key literature written in Spanish that provide evidence of the process of adaptation at local, regional and national levels has been included in this chapter (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Yes we have reports in Spanish on adaptation in Mexico. We also held a meeting in Mexico in May 2012 to get input from Mexican scholars on vulnerability, risk and adaptation in key economic sectors.
28	49549	26	0	0	0	0	It is still necessary to identify how the different experiences in USA, Canada, and Mexico can be compared or analyzed in order to improve the cohesion and coherence of the document and the sections (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We have attempted to provide such contrasts
29	49550	26	0	0	0	0	Perhaps analyzing three emblematic cases of each country in terms of adaptation capacity, climate-related hazards, and historical and current responses could be an interesting exercise that provide evidence of how adaptation has been undertaken by institutions and society (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We are including a case study contrasting adaptation in Toronto, New York City, and Mexico City
30	49551	26	0	0	0	0	I have read the different versions of the North America Chapter in previous editions of the IPCC and was wondering if it is not needed a lead author from Canada since there are from Mexico and USA. Leading authors from each country analyzed could provide expertise of the different experiences, adaptation strategies undertaken, and research developed or underway. A potential candidate could be Linda Mortsch, who can strengthen the Canadian perspective in this chapter as she did in the previous report. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Linda Mortsch is review editor - and we sure she appreciates the compliment!
31	51535	26	0	0	0	0	1) Overall -- In preparing the 2nd-order draft, the chapter team should prioritize making each section of the chapter a polished, comprehensive treatment of topics considered. From these sections, the chapter team is then encouraged to maximize the utility of its findings, ensuring that they are robust, compelling, and nuanced. Themes to consider informing in constructing findings include decisionmaking under uncertainty, risks of extreme events and disasters, avoided damages, and limits to adaptation. To these ends, the chapter team has prepared a solid 1st-order draft. In effort to inform further chapter development, I provide general and specific comments below. (Katharine Mach, IPCC WGII TSU)	We attempted to do so
32	51536	26	0	0	0	0	2) Highlighting key findings -- In developing the 2nd-order draft, the chapter team should aim to present key findings throughout the sections of the chapter, using calibrated uncertainty language to characterize its degree of certainty in these conclusions. In this way, a reader of the chapter will be able to understand how the literature reviews and syntheses in the chapter sections--the traceable accounts--support the conclusions of the chapter, especially those presented in the executive summary. Additionally, identification of key findings throughout the chapter will robustly support meaningfully specific characterization of key trends and determinants in the context of the executive summary. (Katharine Mach, IPCC WGII TSU)	We attempted to do so
33	51537	26	0	0	0	0	3) Usage conventions for calibrated uncertainty language -- Where used, calibrated uncertainty language, including summary terms for evidence and agreement, levels of confidence, and likelihood terms, should be italicized. In addition to incorporating these terms directly into sentences, the author team may find it effective to present them parenthetically at the end of sentences or clauses. Casual usage of the reserved uncertainty terms should be avoided. (Katharine Mach, IPCC WGII TSU)	We are attempting to do so
34	51538	26	0	0	0	0	4) Specificity of described observations and projections -- The author team is encouraged to continue presenting observed and projected impacts and trends with high levels of specificity and conciseness. In this vein, the author team should continue considering the following approach in characterizing examples and outcomes in the chapter: indicating relevant time periods, geographic areas, etc. for observations; indicating the relevant time frames, climate/socio-economic scenarios, geographic regions, or other assumptions for projections; and characterizing key driving factors where ranges of outcomes are presented. (Katharine Mach, IPCC WGII TSU)	We are trying to be specific on observations
35	51539	26	0	0	0	0	5) Conditional constructions -- The chapter team should consider for the usage of conditional constructions that explicitly separate physical changes from corresponding conditional impacts. The chapter team can then separately characterize the degree of certainty for a physical change (drawing from assessment findings in the working group 1 contribution, for example) and the corresponding conditional outcome where appropriate. (Katharine Mach, IPCC WGII TSU)	We attempted to do so
36	51540	26	0	0	0	0	6) Cross-referencing of other chapters -- Some specific opportunities for cross-referencing the findings of other chapters in the working group 2 contribution, as well as the working group 1 contribution, to the 5th assessment report, have been flagged in review comments throughout the chapter. (Katharine Mach, IPCC WGII TSU)	Agree and will attempt to do so
37	51541	26	0	0	0	0	7) Plenary Approved Outline -- In further developing the chapter, the author team should ensure that all topics on the plenary approved outline are addressed, including the last 3 bullets listed under "chapter structure (22-30)." Additionally, for some sections of the chapter, the author team may wish to further consider ensuring that the CONTEXT topics have been fully addressed, potentially adding further subsections in some parts of the chapter to clarify consideration of CONTEXT. The author team should also consider further inclusion of material on the physical science of climate change, at least through clear cross-referencing of findings developed in the working group 1 contribution, Chapter 21 of the working group 2 contribution, etc. (Katharine Mach, IPCC WGII TSU)	We have attempted to this. Also note the TSU informed us that our FOD was too long.
38	51542	26	0	0	0	0	8) Figures -- Figures, as well as tables, represent an important and effective vehicle for clear communication of assessment and corresponding key findings. The chapter team is very much encouraged to continue developing figures and tables that complement assessment already present in the chapter text. The author team might especially consider further opportunities for developing figures that are data-rich or synthetic or that otherwise add value to the chapter's assessment. (Katharine Mach, IPCC WGII TSU)	We included more integrative Figures and intend to even go further for the final draft.
39	51543	26	0	0	0	0	9) Formatting of citations -- By the 2nd-order draft, the author team should ensure that all formatting of citations is correct, following the style guide for authors. Attention should be paid both to citations in the chapter text and to the corresponding entries in the chapter reference list. (Katharine Mach, IPCC WGII TSU)	We have worked with the TSU on citation formatting

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40	51544	26	0	0	0	0	10) Coordination across the Working Group 2 contribution -- In developing the next draft of the chapter, the author team should consider treatment of topics not only in this chapter, but also across the report as a whole. For each topic, the chapter team should ensure that treatment here is reduced to the essence of what is relevant to the chapter, with cross-references made to other chapters as appropriate, also minimizing overlap in this way. (Katharine Mach, IPCC WGII TSU)	Are trying to focus on North America specific aspects
41	51545	26	0	0	0	0	11) Harmonization with the Working Group 1 contribution to the AR5 -- At this stage of chapter drafting, the author team should carefully consider the working group 1 contribution. Wherever climate, climate change, climate variability, and extreme events are discussed, the chapter team should ensure that their treatment is harmonized with the assessment findings of working group 1. (Katharine Mach, IPCC WGII TSU)	Dr. Diffenbaugh is coordinating with WG I and WG II scientists
42	52149	26	0	0	0	0	This chapter really needs a summary table of key impacts for various regions. Right now it is too much a rather lengthy compilation of a range of topics (much like the IPCC SAR), but it is really hard to figure out what is important in each part of North America, and this needs to be fixed (same thing happened with SAR when a special report on regional impacts had to be prepared). I have used a table format summarizing impacts from the US National Assessment that had megaregions on the vertical axis and then had three columns, once each for impacts that affect: (a) the environment; (b) society and the economy; and (c) people's lives. It seems to me that if you then pair this with the types of boxes that you have in the chapter, describing the major linked impacts in the various regions, that the chapter could be very helpful and useful to readers, as compared to now, when it is a real slog to get through it all and figure out what matters where. You can see my version of the chart at MacCracken, M. C., 2001: Climate Change and the US National Assessment, pp. 40-43 in McGraw Hill Yearbook of Science and Technology 2002, McGraw-Hill, New York, 457 pp. (Michael MacCracken, Climate Institute)	We think it is sufficient to sum up major findings in the Executive Summary
43	52150	26	0	0	0	0	On the set of regions (well, regions within the North America region), I particularly liked the one on the Mexican border region. I would strongly suggest also having ones on the Great Lakes, the Great Plains, the Rocky Mountains, northeastern North America, etc. Readers really want to know what is going to happen to them--so pick a major issue in each of these regions and focus a box on that, and then in last couple of sentences indicate other key issues in that region. (Michael MacCracken, Climate Institute)	Because of space constraints, we could only use the Us-Mexico border region as one of our case studies
44	52151	26	0	0	0	0	There is no indication at all (at least that I could find) that what will happen elsewhere will affect North America, and that what happens in North America could well happen elsewhere. I would like to suggest doing this in Section 26.11.3, where the market aspect of each of these issues could be usefully discussed. So, if climate change impacts agriculture elsewhere, that will affect the grain market and so the Great Plains; and similarly for other areas. Thus, I would really suggest building up the indicated section--global coupling does really matter. (Michael MacCracken, Climate Institute)	We mention the importance of impacts of North American agriculture on global markets. We are not aware of literature of how change elsewhere affects North America, except in agriculture
45	52152	26	0	0	0	0	The chapter has so many references included in the text in various locations that it is really hard to understand what the point is. It is not at all helpful to the reader to suggest they have to go to some reference to understand or figure out what the point is. The text needs to make the point, and then have a reference or two. And if a reference applies to several points in a paragraph, put it at the end of the paragraph, not after each sentence. The worst paragraph in this regard seemed to me to be the first paragraph of section 25.11.1.2. Now, I know this is made worse by not using "et al." which will presumably be done in the final version, but it is absolutely essential that a reader should be told the point and not have to go read a reference to get the point; references are where one would go to find out the justification for the point, not the point itself. (Michael MacCracken, Climate Institute)	Good point we are already working on and we can be sure to address in final version
46	52153	26	0	0	0	0	Studies on climate change impacts in California are indicating that the finer the scale one looks at and evaluates impacts, the greater the impacts (i.e., monetary value of the impacts, etc.); I am sorry that I don't have the reference for this point. This chapter does have both general examples and relatively specific points, which is very helpful, but I think a more general comment needs to be made that the closer one looks, the more the complications and costs. This is another reason that I suggested in a separate general comment that it will be essential to have a summary chart of key points in each region. (Michael MacCracken, Climate Institute)	We are trying to address impacts at different scales. With limited space, it is difficult to delve in high resolution. To help address more local impacts, we have drafted the box on the Mexico-US border and on adaptation in three cities.
47	52161	26	0	0	0	0	Text needs a good bit of editorial smoothing--I will assume that will get done. (Michael MacCracken, Climate Institute)	to be addressed in the final chapter draft
48	52164	26	0	0	0	0	Right at the start of the chapter, the countries included in North America need to be defined. This is the first time that Mexico is being included in the North America chapter, and this needs to be made clear and explained about why these 3 countries, and no others, are being treated together and why Mexico is not included in Chapter 27. Fine to make the change, but just has to be explained. (Michael MacCracken, Climate Institute)	OK
49	53586	26	0	0	0	0	When presenting projected impacts, please include the time frame, scenario, and other assumptions. This is done in most instances but is missing in a few, including in the Executive Summary. (Kristie L. Ebi, IPCC WGII TSU)	Will try to do so where appropriate
50	53587	26	0	0	0	0	Please check consistency of statements with those in the relevant sectoral chapters, such as food systems, coastal zones, and human health. (Kristie L. Ebi, IPCC WGII TSU)	Will try to do so where appropriate

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51	54535	26	0	0	0	0	GENERAL COMMENTS: I would like to thank the authors for their work on the FOD. When considering the expert review comments received on your chapter and the next round of revisions, I suggest several overall priorities. (1) Keep in mind that the preparation of the SOD is the time to ensure that each section of the chapter presents a comprehensive treatment of relevant literature, and that the Executive Summary presents findings that capture the key insights that arise from the chapter assessment. (2) This is also the time to focus on distilling the chapter text, not just fine-tuning wording but editing with a critical eye to improving quality by making discussions succinct and synthetic, while still being comprehensive. (3) Cross-chapter coordination is also important at this stage, as it should now be possible to identify topics that overlap with other chapters and to coordinate with other chapter teams to minimize that overlap. (4) Cross-Working Group coordination is important as well, and relevant chapter sections should cross-reference chapters from the other Working Groups, particularly in the case of statements about changes in mean or extreme climate conditions that are assessed in the contribution of Working Group I. (5) Continue to look for opportunities for the creation of figures that synthesize across results from the literature. (Michael Mastrandrea, IPCC WGII TSU)	We are working to implement these comments
52	54536	26	0	0	0	0	EXECUTIVE SUMMARY: Thank you for developing an initial draft of an Executive Summary for the FOD. For the SOD, the author team should focus on constructing assessment findings of the form employed by other chapters. Each paragraph should present an assessment finding in bold with calibrated uncertainty language, followed by additional nonbold sentences providing further explanation and context, as well as line of sight (a draft of which you already have provided) to supporting chapter sections where the traceable account appears. In the next round of revisions, I also suggest considering ways to make the Executive Summary findings more specific. Currently, the findings tend to the general, providing indications of directions of change when more specific/quantitative information is often presented in the corresponding chapter text and sometimes providing less information about sub-regional differences. Please consider opportunities to include further detail while still providing clear findings. Some findings also include information about adaptation options and limits along with impacts, but this could be taken further to integrate the information available regarding adaptation. Likewise, to the extent it is available, information about how impacts vary across emissions scenarios would be useful to include where there are meaningful variations identified. (Michael Mastrandrea, IPCC WGII TSU)	We are working to address these comments, whenever possible
53	54537	26	0	0	0	0	TRACEABLE ACCOUNTS: The author team has made a good start to providing traceable accounts for assessment findings and highlighting the location of those traceable accounts in the Executive Summary. In general, I would recommend the author team continue to strengthen the linkage between support in the chapter text and assessment findings in the Executive Summary. In this context, I suggest providing some explanation of the calibrated uncertainty language used in the Executive Summary (once it is fully developed) in the corresponding chapter section(s) where the traceable account appears for each finding, for cases where this is not done already. For example, in situations where confidence is not high, it would be useful to understand why the author team has made this judgment (e.g., is there a lack of robust evidence?, are there multiple perspectives in the literature?). In situations where confidence is high or likelihood language is employed, what is the evidence that forms the basis for these assignments? Succinct descriptions in the chapter text of this type will both highlight the basis for ES findings and help explain the author team's assessment of the literature. We in the TSU are available to discuss these issues as well if that would be of use. (Michael Mastrandrea, IPCC WGII TSU)	We will attempt to do so.
54	41019	26	2	16	2	18	It may be worth considering inserting one or a couple of figures that illustrate the diversity of the Ecological Regions of North America. There are several versions (including some showing the marine ecoregions but the CEC.org version of terrestrial regions will provide a useful starting point. They are all at http://www.cec.org/Page.asp?PageID=924&ContentID=2336 Obviously each nation also has more detailed mapping. Example in Canada there are a number of sites with versions of this http://geogratis.cgdi.gc.ca/Ecosystem/1_ecosys/ecoreg.htm , and the one I generally use can be access from the following site by downloading Canada (Ecozones and Ecoregions) 1:7.5M http://sis.agr.gc.ca/cansis/nsdb/ecostrat/printed_maps.html I would recommend including such a map in each regional chapter. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Unfortunately, we do not have sufficient space to insert such figures
55	41020	26	2	31	0	0	SLR - I assume Sea Level Rise - not a camera. Glossary- could I suggest a glosary of abreviations (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	This will be in the Glossary
56	51546	26	3	4	0	0	Executive Summary -- In subsequent work on the executive summary, there are several aspects of development for the author team to consider further: 1st, it would be preferable to present the paragraphs of the executive summary with a key finding in bold text followed by explanatory non-bold text. 2nd, for each key finding and wherever else relevant, the author team should use calibrated uncertainty language to characterize its degree of certainty in these conclusions, especially considering summary terms for evidence and agreement and levels of confidence. 3rd, throughout the executive summary, the author team may wish to enhance specificity, indicating for key trends or determinants more specifically where, when, why (what specific drivers are relevant) and thereby illustrating with nuance where the current state of understanding lies. (Katharine Mach, IPCC WGII TSU)	We have inserted confidence statements
57	53588	26	3	4	0	0	The Executive Summary should have confidence statements, and for projections should include where, when and under what assumptions. (Kristie L. Ebi, IPCC WGII TSU)	We have inserted confidence statements
58	53589	26	3	4	0	0	You might look at the Executive Summary of the Australasia chapter for how they categorized projected impacts into those that are probably unavoidable and those that may be avoided with adaptation/mitigation. (Kristie L. Ebi, IPCC WGII TSU)	We have read the Australasia ES and the ES of other chapters

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
59	44937	26	3	4	4	9	Given the limitations in the FOD it is not possible to do a meaningful review of the Executive Summary, but many of the key finding seem to mirror those of Chapter 14 of the AR4 without a clear indication of how understanding has advanced. For the SOD, a format that includes clear conclusions associated with confidence statements, along with brief supporting text, is desirable (such as was used in the AR4). In assigning confidence, alignment with conclusions of national / subnational assessments (e.g. USGCRP, 2009; Lemmen et al., 2008) might be an additional factor to consider. (Don Lemmen, Canada National Study)	We are revising the ES
60	46731	26	3	4	4	9	Executive summaryL This section mostly deals with what is happening in the U.S. and Mexico. There is relatively little attention given to Canada. I think it is worth mentioning here that we are losing ice and permafrost from that region at a rapid rate. I realize that this is also mentioned in chapter 28, but a nod to that would be good here. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We believe the findings are balanced and include significant discussion on Canada. As noted, we feel the literature on Mexico is more limited relative to the US and Canada
61	45908	26	3	6	3	6	Some recognition of Natural Climate variability is needed here. For example many studies (Pan et al. 4004; Wang et al. 2009; Meehl et al 2012; Kumar et al.(a) submitted to Journal of Climate) have shown that central/eastern USA shows a negative temperature trend. At regional scale, natural climate variability signal compete with the global warming signal, and many times it is natural climate variability signal which dominates over global warming signal (e.g. warming hole). Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We address strength of signal relative to background variability
62	51547	26	3	6	3	12	While maintaining a concise presentation, the author team might consider further ways to indicate more specifically the magnitude and nature of changes that have already occurred and that are projected for the future. Additionally, if the term "very likely" on line 10 is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized; casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Comment addressed
63	54538	26	3	6	3	12	Please specify these statement further. Over what timeframe have warming and other changes been observed? Can observed changes in means and extremes be quantified? What timeframe pertains to the projections mentioned? In addition, currently these statements can be interpreted as applying homogenously to all of North America, whereas important sub-regional variation in both observed and projected changes is discussed in the chapter text. Please ensure that these statements communicate the available detail and do not overgeneralize. Please also ensure that the traceability of the assignment of "very likely" to a range of projected impacts is clear, as this is a fairly strong probabilistic statement that requires a clear evidentiary base. Finally, please check the line of sight references to chapter sections, as 26.1.1 does not exist in the current draft. (Michael Mastrandrea, IPCC WGII TSU)	The ES has been rewritten and only when possible addressed these concerns
64	53590	26	3	7	3	7	What stresses? (Kristie L. Ebi, IPCC WGII TSU)	Statement has been removed
65	52154	26	3	7	3	8	This sentence does not make to me. What are "these stresses"--the first sentence seems to refer to stressors rather than stresses. (Michael MacCracken, Climate Institute)	Statement has been removed
66	42088	26	3	8	0	10	As the sentence is written, it could imply that changes in extreme events have lead to larger economic losses. This would be in contradiction with other part of the report such as chapter 18 on the detection and attribution of climate change impacts. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Statement has been removed
67	52155	26	3	9	3	9	Are there examples of pests disrupting human settlements "across North America"--or wildfires? (Michael MacCracken, Climate Institute)	Executive summary has been revised and this statement is no longer there
68	52156	26	3	9	3	10	Yes, but what matters is whether there are trends underway--not what the present situation is. (Michael MacCracken, Climate Institute)	Correct, but the ES has been rewritten

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
69	45909	26	3	10	3	12	Climate projections should be put in the contest of observed uncertainty in 20th century CMIP5 climate simulations. For example, at regional scale multi-model mean does not provide reliable results in 20th century climate simulations and in most cases multi-model mean provides a much conservative estimate of precipitation or temperature trend (see Kumar et al. (a) and (b) submitted to Journal of Climate). Because climate change signal gets mixed with natural climate variability signal, which rarely synchronize across different climate simulations. For example in Kumar et al. (a) we show "..... temperature trends, often associated with global warming are, not a monotonically increasing or decreasing features, at least at regional scale, the greenhouse gas emission-based global warming affects the regional temperature trend by changing the envelope of trend variability. For example, 40-50% of the 20th Century climate simulations show a negative temperature trend over the Eastern United States (i.e., 40-50% of shaded regions in Figs. 3(a) and 4(a) are below zero line). However, none of the climate simulations show negative summer temperature trends in the RCP 8.5 scenarios, and only 10-20% of climate simulations show negative summer temperature trends in the later half of the 21st century in the RCP4.5 scenario, associated with CO2 stabilization.....". Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	Climate projections should be put in the contest of observed uncertainty in 20th century CMIP5 climate simulations. For example, at regional scale multi-model mean does not provide reliable results in 20th century climate simulations and in most cases multi-model mean provides a much conservative estimate of precipitation or temperature trend (see Kumar et al. (a) and (b) submitted to Journal of Climate). Because climate change signal gets mixed with natural climate variability signal, which rarely synchronize across different climate simulations. For example in Kumar et al. (a) we show "..... temperature trends, often associated with global warming are, not a monotonically increasing or decreasing features, at least at regional scale, the greenhouse gas emission-based global warming affects the regional temperature trend by changing the envelope of trend variability. For example, 40-50% of the 20th Century climate simulations show a negative temperature trend over the Eastern United States (i.e., 40-50% of shaded regions in Figs. 3(a) and 4(a) are below zero line). However, none of the climate simulations show negative summer temperature trends in the RCP 8.5 scenarios, and only 10-20% of climate simulations show negative summer temperature trends in the later half of the 21st century in the RCP4.5 scenario, associated with CO2 stabilization.....". Paper reference is provided in a separate pdf sheet. (Kumar, Sanjiv, Center for Ocean-Land-Atmosphere Studies)
70	52157	26	3	11	3	12	"higher sea levels" is mentioned twice. (Michael MacCracken, Climate Institute)	Been addressed
71	54539	26	3	14	3	16	Section 26.2.2.1.1 does not exist in the current draft, and section 26.2.2 does not discuss attribution directly. Please check the traceable accounts for the statements about attribution of changes in snowpack and vector diseases. (Michael Mastrandrea, IPCC WGII TSU)	Have revised this and removed mention of vector disease
72	51548	26	3	15	3	16	For the examples given here, the author team might consider indicating more specifically the geographic regions, time frames, and events/trends that have been attributed to anthropogenic climate change. (Katharine Mach, IPCC WGII TSU)	We think that the level of generality is appropriate for the ES
73	52158	26	3	16	3	16	This particular year seems to show that managed systems are being impacted, so the conclusion here needs to be significantly softened. (Michael MacCracken, Climate Institute)	Disagree with the comment. The literature has not established that managed systems are changing because of anthropogenic climate change
74	51549	26	3	18	3	19	It would be preferable to indicate more specifically with examples how ecosystems "are already being affected" and what kind of ecosystem services or types of biodiversity may be reduced. If the term "very likely" is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized; casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	We do get into details on ecosystem impacts in the ecosystems section. We do not feel there is sufficient space in the ES to discuss details
75	53591	26	3	18	3	19	Where, when, and under what assumptions? (Kristie L. Ebi, IPCC WGII TSU)	Is explained in the ecosystems section
76	54540	26	3	18	3	19	Is this intended as an attribution statement like the previous paragraph? It would be useful to clarify this and the relationship to the previous paragraph, which does mention some ecosystems. It would also be useful to clarify what is meant by "high risk." Finally, the traceable account for the statement about future reductions in biodiversity and ecosystems services is not clear. Here again, it would also be useful to provide a clear explanation of the evidence underlying the assignment of "very likely." (Michael Mastrandrea, IPCC WGII TSU)	Section has been revised
77	48221	26	3	21	3	22	The conclusion that quality of infrastructure increases vulnerability, seems like a broad generalization; age, maintenance and management will vary considerably among regions and jurisdictions. (David Sauchyn, University of Regina)	Yes it does, but in general, aging infrastructure in the North America, particularly given inadequate maintenance is leading to deterioration and hence to sensitivity
78	51550	26	3	21	3	24	The author team should specify examples of what is meant in these conclusions more fully. (Katharine Mach, IPCC WGII TSU)	We address this now in the economic sectors and infrastructure section.
79	52159	26	3	22	3	22	I don't understand "quality" of infrastructure--how about "characteristics"? (Michael MacCracken, Climate Institute)	The section has been revised
80	52160	26	3	24	3	24	"flooding" should be "flood control" (Michael MacCracken, Climate Institute)	Either term could be used, but we think "flooding" is more widely used. Flood control is about adaptation and flooding is about the impact of climate change
81	46732	26	3	28	3	29	"Human health risks...diseases." See my notes below on whether increased pollen may be a risk. I think we do not have enough information at this point to be able to say that increased pollen productivity will happen, and even if it does in some species, many of these are projected to reduce their ranges. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We think the health section provides citations and analysis to support the conclusion about pollen
82	37533	26	3	30	0	0	Include "socially" in "Health impacts are likely to be greatest for economically and socially disadvantaged..." (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	The section was redrafted

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
83	51551	26	3	30	3	30	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	We have considered the guidance
84	51552	26	3	33	3	34	As possible, the author team might consider indicating the time frames and climate/socio-economic scenarios for which such offsets would occur. (Katharine Mach, IPCC WGII TSU)	The SOD mentions timeframe for agriculture impacts
85	52162	26	3	33	3	36	It is essential to be very careful here. While overall agricultural productivity can likely be sustained by adaptive measures, it really needs to be said that the situation for particular farmers or areas where farming occurs may be much more problematic, and so for each subregion and individual, the adaptive measures needed will be far different. The point is that impacts relating to agricultural productivity and food security are quite different from impacts on farming and farmers. (Michael MacCracken, Climate Institute)	We believe the food security section differentiates between different types of farmers. This statement is about the agriculture system as a whole.
86	53592	26	3	33	3	36	Over what time frame? (Kristie L. Ebi, IPCC WGII TSU)	The SOD states the timeframe
87	53593	26	3	38	3	47	Is this before impacts? (Kristie L. Ebi, IPCC WGII TSU)	We do not understand the comment
88	52163	26	3	39	3	41	Also needs an example from other than Mexico. (Michael MacCracken, Climate Institute)	ES has been revised
89	54541	26	3	39	3	41	Section 26.7 focuses on indigenous communities, and it would be useful to draw this theme into the statements here, if that is the sole location of the traceable account for this information. (Michael Mastrandrea, IPCC WGII TSU)	Revised ES mentions indigenous peoples
90	42089	26	3	40	0	0	"contraction of insurance and credit" or "limited penetration of insurance companies and contraction of credit"? (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	The ES has been revised. This statement no longer appears
91	48222	26	3	42	3	42	The advantage to urban centers from built-environment features is in contrast to the previous statement regarding quality of infrastructure in lines 21-22. (David Sauchyn, University of Regina)	The statement has been revised in the SOD
92	52165	26	3	45	3	45	In addition to "reacting and adapting to extreme weather," there are also impacts (e.g., on agriculture) and so this phrasing should include "impacting" (Michael MacCracken, Climate Institute)	We do not think the change is needed.
93	52166	26	3	45	3	54	These paragraphs need some integration--they seem a bit duplicative, and even contradictory (Michael MacCracken, Climate Institute)	The section of the ES has been revised
94	53594	26	3	46	3	47	Lessons learned are often not remembered either. (Kristie L. Ebi, IPCC WGII TSU)	Section has been revised
95	48223	26	3	49	3	49	insurance 'sector' (David Sauchyn, University of Regina)	Section has been revised
96	52167	26	3	49	3	51	It needs to be made clear that not all impacts can be adapted to without significant cost and/or suffering. This idea that everything can be adapted to (implicitly doing so easily) is just not the case (sea level rise being an example) (Michael MacCracken, Climate Institute)	We do not believe this paragraph implies that adaptation is costless or painless. We are pointing out where adaptation appears to be happening
97	54542	26	3	49	3	51	Section 26.11.4 is meant here. It appears that section 26.11.2 is also relevant to the last statement on construction. (Michael Mastrandrea, IPCC WGII TSU)	We have restructured the chapter and correctly cited new sections
98	51553	26	3	54	3	54	It would be helpful to indicate more precisely the nature of involvement of state and provincial governments in planning so far--how many, how are they distributed by country? (Katharine Mach, IPCC WGII TSU)	We address in the text of the chapter.
99	52168	26	4	1	4	1	"The three national governments" have really yet to be defined in this chapter. It is also not clear to me to say that the national governments of the US and Canada have actually initiated adaptation activities. What is basis for this statement? (Michael MacCracken, Climate Institute)	We provide citations of documents on adaptation published by all 3 governments. The revised ES does not get this specific.
100	53595	26	4	1	4	2	But very limited in US. (Kristie L. Ebi, IPCC WGII TSU)	That is a matter of judgment
101	37534	26	4	1	4	6	Consider to include the recent Climate Change Law in Mexico (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	We have updated the analysis in the SOD
102	48224	26	4	2	4	2	Delete 'at' (David Sauchyn, University of Regina)	OK
103	42091	26	4	3	0	5	These efforts are in a nascent stage and scholarship is starting to evaluate how effective they will be in reducing the impacts of climate change, particularly in the case of the relatively high greenhouse gas emissions projections. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We are unaware of such publications. No cites were provided by the reviewer.
104	48225	26	4	5	4	5	Add 'be' after 'change' (David Sauchyn, University of Regina)	Section has been revised
105	51554	26	4	12	0	0	Section 26.1. For key findings presented from the 4th assessment report, the author team should specify the relevant chapter (and potentially chapter section) for each finding given. Additionally, all calibrated uncertainty language cited from the 4th assessment report (including levels of confidence and likelihood terms) should be italicized. Instances of the word "likely" should be checked: if calibrated uncertainty language, the term should be italicized for clarity; casual usage of the reserved likelihood term should be avoided. Along these lines, please note levels of confidence or likelihood terms used on the following lines: page 4, line 30, 34, 37, 44, 48, 49, 50; page 5, line 1, 4, 9, 10, 11, 14, 15, 21, 23. (Katharine Mach, IPCC WGII TSU)	We have done so
106	44938	26	4	12	4	21	Expand the Introduction to explain to the reader the logic in structuring the Chapter the way it has been. It is not intuitive. (Don Lemmen, Canada National Study)	We have rewritten the Introduction in response to this comment
107	52169	26	4	14	4	15	I am not at all sure that this sentence is phrased properly. One of the unique aspects of North America is that it has a pretty integrated market economy; what is the basis for saying that it has a diversity of economies? Sure, there are many components of the economy, but different economies? And same with cultures--it is not at all clear that North America is more diverse in this way that the other areas that IPCC has chapters for--if anything, other than Australia, which is much smaller, the three nations of North America likely have the most homogeneous set of cultures and economies of any of the other IPCC regions. (Michael MacCracken, Climate Institute)	The Introduction has been rewritten

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
108	46733	26	4	26	4	28	"This section summarizes...(Field et al., 2007)." This sentence references the findings of AR4. Surely there are better sources to draw upon? Other chapters I have reviewed here make reference to the forthcoming AR5 information. Can't the author of this section also have access to the AR5? The findings of AR4 are starting to get quite out of date. There must be more recent literature that can be used. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	Our mandate here is to summarize later literature in the following sections. The goal of this is to summarize AR4 findings
109	42090	26	4	28	0	30	It should be clarified that according to many studies (including the AR4 and the current report) the main cause for the dramatical increase in damages is largely due to the increase in exposure, not to climate change or an increase in extreme events. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	That is exactly what chapter 14 states
110	49448	26	4	28	4	30	"Over the past decades, economic damage (particularly to infrastructures in US and Canada) from severe weather, including hurricanes, other severe storms, floods, droughts, heat waves and wildfires has increased dramatically (high to very high confidence)." These extreme hydrometeorological events (e.g., hurricanes Gilberto, Katrina and Wilma) have also caused severe human and economic damages in Mexico, particularly in Chiapas, Tabasco and Yucatan. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Yes, but this was not stated in the AR4
111	41047	26	4	31	0	0	SLR is assume is sea level rise but I am not familiar with it as a normal abbreviation (Bruce McCarl, Texas A&M University)	We included the whole worlds and their acronym in the summary of keypoints
112	52170	26	4	33	4	34	This has an awful lot of jargon for an introductory statement. In reading through the chapter, there was actually much more discussion of the shortcomings of adaptive capacity of the three nations than this sentence indicates. Other than having a higher GDP than other regions, what is the basis for saying there is "considerable adaptive capacity"--Katrina gives rather little indication of this, nor do other low-lying coastal environments and cities. And saying this with "very high confidence" seems to be totally unjustified, especially in that adaptive capacity has yet to be defined. Where in the chapter is this statement justified--certainly not in the following paragraphs, where the contradictory situation seems to be indicated? See for example, line 45, where it says "readiness for increased exposure is low"--I think this whole notion of North American adaptive capacity being in good shape is based on the high GDP per capita, but this alone is not at all a measure as the money is all tightly allocated and there is little reserve anywhere for the costs of ongoing adjustment and adaptation. The case is just not made in this chapter on there being strong adaptive capacity. (Michael MacCracken, Climate Institute)	We added some text to make clearer that this is the finding of chapter 14 of the AR4. We also got feedback from one of the chapter authors. And this is what he said "The evidence of high capacity is found in the literature in several dimensions, including high wealth and capacity to pay. Data from the annual Disaster Report by the International Red Cross, CRED data and NOAA data show that the risk of loss of life or injury due to weather events is low and has been falling for decades in North America. Low risk of fatalities and injury, relative to regions including Asia and Africa, implies the application of adaptive capacity. The failings evident in response to Katrina were not documented as a lack of capacity. There were failings in execution. Also potential actions to better protect New Orleans were not funded. Literature consistently identifies the US and Canada as leaders in terms of capacity to adapt. We know what actions could be taken to reduce the risk of loss and have the funds to pay if we choose. The team did discuss this issue, naturally, and were in full agreement last assessment. One concern I brought up is that some literature addresses the risks associated with excessive dependence on engineered adaptation. For example, construction of a 3 meter levee may build capacity to cope with a 500 year flood risk, but if 4 meters of water comes the community will experience catastrophic damage. The US and Canada have used engineered solutions to address many perils and there is a risk that these may fail.
113	49450	26	4	35	4	37	"For Mexico the development of early warning systems and risk analysis in the areas of agriculture, human health, water resources, fisheries and coastal resources, has increased their capacity for planning and management (high confidence)." Take into account that some of these early warning systems have been used since the latest 1980s. Therefore, Mexico's adaptation capacity has increased in part as a result of more comprehensive assessment of climate change impacts, and the integration of existing sectoral plans and programs. This effort initiated with the implementation of the Mexican Special Climate Change Program (SCCP) in 2009. Reference: Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This is a finding of chapter 13, AR4. We changed the text to better reflect their statement
114	37535	26	4	36	0	0	Regarding human health in Mexico, early warning systems (hurricanes) is the only one that has been successful, based on evaluations. The health sector remains weak for responses to climate change. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	This is a finding of chapter 13, AR4. We changed the text to better reflect their statement
115	49451	26	4	47	4	48	Consider the following improvements in the edition of the paragraphs and include some comments: "For Mexico, land-use change has intensified natural resources use and exacerbated land degradation" and heavy deforestation. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Paragraph edited. These are findings of AR4
116	49452	26	4	49	4	49	Include reference: Peterson, A.T., Ortega-Huerta, M.A., Bartley, J., Sanchez-Cordero, V., Soberan, J., Buddemeier, R.H., and Stockwell, D.R.B., 2002, Future projections for Mexican faunas under global climate change scenarios. Nature 416, 626-628. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	These are findings of AR4

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
117	49453	26	4	49	4	52	Consider that in the north of Mexico, agricultural lands have experienced severe desertification since the late 1980s. Thus, climate change will increase already existing negative impacts, leading to higher migration. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	These are findings of AR4
118	42049	26	4	51	0	0	There is a single): I think you have missed the likely. (Liette Vasseur, Brock University)	Addressed
119	49454	26	5	1	5	1	"Millions in Mexico are projected to be at risk from the lack of adequate water supplies—in quantity and quality—(medium 1 confidence)". (Fabiola S. Sosa-Rodriguez, University of Waterloo)	There is no comment to address
120	52171	26	5	1	5	1	Is this lack of water a current situation and getting worse due to population growth or a trend due to climate change, or both—it is important in all cases to indicate that there is a trend due to climate if this is a case. (Michael MacCracken, Climate Institute)	According to chapter 14 Climate change together with higher demand from economic development, agriculture and population growth will impose further constraints to over-allocated water resources, increasing competition among agricultural, municipal, industrial and ecological uses
121	52172	26	5	2	5	2	The word "affecting" says nothing—please use words that say type of effect, increase, decrease, whatever. The word affect is just too vague. (Michael MacCracken, Climate Institute)	Addressed
122	52173	26	5	3	5	3	Wording fouled up here—should it be "This will impose further constraints on"? (Michael MacCracken, Climate Institute)	Addressed
123	52174	26	5	6	5	24	Given the content of these paragraphs, which seem about right, how can it be argued that these countries have high adaptive capacity? I just do not understand how the statement on page 4, line 15 is at all justified. (Michael MacCracken, Climate Institute)	See response to comment 112
124	46734	26	5	10	5	10	I don't think you have enough evidence to be able to say "including exposure to pollen" here. Do you have a paper to support this statement? While pollen productivity may increase in some species, we do not have enough information about changes in their ranges will impact exposure to pollen. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	The paper provided by chapter 14, which we are summarizing is Ziska, L. H., D. E. Gebhard, D. A. Frenz, S. Faulkner, B. D. Singer, and J. G. Straka, 2003: Cities as harbingers of climate change: Common ragweed, urbanization, and public health. J. Allergy Clin. Immunol., 111, 290-295.
125	49455	26	5	14	5	18	Include the following reference, as well as its key findings: Mortsch LD, Ingram J, Hebb A, Doka S (eds) (2006). Great Lakes Coastal Wetland Communities. Vulnerability to Climate Change and Response to Adaptation Strategies. Final Report. Climate Change Impacts and Adaptation Program (CCIAP). Environment Canada, Toronto. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We are summarizing finding from AR4
126	35534	26	5	20	5	23	A down-side of using air-conditioning as an adaptation strategy to deal with heat stress is that is a source of carbon dioxide emissions. (Hans Baer, University of Melbourne)	Agree
127	49456	26	5	20	5	24	"Without increased investments in such countermeasures as early warning and surveillance systems, air conditioning, access to health care, hot temperatures and extreme weather in Canada and the US are likely to cause increased adverse health impacts from heat-related mortality, pollution, storm-related fatalities and injuries, and infectious diseases (very high confidence)." Similar impacts could be also expected for Mexico. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Yes, but we are only summarizing finding from AR4
128	44939	26	5	23	0	0	I assume the word "streamlining" should be "mainstreaming". (Don Lemmen, Canada National Study)	Addressed
129	44940	26	5	27	0	0	In this heading, as well as subsequent subheadings, it would be worthwhile to make reference to both trends and projections - as a means of highlighting the fundamental difference in source data (observation versus modeling). (Don Lemmen, Canada National Study)	Done
130	42050	26	5	31	0	0	Change differ in in by differ in these three... (Liette Vasseur, Brock University)	Addressed
131	42092	26	5	31	0	32	When talking about the differences shaping vulnerability and adaptation in NA countries I think that it is important to include a forth dimension: the cultural and traditional dimension. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We didn't find literature on this as it relates to vulnerability
132	49457	26	5	31	5	31	Typo "Canada, Mexico and USA differ in in three" (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Addressed
133	49458	26	5	31	5	34	Reference: UNDP (2011) Human Development Report 2011. Sustainability and Equity: A Better Future for All. UNDP, New York. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Addressed
134	41048	26	5	31	6	33	I think this Demographic, Socioeconomics, and Institutional Trends section could be summarized and is out of place. I find it of little use to rest of document (Bruce McCarl, Texas A&M University)	Concerned addressed. We redrafted the section and focused on present and future trends as they influence impacts, adaptation and vulnerability
135	51555	26	5	33	5	37	Citations in support of these statements should be provided. (Katharine Mach, IPCC WGII TSU)	Addressed
136	49459	26	5	35	5	37	Reference World Bank (2011). Indicators. GDP by Country. Online: www.worldbank.org (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Section was restructured and reference to GDP became unnecessary
137	52175	26	5	39	5	41	Awkward phrasing. (Michael MacCracken, Climate Institute)	Sentence edited
138	49460	26	5	39	5	43	"For instance the US-Mexico border ... and potential vulnerabilities in managing trans-border environmental resources and issues", such as water. There is a long history of trans-border water management conflicts between USA and Mexico. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We try to address this in the US-Mexico Border Box
139	51556	26	5	42	5	42	Examples noted here should be provided by the 2nd-order draft. (Katharine Mach, IPCC WGII TSU)	Done
140	42051	26	5	43	0	0	Need to be a little more consistent: issues. (Wilder et al., 2010);(1260 Scott, C.A. and this is thru in many places and made the text difficult to read. (Liette Vasseur, Brock University)	Section redrafted
141	51557	26	5	46	5	46	The timeframe for the described slowing population growth should be specified. (Katharine Mach, IPCC WGII TSU)	Addressed and table with data for the three countries provided
142	53596	26	5	46	5	54	What about data for Canada? These data could be summarized in a table. (Kristie L. Ebi, IPCC WGII TSU)	Addressed and table with data for the three countries provided

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
143	49461	26	5	47	5	47	Mexico's fertility rate was 2.1 in 2010. Reference INEGI (Mexican National Institute of Statistics and Geography) (2010). Mujeres y Hombres de Mexico, 2010. INEGI, Mexico (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Addressed
144	52176	26	5	47	5	47	Change to "over coming decades" (Michael MacCracken, Climate Institute)	This is a question of writing style
145	51558	26	5	50	5	50	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Addressed
146	52177	26	5	50	5	50	"experience" (Michael MacCracken, Climate Institute)	Deleted
147	49462	26	5	53	5	53	This section can be complemented with the following information: "Large population...(Hallegatte, S. 2011)." "For example, Mexico City's current infrastructure is insufficient to meet the demands for water and wastewater services: 14% of its population has access to water by car tanks and also via wells, rivers, streams and springs, and 7% lack sewage service or use septic tanks'. Reference: Sosa-Rodriguez, FS (2010). Exploring the Risks of Ineffective water supply and sewage disposal: A case study of Mexico City. Environmental Hazards, 9 (2010), pp. 135-146 (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We only use the example of what growing total populations mean in terms of projected increases in water demands where no consideration is given to global warming
148	49463	26	5	54	5	54	What is the reference for this information? "These challenges are severe in Mexico, where 14% of the urban population lives in slums.." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	That sentence is not any longer part of the narrative
149	52178	26	6	2	6	2	Where is the declining rural population? (Michael MacCracken, Climate Institute)	Concern addressed. We included a Table showing that rural populations have grown at slower rates than urban and total populations
150	49464	26	6	3	6	4	Typo. "Rural population isolation could be aggravated by high dispersion levels in a number of areas in Canada and Mexico ..." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Addressed
151	49465	26	6	4	6	4	"Rural poverty could be exacerbated due to agricultural..." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Both words can be used
152	49466	26	6	4	6	6	This section can be improved with the following information: 'Current agricultural practices in Mexico cannot deal with extreme weather events because of lack of infrastructure, financial support, and climate information for planning'. Reference: Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change, in review. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We can see whether to cite this reference once it is accepted
153	36326	26	6	6	6	6	Full-stop/period missing at end of sentence. (Steven Chan, Newcastle University)	Addressed
154	36327	26	6	7	6	16	Ageing population will also incur cost that reduces resources for managing global change. I am not familiar with the economics and finance side of adaptation, but this may be a nice place to discuss that. (Steven Chan, Newcastle University)	We didn't find literature on this
155	49467	26	6	8	6	11	This section can be improved with the following information. 'With the elderly population growing in Mexico, temperature increases are expected to exacerbate the number of deaths caused by heat waves and droughts, particularly in the north'. Reference: Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We can see whether to cite this reference once it is accepted
156	36328	26	6	18	6	23	The meaning of Gini index may not be clear to some reader, and may require a (brief) definition. (Steven Chan, Newcastle University)	Addressed
157	52179	26	6	18	6	23	There is no mention here of the Skeptic movements in US and Canada and their effects on government policies--even so much as have the state of North Carolina pass a law to not allow the state to take sea level projections into account. The resistance to using scientific information is going to make adaptation more difficult, and this might well be said. (Michael MacCracken, Climate Institute)	No because this is not what the box is about
158	53597	26	6	18	6	23	Data for US and Canada? (Kristie L. Ebi, IPCC WGII TSU)	Addressed
159	45910	26	6	26	0	0	[1] Discuss future projections in the contest of observed uncertainty in 20th century CMIP5 climate simulations. [2] Natural climate variability role (e.g. warming hole) should be recognized here. [3] A comparison between high emission (e.g. RCP8.5), and low emission scenarios should be presented (for details see my previous comments related to Chapter 26). (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	The new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
160	48670	26	6	26	7	7	There isn't any link given between these observed trends and anthropogenic climate change. (Dáithí Stone, University of Cape Town)	It is unclear if the reviewer means that the cited literature do not provide links, or if the section fails to communicate links that exist in the literature. [can we say we have identified changes in climate attributed to climate change in the literature?]
161	42096	26	6	26	8	6	The section is unbalanced particularly regarding the information of the AR5 WGI climate change scenarios for Mexico (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	The new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. This new figure clearly shows results for Mexico. In addition, text describing this new figure – including the results for Mexico – has also been added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
162	44941	26	6	30	6	32	This section needs to be expanded to be useful to a reader. In addition to identifying what "processes important for climate change in NA" are assessed elsewhere, some text helping the reader understand RCP scenarios, and the relationship to the SRES (and older) scenarios that are referred to in the subsequent sections, would be helpful. This may be as simple as referencing a Table, FAQ and Box that appears elsewhere in the AR5. The second sentence ("Additional information ...") is confusing given that the subsequent discussion of projections is largely based on CMIP5, and could simply be deleted. (Don Lemmen, Canada National Study)	Unfortunately, the allocated length limits do not allow expansion of this section. However, as suggested by the reviewer, a statement referring readers to the WGI Annex II: Climate System Scenario Tables for a comparison of emissions, concentrations, and radiative forcing in the RCPs and older SRES scenarios has been added to the text. In addition, the second sentence which began "Additional information..." has been deleted, as suggested by the reviewer.
163	52180	26	6	30	6	32	This is really not very helpful--at least give titles of other chapters, and if can indicate what the issues are that are covered in these other chapters and locations as the average reader would have to go looking to figure out what this is all about. (Michael MacCracken, Climate Institute)	Unfortunately, the allocated length limits do not allow expansion of this section. However, as suggested by the reviewer, the titles of the chapters have been added to the text. In addition, as suggested by another reviewer, a statement referring readers to the WGI Annex II: Climate System Scenario Tables for a comparison of emissions, concentrations, and radiative forcing in the RCPs and older SRES scenarios has been added to the text, and the sentence which began "Additional information..." has been deleted.
164	42093	26	6	31	0	32	Please provide reference to where this information can be found (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	This information is available in the peer-reviewed literature, and assessed in the remainder of the Chapter. However, as suggested by another reviewer, this sentence been deleted.
165	53598	26	6	32	6	32	Where are those data available from? (Kristie L. Ebi, IPCC WGII TSU)	This information is available in the peer-reviewed literature, and assessed in the remainder of the Chapter. However, as suggested by another reviewer, this sentence been deleted.
166	53599	26	6	35	8	6	Please ensure consistency with WGI. (Kristie L. Ebi, IPCC WGII TSU)	Efforts have continued to ensure consistency with WGI. These efforts include updating references to WGI section numbers to be consistent with the WGI SOD NEED TO CONFIRM FOUND ALL INSTANCES OF THIS. These efforts also include drawing on the synthesis of WGI (see explicit statements in the section text identifying the WGI assessment). In addition, further efforts have been made to assess the results of the CMIP5 GCM experiment, which provides a primary source for the WGI assessment. This includes the new Figure NEW, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
167	45911	26	6	44	6	46	Attribution of "Wamring hole" should be mentioned, e.g. Meehl et al. (2012) attributes warming hole to natural climate variability, Our study (kumar et al. (a), submitted to J. Clim.) found that although "warming hole" is associated with North Atlantic Multi-decadal oscillation (natural climate variability), in the future climate the reappearance or disappearance of warming hole depends upon the climate choice (RCP 8.5 versus RCP4.5) we make, because of change in mean climate state (trend variability range in the North Atlantic) . Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We have ensured that the text is consistent with the text in the WGI SOD (Section 2.6.1). This includes changing the text to read "relative cooling has occurred over central North America and the eastern USA", and adding a sentence stating that it is possible that this "warming hole" has been influenced by changes in the hydrologic cycle (e.g., Pan et al. 2004; Portmann et al. 2009), as well as by decadal-scale variability in the ocean (e.g., Meehl et al. 2011; Kumar et al. submitted). In addition, the new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. This new figure shows that more than 90% of the CMIP5 models exhibit annual warming that exceeds twice the baseline standard deviation in the mid- and late-21st-century periods of RCP4.5 and RCP8.5, including over the central U.S. where the "warming hole" has been suggested. Text describing this new figure has also been added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
168	47889	26	6	44	6	46	I understood that the 'mean cooling' over eastern US ceased some years ago. Please check and clarify as it implies that cooling is still underway. (Louis Iverson, US Forest Service)	We have ensured that the text is consistent with the text in the WGI SOD (Section 2.6.1). This includes changing the text to read "relative cooling has occurred over central North America and the eastern USA", and adding a sentence stating that it is possible that this "warming hole" has been influenced by changes in the hydrologic cycle (e.g., Pan et al. 2004; Portmann et al. 2009), as well as by decadal-scale variability in the ocean (e.g., Meehl et al. 2011; Kumar et al. submitted).
169	52181	26	6	44	6	46	Gene Takle of Iowa State indicates that the reason that peak temperatures in the central Midwest have come down (i.e., fewer days over 100 F) is that the ground is moister due to Gulf Coast induced rainfall occurring further north. Thus, the storm belt shifts and so there is more soil moisture and one gets evaporative cooling (and higher humidities and heat index--even though the temperature is not as high). In my view, this simple looking at just the temperature and not the changes in humidity can give really misleading results (indeed, Gene suggests that grain companies are bragging they can deal with climate change due to the lower peak temperatures--but they ignore all the other aspects of weather that is changing). What is really needed is a map of change in potential equivalent temperature, or whatever the name is for the temperature that includes effect also of humidity change. (Michael MacCracken, Climate Institute)	We have ensured that the text is consistent with the text in the WGI SOD (Section 2.6.1). This includes changing the text to read "relative cooling has occurred over central North America and the eastern USA", and adding a sentence stating that it is possible that this "warming hole" has been influenced by changes in the hydrologic cycle (e.g., Pan et al. 2004; Portmann et al. 2009), as well as by decadal-scale variability in the ocean (e.g., Meehl et al. 2011; Kumar et al. submitted). Unfortunately, the allocated length limits do not allow addition of a map of apparent temperature.
170	48226	26	6	46	7	7	This overview of trends in water resources is excellent; it contains information that should be included in Chapter 3 on page 18 (David Sauchyn, University of Regina)	The support of the reviewer is gratefully acknowledged.
171	41021	26	6	50	6	51	See Drought Research Initiative and the summary report - The 1999-2005 Canadian Prairies Drought: Science, Impacts and Lessons, Stewart & Lawford Editors, 2011 ISBN 978-0-9868749-0-1 http://www.meteo.mcgill.ca/dri/errata.php (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	The assessment of observed climate trends conforms with that of Working Group I.
172	42052	26	6	50	6	51	It seems that drought (like many other phenomena in this section) has been put as one thing, although it is very clear that more coastal areas differ from the central and mid west. There may be a need to be a little more precise here. (Liette Vasseur, Brock University)	It has been confirmed that the language is consistent with the WGI contribution to AR5 (section 2.6.2). In addition, reference to Sheffield et al. (Nature, 2012) has been added, which clearly show variations in the sign of calculated drought trend within North America and between different definitions of drought. The text has been edited to clarify that these are WGI contributions to the AR5.
173	46735	26	7	12	7	13	"Chapter 14 of WGI...Annex I Atlas." Which IPCC report is this referring to? AR4 or AR5? (Maria Caffrey, National Park Service and University of Colorado, Boulder)	The text has been edited to clarify that these are WGI contributions to the AR5.
174	35076	26	7	15	0	0	This paragraph is unclear. It gives the impression that substantially different results can be drawn from CMIP3 and CMIP5, and I do not think it is the case. My impression is that the main issue is the word "robustness". In both CMIP3 and CMIP5 warming in future climate is very robust for all seasons, and by "robust" I mean that all GCMs and RCMs agree on this projection (although they differ in specific values). In both datasets warming is larger in the north during winter, and in central US during summer. But if we consider not only the sign of the change but also the noise level --interannual variability-- in a signal-to-noise perspective, things are different. Interannual variability is so large in the north that dwarfs the signal for longer than in the south. I propose to keep the word "robust" close to its common usage, that is the first mentioned here. And perhaps to use the expression from (Giorgi and Bi 2009: The time of emergence of of GHG-forced precipitation change hot-spots. GRL, 36 L06709) of "time of emergence" as the time it would take a climate change signal to be detected from the underlying variability. Or just simply signal-to-noise ratio. (Ramon de Elia, Ouranos consortium)	In response to this comment and the comments of other reviewers, the first instance of "robust" in this paragraph has been preserved, while the subsequent instances of "more robust" in this paragraph have been replaced with "higher signal-to-noise ratio". In addition, the new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
175	42094	26	7	15	0	19	These two sentences are contradictory (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	In response to this comment and the comments of other reviewers, the first instance of "robust" in this paragraph has been preserved, while the subsequent instances of "more robust" in this paragraph have been replaced with "higher signal-to-noise ratio". In addition, the new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
176	45912	26	7	16	7	19	CMIP3 results should be replaced with CMIP5 results (e.g. Kumar et al. (a); Maloney et al.; and other relevant papers submitted to Journal of Climate, CMIP5 North America Special collection). My assessment based on results presented in Kumar et al. (a), submitted to J. Clim, CMIP5 results are similar to CMIP3 results (projected summer temperature trend is more robust than projected winter temperature trend (see Figs. 10 and 11 in the referred paper). Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	In response to this comment and the comments of other reviewers, the first instance of “robust” in this paragraph has been preserved, while the subsequent instances of “more robust” in this paragraph have been replaced with “higher signal-to-noise ratio”. In addition, reference to the reviewer’s paper has been added (Kumar et al., submitted to Journal of Climate). Further, the new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
177	51559	26	7	17	7	18	It would be helpful to specify further here what is meant by “more robust.” (Katharine Mach, IPCC WGII TSU)	In response to this comment and the comments of other reviewers, the first instance of “robust” in this paragraph has been preserved, while the subsequent instances of “more robust” in this paragraph have been replaced with “higher signal-to-noise ratio”. In addition, the new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
178	45913	26	7	19	7	21	CMIP3 results should be replaced with CMIP5 results (e.g. Kumar et al. (a); Maloney et al.; Sheffield et al. (a) and (b); and other relevant papers submitted to Journal of Climate, CMIP5 North America Special collection). Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	The new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
179	45914	26	7	21	7	21	Also present “warming hole” projections results, as this is one of the interesting feature of North America climate, and people want to know “what is future of warming hole?” See kumar et al. (a) and Pan et al. submitted to Journal of Climate. Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	The new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. This new figure shows that more than 90% of the CMIP5 models exhibit annual warming that exceeds twice the baseline standard deviation in the mid- and late-21st-century periods of RCP4.5 and RCP8.5, including over the central U.S. where the “warming hole” has been suggested. Text describing this new figure has also been added.
180	52182	26	7	24	7	24	This figure is not really very North America specific. It would be useful to get a more specific graphic. (Michael MacCracken, Climate Institute)	I CAN CREATE A NORTH AMERICA SUBSET IF DESIRED
181	42095	26	7	36	0	0	Alaska are consistent (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	The text has been clarified to read “Alaska, consistent with”.
182	36329	26	7	36	7	45	A major player in west coast (including Alaska) climate is the Pacific North American pattern (PNA). PNA has been linked with north Pacific storm track variability and ENSO. There were some studies concerning PNA in climate change (Boer et al 2000, Climate Dynamics). There are possibly other studies that I am not familiar with. (Steven Chan, Newcastle University)	Text has been added highlighting the influence of tropical SSTs on the Pacific North American pattern (PNA) and north Pacific storm tracks.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
183	45915	26	7	36	8	6	In these two paragraphs you can be far away from reality if you do not consider observed uncertainty in 20th century climate simulations. Because you are talking about specific region e.g. Mexico and Western USA, whether 20th century climate simulations were good in capturing precipitation trend? Specific examples are given in comments below. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	Text has been added stating that not all CMIP5 models simulate the observed recent hydrologic trends in Mexico the western US, along with citation of the reviewer's paper (Kumar et al. submitted to Journal of Climate). In addition, the new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
184	45916	26	7	38	7	40	"... Positive north Atlantic Oscillation Trend ..." Whether CMIP5 models are good in simulating 20th century North Atlantic Oscillation Trend (see Fig.6 to 8 in kumar et al. (a) submitted to J. Clim.) and what does it means to 21st century projections (see Fig. 9 in kumar et al. (a) submitted to J. Clim.). Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We have confirmed that this text is consistent with the text in the WGI SOD (Section 14.7.3).
185	52183	26	7	47	7	48	Given the weather of 2012, it is not at all clear that significant hotspots are not occurring now, far earlier than the late 21st century. (Michael MacCracken, Climate Institute)	The word "hotspot" has been removed and replaced with text stating that Mexico and the western U.S. emerge as areas of prominent aggregate climate change.
186	45917	26	7	47	7	49	Drying in Mexico and Southwestern USA is a robust phenomenon in CMIP5 20th century climate simulations too (see Fig. 5 in Kumar et al. (b) submitted to Journal of Climate). Has this found in the observations? Answer is: No (in above referred Fig. 5, observation is also in the left panel; also see. Sheffield et al. submitted to Journal of Climate). Similar feature was also found in CMIP3 climate simulations. So, now if we put 21st century climate projections in the context of observed uncertainty in the regions, is it really a climate change hot spot? Paper reference is provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	The word "hotspot" has been removed and replaced with text stating that Mexico and the western U.S. emerge as areas of prominent aggregate climate change. In addition, text has been added stating that not all CMIP5 models simulate the observed recent hydrologic trends in the region, along with citation of the reviewer's paper (Kumar et al. submitted to Journal of Climate).
187	45918	26	7	49	8	6	See my general comment on Chapter 26. RCP8.5 scenario results should be compared against RCP 4.5 scenrio result. Also result should be discussed in the conext of observed uncertainty (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	The new Figure NEW has been added, which shows annual temperature and precipitation results from the CMIP5 ensemble, including (1) comparisons of RCP4.5 and RCP8.5, (2) areas where 66% and 90% of models exhibit changes that exceed twice the baseline standard deviation, and (3) areas where 66% and 90% of models agree on the sign of change. Text describing this new figure has also been added.
188	42053	26	7	53	0	0	This sentence really does not make a lot of sense: surface snow amount over the U.S. and Canada, including greater than 80% (30%) of years with March snow... (Liette Vasseur, Brock University)	The text has been edited to separately state the percent of years below the late 20th century median and minimum.
189	49533	26	8	9	35	14	Examples of adaptation strategies used in Canada and their results can be found in Lemmen DS, Warren FJ, Lacoix J, Bush E (Ed.) (2008): From Impacts to Adaptation: Canada in a Changing Climate 2007; Government of Canada, Ottawa, ON. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We added in recent in section on recent adaptation strategies.
190	52184	26	8	13	8	15	Rather than giving topics in these locations, give the key conclusions. Help the reader not have to go looking, etc. (especially in that there is no specific section reference here). (Michael MacCracken, Climate Institute)	Do not understand this comment. Key conclusions are given in Executive Summary. Given the biophysical and socio-economic variation in NA, some discussions must be georeferenced.
191	41049	26	8	13	8	31	I don't think the stress term is very helpful and is confusing. I also think this section should differentiate between gound and surface water as the ground water in many cases is not renewable but is swept in under surface water. You might also talk about water demand increasing aspect of climate change accelerating the withdrawal and depletion levels plus competition (Bruce McCarl, Texas A&M University)	We define stress and differiate where possible between surface and ground waters . We also include impacts of increased demands.
192	51560	26	8	16	8	16	The author team should consider indicating more specifically what is meant here by "too large"--by what standard, how determined, etc.? (Katharine Mach, IPCC WGII TSU)	We define.
193	49468	26	8	18	8	19	Consider the following improvements in the edition of the paragraphs and consider to include this information: "The north and center of Mexico experience high water stress (National Water Commission of Mexico, Statistics on Water in Mexico, 2010 Edition, June 2010)". This problem is caused by water availability and quality reductions. Depending on the parameter analyzed to monitor the quality of water, between 10 and 30% of Mexican water sources are polluted or heavily polluted [Conagua (National Water Commission of Mexico) (2010) Water Statistics in Mexico, 2010. Conagua, Mexico.] In particular, Mexico City faces the highest energy, food and water requirements nationwide due to its high demographic and economic activities concentration. This situation increases its vulnerability levels' Reference: Sosa-Rodriguez, FS (2010). Impacts of Water Management Decisions on the Survival of a City: From Ancient Tenochtitlan to Modern Mexico City. Journal of Water Resources Development. 27 (4), pp., 667-689. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We slightly edited this. We did not include the details on Mexico City here but added elsewhere. ; OK, this should be included (Maria Ibarraran)

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
194	44942	26	8	18	9	33	References here (and elsewhere in chapter) to studies dating back to the 1990s, and not supported by more recent research, is confusing as this literature should have been captured in previous IPCC assessment reports and rolled into the conclusions of those reports. Confusion is even greater for scenario-based modeling studies, where it is very challenging for readers to relate models and scenario used in the 1990s to the state-of-the-art analysis summarized in section 26.2.2. It would be worth noting, as a major gap, if there has been no additional modeling work undertaken since the 1990 s. (Don Lemmen, Canada National Study)	We updated the Lane et al (1999) reference. But other than that, we have recent references except where material is missing and older material must be referenced. ; Change reference of Mendoza et al 1997 to Conde et al 2011.
195	49469	26	8	29	8	30	Consider the following improvements in the edition of the paragraphs. "Reduced flow conditions in rivers can result in a host of impacts on water quality due to temperature and dissolved substances concentration increases, and dissolved oxygen level changes (1171 Daley, 31 M.L. 2009) ..." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Done
196	41050	26	8	29	8	48	this section is a little contradictory first para talks about less strem flow, third para talks about more rainfall. Are these consistent. To me the chapter needs to discuss differeing water supply regionally and then say in this section that that causes different implications across the region (Bruce McCarl, Texas A&M University)	Streamflow may decrease even if P increases because of increases in evapotranspiration. And even if annual streamflow does increase, it is generally recognized that low flows may decrease. Regional differences in water impacts are presented. We will add that this has different implications for different regions.
197	51561	26	8	33	8	33	For the described simulation under higher air temperatures, it would be helpful to specify what range of temperatures were considered. Additionally, it is not completely clear if a model-based simulation is meant here or if an experimentally based outdoor simulation in the various lakes was employed. (Katharine Mach, IPCC WGII TSU)	All simulations were modeled based. Since we refer to many studies, it is not possible to discuss the temperature ranges used in each except to note they were all plausible.
198	46736	26	8	33	8	38	"Simulation of lakes...(Tanner et al., 2011)." This sentence refers to lengthened stratification, however, I don't think there can be lengthened stratification if lake levels decrease. Surely as the lakes get warmer and shallower they would become more akin to lower latitude lakes, perhaps by becoming oligomictic? Include a reference to support your statement that stratification will be lengthened. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We added in that impacts vary by lake system so not all lakes would stratify longer.
199	49470	26	8	33	8	42	Consider the following improvements in the edition of the paragraphs."Simulation of lakes ... increased phytoplankton, and fish and ...biomass; lengthened...in late summer and triggering ... reaction rates; and decreased in lake clarity ... Many found through simulation..., but in some cases the total load stayed the same.... (1176 Tu, J. 2009)...(Wilson and Weng, 2011) found that ..., climate change impacts were greater than land-use change (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Since this did not change content, and present text is clear, we did not change.
200	48227	26	8	38	8	38	Many 'authors' (David Sauchyn, University of Regina)	Added.
201	51562	26	8	38	8	39	For this statement, it would be helpful to clarify what climate/socio-economic scenarios were considered and what kinds of nonpoint source loads are relevant here--for what contaminants or other compounds? (Katharine Mach, IPCC WGII TSU)	Space does not allow describing all the scenarios and loads.
202	41213	26	8	38	8	40	Section 26.3.1.1 pg 8 line38-40 – this sentence not clear (Susan Evans, WWF-Canada)	Edited.
203	53600	26	8	48	9	45	Please provide information on time slice, scenarios, and other critical assumptions. No adaptation appears to have been assumed in many instances, but this is not explicitly stated. (Kristie L. Ebi, IPCC WGII TSU)	Some of this information was added in but due to space limitations, we cannot add in all.
204	41051	26	8	49	8	49	the section about "Plants will be more vulnerable to flooding due ..." totally ignores adaptaion. Wouldn't some of the plants be moved? This will cost money but adaptaion will occur (Bruce McCarl, Texas A&M University)	Of course some adaptation will occur. This statement was just about their vulnerability if no actions were taken.
205	41055	26	9	0	0	0	Sorry but the word stress is a poor choice perhaps scarcity needs to be worked in. I also think the concept of increased demand needs to be worked in. We looked at this in a reginal study finding increased demand for ag and municipal plus implicitly for environmental protection (Chen, C.C., D. Gillig, and B.A. McCarl, "Effects of Climatic Change on a Water Dependent Regional Economy: A Study of the Texas Edwards Aquifer", Climatic Change, 49, 397-409, 2001.) (Bruce McCarl, Texas A&M University)	Stress is clearly defined as ratio of withdrawals to available water.Thus it will increase as supplies decrease. It also can capture the impacts of changing demands. We also added in some references to changing demands due to climate change.
206	42054	26	9	2	0	0	This is flying high and the sky. However no mention of this in chapter 5. (Liette Vasseur, Brock University)	Comment not understood.
207	36330	26	9	10	9	45	Over the central US and Canada (the Great Plains), poor management of water resources and over-exploitation of ground water has lead to land subsidence and declining groundwater levels. What are the projections for water supply and precipitation over central US/Canada? (Steven Chan, Newcastle University)	The changes in precipitation in these regions are given in Section 26.2.2.1.2. Water management impacts in the USA and Canada are not always similar. For instance, subsidence to groundwater exploitation is not a major concern on the Canadian prairies (where most water use is from surface sources).
208	51563	26	9	11	9	13	Where the author team uses the phrase "most likely" on lines 11 and 13, assignment of calibrated uncertainty language, per the uncertainties guidance for authors, could also be considered. (Katharine Mach, IPCC WGII TSU)	We will use the IPCC uncertainty guidance when we use this term.
209	41052	26	9	12	9	12	I would also talk about increased groundwater depletion (Bruce McCarl, Texas A&M University)	We have done this where possible. As noted in the text, there is relatively little lierature on groundwater impacts. ; add "groundwater depletion"
210	49471	26	9	14	9	17	This section can be improved with the following information. "Based on sixty-seven GCMs and three emissions scenarios (SRES A2, A1B, and B2), the mean annual temperature for Mexico City's urban area is more likely to increase and the annual precipitation to decrease. In warmer years between the 2020s and 2050s, temperature may increase by more than 2°C, and by the end of this century, up to 4.2 °C. Annual precipitation is likely to decline on average by 5.8% in the 2020s, by 7.0% in the 2050s, and by 10.4% in the 2070s.' Reference: Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Done ; Agree, add as mentioned

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
211	51564	26	9	15	9	15	If projected outcomes across these scenarios differ substantially, the author team could consider indication of these differences. (Katharine Mach, IPCC WGII TSU)	Done. Added this in edited form: Comparing the effects on runoff, hydrologic vulnerability, precipitation and exposure to climate change, even though both scenarios show roughly the same areas affected, A2 shows greater extensions being affected and higher impacts than A1B. Differences seem to be higher in the shorter run (i.e. 2030 and 2050) and they tend to level out in 2100. ; The same trends happen under both scenarios. Magnitudes vary but not trends (Maria Ibarraran - UIAP Mexico)
212	41053	26	9	17	9	17	increased irrigation demand is a phenomena that has been found widely in literature and should be referenced better plus there should be a cross reference to chapter 7 (Bruce McCarl, Texas A&M University)	We would rather keep it in the context of the example.
213	52185	26	9	17	9	17	There are a number of "Anonymous" references in text and nothing in references; see also line 51. (Michael MacCracken, Climate Institute)	The references in the original FOD were lost in production. This will be corrected in the SOD.
214	42056	26	9	17	9	20	The Colorado River Basin portion in... The numbers reported here do not make a lot of sense or there is a need for explanation of the impacts as we have more than 100% of water use. (Liette Vasseur, Brock University)	This is not a flow balance; merely projections of how demands may increase even if there may not be sufficient water in the future to meet them.
215	53601	26	9	20	9	20	Please describe the most severe climate change scenario. (Kristie L. Ebi, IPCC WGII TSU)	Have done so
216	36039	26	9	20	9	21	Need to specify which climate change scenario was used instead of refer to as "the most severe" (Michael Brewer, NOAA)	Have done so
217	48228	26	9	20	9	21	'of three runoff'? (David Sauchyn, University of Regina)	We added a comma between three and runoff to clarify.
218	51565	26	9	20	9	23	For these statements, the author team might consider indicating how projected outcomes differ across scenarios of climate change. (Katharine Mach, IPCC WGII TSU)	Have done so
219	41054	26	9	20	9	24	factual statements like "In the Rio Grande basin in New Mexico under the most severe climate change scenario of 21 three runoff is projected to be reduced by nearly 30% by 2080. In general, ecosystems and irrigation are the most 22 stressed as water is transferred to urban and industrial users with greater economic productivity. Economic losses 23 under the most severe climate scenario are at least \$100 million per year in 2080. Water transfers will likely entail 24 significant transaction costs associated with adjudication and potential litigation." need more referencing (Bruce McCarl, Texas A&M University)	The reference here is all to Hurd (2012).
220	42057	26	9	21	0	0	In general, ecosystems and irrigation are the most...: How can you put these two things together in the same sentence? (Liette Vasseur, Brock University)	Both become water-short. In a nutshell, during times of "scarcity", the two "uses" that need the most water are most stressed; these uses are ecosystems and agriculture.
221	51566	26	9	23	9	50	"likely" on lines 23, 29, 32, 50 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	We have not avoided casual use of this and related IPCC terms. ; no statistical significance, change term as desired in lines 29,32,50
222	52186	26	9	42	9	43	Again, it is really important to provide the results--"impacted" in which way; this is all so conditional. What is projected? (Michael MacCracken, Climate Institute)	Clarified.
223	41056	26	9	50	9	50	I think it would be good to say flooding may increase under an increase in extreme events. Might also have a section below on droughts (I have not looked ahead to see if it is there) (Bruce McCarl, Texas A&M University)	It is stated elsewhere floods will increase in NA. Droughts are mentioned in the context of water supply and other water uses. ; Start line 50 with "Flooding may increase as extreme events become more common." (Maria Ibarraran - UIAP Mexico)
224	51567	26	9	50	9	54	For the described increases in flooding (in particular on lines 50 and 54), the author team should consider more conditional framings, ideally cross-referencing the working group 1 contribution to the 5th assessment report (and potentially also the special report on extremes, chapter 3) regarding findings on flood projections. (Katharine Mach, IPCC WGII TSU)	Added in SREX reference. Did not understand rest of comment.
225	49472	26	10	5	10	6	This section can be improved with the following information. "Drainage infrastructure designed... (Kirshen et al., 2011)." 'For example, in Mexico City heavy rains will increase its exposure to floods since drainage system capacity is limited in its ability to extract rain and wastewater during these events.' Reference: Sosa-Rodriguez, FS (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change.) 'This system is already affected by poor maintenance and differential soil subsidence that have caused sewage pipeline breakage and reduced flow extraction capacity.' Reference Sosa-Rodriguez, FS (2010). Exploring the Risks of Ineffective water supply and sewage disposal: A case study of Mexico City. Environmental Hazards, 9 (2010), pp. 135-146 (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We added in Sosa-Rodriguez reference.
226	49473	26	10	5	10	6	This section can be improved with the following information. 'The Canadian Great Lakes could reduce their power generation by up to 1,160 Megawatts/year (MW)—almost half of their current generating capacity estimated in 2,150 MW/year—with potential annual economical losses of \$530 million dollars.' Reference Buttle J, Muir JT, Frain J (2004). Economic impacts of climate change on the Canadian Great Lakes hydro-electric power producers: A supply analysis. Canadian Water Resources Journal 29: 89-109. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We added in these references - updated if available.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
227	49474	26	10	5	10	6	Low water-levels in the Great lakes region could also affect recreation, tourism, the environment and aquatic species. References: (1) Mortsch LD, Ingram J, Hebb A, Doka S (eds) (2006). Great Lakes Coastal Wetland Communities. Vulnerability to Climate Change and Response to Adaptation Strategies. Final Report. Climate Change Impacts and Adaptation Program (CCIAP). Environment Canada, Toronto. (2) Lofgren BM, Quinn FH, Clites AH, Assel RA, Eberhardt AJ, Luukkonen CL (2002). Evaluation of Potential Impacts on Great Lakes Water Resources Based on Climate Scenarios of Two GCMs. Journal of Great Lakes Research 28: 537-554. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We add in these references - updated if available
228	51568	26	10	5	10	6	The author team should consider indicating the relevant geographic area for which this statement pertains. (Katharine Mach, IPCC WGII TSU)	This statement applies in most regions of NA because it is expected that the intensities of extreme precip events will increase.
229	44943	26	10	9	10	24	Consideration of instream uses requires consideration of ecological uses / services. The current focus on hydroelectricity is more appropriately placed in section 26.3.2 (Energy-Water Nexus. (Don Lemmen, Canada National Study)	Hydro is a legitimate instream use, but we see the point. Ecological impacts are addressed in another section of WG2, here we are focusing on human uses of water.
230	48229	26	10	11	10	13	This information appears on the previous page (lines 29-31). It has been repeated. (David Sauchyn, University of Regina)	The information is from the same reference but on different topics in Mexico. ; Same source, but different information is used.
231	51569	26	10	11	10	19	For these statements, the author team should indicate the relevant climate/socioeconomic scenarios considered (or indicate if the results pertain across a range of scenarios analyzed). (Katharine Mach, IPCC WGII TSU)	Reference to scenarios A2 and A1B added in ; For Mexico the scenarios are A2 and A1B.
232	42058	26	10	22	0	0	Navigation in the Great Lakes basin... there is a need for reference. (Liette Vasseur, Brock University)	References added
233	40865	26	10	22	10	24	I'm glad you mention impacts on barge traffic in Great Lakes. You may also want to mention the potential of flooding to disrupt Mississippi River navigation. The second paragraph on page 91 of the following report discusses this: http://onlinepubs.trb.org/onlinepubs/sr/sr290.pdf . (John Posey, East-West Gateway Council of Governments)	The navigation impacts on the Mississippi are not included due to space limitations.
234	44944	26	10	22	10	24	One of many, many examples of statements in the chapter that require supporting references. In this case Millerd (2001) and Chiotti and Lavender (2008) - both referenced elsewhere in this chapter - would be appropriate. (Don Lemmen, Canada National Study)	Added references
235	41057	26	10	26	10	26	instream uses include ecological support and this should be mentioned. The above mentioned chen study looks at this. (Bruce McCarl, Texas A&M University)	Unfortunately, we do not include ecological impacts in this section; too little space.
236	49475	26	10	29	10	29	Consider the following improvements in the edition of the paragraphs. "The energy demands for water supply and wastewater treatment are (California, 2005) ...and Price, 2011) projected to increase under (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Entire section was rewritten
237	51570	26	10	29	10	29	It would be helpful to indicate why energy demands for wastewater treatment are expected to increase due to climate change. (Katharine Mach, IPCC WGII TSU)	Entire section edited and this added.
238	53602	26	10	29	10	29	Please describe time slice, scenarios, and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	This was added with references. It is well recognized that these increases will occur: The energy demands for water supply and wastewater treatment are projected to increase under climate change due to increases in pumping and treatment requirements for water supply and increases in effluent treatment and cooling to address increases in surface water temperatures
239	52187	26	10	29	10	31	Switch to title case (Michael MacCracken, Climate Institute)	Done
240	36331	26	10	29	10	36	Text is hard to follow due to the way how citations are made in that paragraph. (Steven Chan, Newcastle University)	Changed.
241	49476	26	10	36	10	36	This section can be improved with the following information. "Prepared by ...2009)." "Energy requirements to supply with water and dispose wastewater in several cities in Mexico are already unsustainable; therefore, climate change is an additional pressure for the energy sector. For example, in Mexico City, water needs to be transferred from external sources 126 km and pump up over 1 200 m, which requires 1,787 million kWh every year, at an estimated cost of US\$62.54 million/year." Reference: Sosa-Rodriguez, FS (2010). Impacts of Water Management Decisions on the Survival of a City: From Ancient Tenochtitlan to Modern Mexico City. Journal of Water Resources Development. 27 (4), pp., 667-689 (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We cited this research as one of many other cited examples of the present energy-water nexus. ; Agree, add as mentioned (Maria Ibarra - UIAP Mexico)
242	52188	26	10	36	10	37	Is this really the case? In California, I thought agriculture used 80+% of the water, and irrigation uses in the Great Plains are also quite high. If this 80% number is really the case, the country would seem capable of solving its water problems by shutting down coal-fired electric power. Is that really so dominantly the case? (Michael MacCracken, Climate Institute)	This figure is correct. Power plants withdraw vastly more water than agriculture, but consume very little.
243	49477	26	10	37	10	42	I suggest to change the order of the last two sentences of this paragraph. Consider some improvements in the edition of the paragraphs. " Various carbon pricing policies may decrease thermoelectric power plant freshwater withdrawals and consumption in the continental USA compared to business as usual policies (Chandel et al., 2010)). However, other mitigation strategies for energy production such as carbon capture, nuclear power, and some biofuels will exacerbate stresses on water supplies and water quality (1223 Cooper, D.C. 2012), (1226 Delucchi, M.A. 2010), (Engelhaupt, 2007), (Powers et al., 2011), (Stone et al., 2010) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This section was rewritten and some of these suggestions were incorporated.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
244	37716	26	10	43	0	0	I think this section needs to include some integrated studies. Add(?): The interaction of energy and water demand and supply, as affected by climate change has been studied and documented by several researchers, for the U.S (Skaggs et al., 2012, Roy et al., 2012, Tidwell et al. , 2011).[Skaggs, R., T.C. Janetos, K.A. Hibbard, and J.S. Rice, 2012: Climate and Energy-Water-Land System Interactions: Technical Report to the U.S. Department of Energy in Support of the National Climate Assessment, Report PNNL-21185, Pacific Northwest National Laboratory, Richland, Washington. Available at: http://www.pnnl.gov/main/publications/external/technical_reports/PNNL-21185.pdf] [Roy, S.B., L.Chen, E.H. Givertz, E.P. Maurer, W.B. Mills, and T.M. Grieb, 2012 Projecting Water Withdrawal and Supply for Future Decades in the U.S. under Climate Change Scenarios, Environmental Science & Technology, 46 (5), 2545-2556 DOI: 10.1021/es2030774] [Tidwell, V.C., P. H. Kobos, L.A. Malczynski, G. Klise, C. R. Castillo, 2011: Exploring the Water-Thermoelectric Power Nexus. Journal of Water Resources Planning and Management, Posted online on 21 Dec 2011. doi: 10.1061/(ASCE)WR.1943-5452.0000222] (George Backus, Sandia National Laboratories)	These references were added.
245	49478	26	10	47	10	54	Consider some improvements in the edition of the paragraphs. I did not go through all the paragraph. "Urban water adaptation options include improved drought management plans;, reduced water consumption:; system interconnections:; enhanced water quality and, coordination with other organizations in the water supply watersheds:; holistic management of storm water, flood waters, water supply, and wastewater:;incorporated climate change impacts into municipal bond ratings:; security through diversity of supplies including development of local resources, expansion of regional storage including aquifer storage, including projected future changes in climate into masterplans and source protection, land use management, and better alignment of revenues with fixed and variable costs (Lempert and Groves, 2010), (Smith, 2009), (105 Rosenzweig, C. 2007), ... (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This section was rewritten and some of these suggestions were incorporated.
246	49479	26	11	4	11	4	Consider some improvements in the edition of the paragraph. "Based upon a survey of water managers in the mid-Atlantic USA, Dow et al (2007), found they ...scarcity." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Since this did not change or addition clarity, no changes made in text.
247	36332	26	11	5	11	7	The meaning of "demand hardening" is not clear. (Steven Chan, Newcastle University)	This section eliminated and replaced by actual adaptations.
248	37536	26	11	7	0	0	The US Southwest is likely to face higher economic expenses and environmental losses due to exacerbation of water sustainability problems associated to climate change (Mac Donald, 2010). MacDonald, G.M, 2010: Water, climate change, and sustainability in the southwest. PNAS, 107(50), 21256–21262. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	Added.
249	49480	26	11	7	11	7	This section can be improved with the following information. "Some adaptation strategies implemented by the Mexican government include adjust water management and policies (e.g., water prices), incorporate climate information in water management, finance infrastructure and technology for efficient wastewater treatment and irrigation, and promote society's participation in water management.' Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Some of this information added to text. ; Agree, add as mentioned
250	52189	26	11	9	11	15	This statement seems far too simplistic (a DUH statement)--there needs to be some indication of costs and implications, the need for crop switching, etc. The example used here is far too specific--try one in California or Arizona, etc., and give some discussion of water pricing, etc. Also, water laws are different across the countries (and even within them), and this matters as well. With Mexico treating water as a national treasure and not having anyone really own water resources, such government-driven approaches are much more complex. This is all just far too simplified. (Michael MacCracken, Climate Institute)	This entire section was removed and replaced by the new section on Existing Adaptations. There is no longer reference to the Oldman River water management strategy . Due to space limitations, we do not go into the details such as pricing and institutions of the strategies we do discuss.
251	36333	26	11	9	26	11	Another jargon or phrase with unclear meaning: "first-in-time, first-in-right". I am not sure using a catch phrase for a specific programme is beneficial without actually describing programme in detail. (Steven Chan, Newcastle University)	This section replaced.
252	41058	26	11	13	12	13	columbia river box does not bring its points home. As it is it does not add anything to the subject of wgii and the chapter (Bruce McCarl, Texas A&M University)	Columbia example was eliminated so no response to this comment.
253	36042	26	11	15	0	0	And other locations. There is a citation for Anonymous (2008). I assume this is a placeholder since an anonymous science citation is suspect. (Michael Brewer, NOAA)	Yes, there was a software failure so not all references got in.
254	53603	26	11	26	11	31	Is there evidence of the effectiveness? (Kristie L. Ebi, IPCC WGII TSU)	This section replaced.
255	49481	26	11	33	11	36	Clarify where the practices mentioned were implemented (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This section replaced.
256	44945	26	11	38	12	10	While the Columbia River Basin is an excellent example of managing transboundary water issues, it was addressed in the AR4. If this box is retained it is important that it builds on the findings of the AR4, rather than repeating them. (Don Lemmen, Canada National Study)	Columbia example was eliminated so no response to this comment.
257	51571	26	11	43	11	44	It would be helpful to indicate what scenarios of climate change were considered in this analysis. (Katharine Mach, IPCC WGII TSU)	Columbia example was eliminated so no response to this comment.
258	47220	26	12	0	14	0	Increased temperatures and lower precipitation during the growing season will lead to drier soils, which combined with warmer conditions, may potentially increase tree vulnerability to water stresses and impact forest productivity. Changes in biochemical cycling of nutrients are also expected as microorganism activity and abiotic chemical reactions are highly dependent on temperature and precipitation. Reference: Houle, D., Bouffard, A., Duchesne, L., Logan, T., Harvey, R. 2012. Projections of future soil temperature and water content for three southern Quebec forested sites. Accepted in Journal of Climate. (Diane Chaumont, Ouranos)	Unless the commenter sends along the manuscript, we do not have access to accepted articles. We can consider in the final draft.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
259	49482	26	12	4	12	6	Examples of USA and Canada collaboration to reduce climate change impacts on water basin and wetlands management can be found in Mortsh LD, Quon S, Craig L, Mills B, Wrenn B (eds). Adapting to Climate Change and Variability in the Great Lakes-St. Lawrence Basin. Proceedings of a Binational Symposium. May 13-15. Environmental Adaptation Research Group (EARG)/Great Lakes Environmental Research Lab (GLERL), Toronto (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We consulted the reference, published in 1997, so we searched and cited latest works by the same authors. Columbia example was removed. (water)
260	41214	26	12	13	0	0	Section 26.4 pg12 line 13 – this section is very terrestrially focused. Notably absence is any specific reference to open ocean systems (e.g. changes in current and circulation patterns as a result of climate change will have a significant impact on biodiversity and ecosystem function). The following reference provides an assessment of the climate change impacts and vulnerabilities along the pacific marine coast of Canada, which synthesizes information from a significant number of peer reviewed sources. This should help as a start to broaden the review of marine systems in this chapter. Okey, T.A, H.M. Alidina, A. Montenegro, V. Lo, S. Jessen. 2012. Climate Change Impacts and Vulnerabilities in Canada’s Pacific Marine Ecosystems. CPAWS BC and WWF-Canada, Vancouver BC. (Susan Evans, WWF-Canada)	This reference with others were integrated into a special section 26.4.2 coastal ecosystems Coastal Ecosystems
261	51572	26	12	13	0	0	Section 26.4. Building on the well-developed assessment in this section, the author team is encouraged to further highlight key assessment findings that have emerged, also with usage of calibrated uncertainty language to characterize the author team's degree of certainty in these conclusions. (Katharine Mach, IPCC WGII TSU)	The uncertainty language was one of the topics discussed in BA. We agreed in BA on a shared structre for the sections to focus on observed and projected impacts and adaptations
262	47894	26	12	13	12	50	This section does a very good job describing the past changes, but is weak on describing potential future changes to these forested ecosystems, including other organisms living in the forest. I recommend a few publications to include: Iverson L.R., Prasad A.M., Matthews S.N. and Peters M. 2008. Estimating potential habitat for 134 eastern US tree species under six climate scenarios. Forest Ecology and Management 254: 390-406. Matthews S.N., Iverson L.R., Prasad A.M. and Peters M.P. 2011. Potential habitat changes of 147 North American bird species to redistribution of vegetation and climate following predicted climate change. Ecography 260: 1460-1472. (Louis Iverson, US Forest Service)	We have entirely revised this section to include both observed changes in the past and projected changes in the future. In revising this section, we worked to include the recommended citations and other relevant literature.
263	49487	26	12	13	15	40	I suggest to strengthen the discuss of how ecosystems require to be managed in a changing climate and what new challenges managers are likely to experience in section 26.4 Ecosystems and Biodiversity. Examples of adaptation in North America can be found in Bhatti JS, Lal R, Apps MJ, Price MA (Ed.) (2006) Climate Change and Managed Ecosystems. Taylor and Francis. Boca Raton, FL. Another reference is Mortsch LD (2006). Chapter 3. Impact of Climate Change on Agriculture, Forestry and Wetlands. In: Bhatti JS, Lal R, Apps MJ, Price MA (Ed.) Climate Change and Managed Ecosystems. Taylor and Francis. Boca Raton, FL. Pp. 45-67. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We cite the book in the section on coastal ecosystems. L261
264	44946	26	12	13	16	23	The introduction to this section requires an explanation of why it is focused on forests and coasts at the exclusion of many other sensitive ecosystems, including grasslands and alpine. There is very little information presented on biodiversity beyond the statement that it is a strong indicator of ecosystem resilience. Without more details on biodiversity it should likely be dropped from the heading. (Don Lemmen, Canada National Study)	In the restructuring and revising of the Ecosystems section, we have attempted to explain this more clearly. In essence, in reviewing an area of the literature as vast as climate change impacts, adaptation, and vulnerability on North American ecosystems, some decisions must be made about what to focus on. We have zoomed in on forests and coastal ecosystems as two areas in which many important advances have occurred since the AR4, but tried to better acknowledge that we are not covering the other ecosystems in nearly as much depth in this draft.
265	41059	26	12	16	12	16	you might also want to look at Attavanich, W., B. Rashford, R.M. Adams, and B.A. McCarl, "Land Use, Climate Change and Ecosystem Services", Oxford Handbook of Land Economics, edited by Joshua M. Duke and JunJie Wu, forthcoming, 2011. wehre we show adaptaion in ag threatens prairie potholes and duck populations (Bruce McCarl, Texas A&M University)	We considered other similar documents that refer North America ecosystems including concern about loss of biodiversity by land use change and climate change. Cross reference with Chapter 4 was noted regarding grasslands, tundra, wetlands and peatlands. Also in coastal systems (Chapter 5), estuaries, tidal flats, and lagoons
266	53604	26	12	27	11	29	Please describe time slice and critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	Space does not allow such a detailed discussion about this one citation (Scholze)
267	49483	26	12	27	12	27	Another study that assess the vulnerability of North American ecosystems to changes in climate, particularly, wetlands is the following. Reference Mortsch LD, Ingram J, Hebb A, Doka S (eds) (2006). Great Lakes Coastal Wetland Communities. Vulnerability to Climate Change and Response to Adaptation Strategies. Final Report. Climate Change Impacts and Adaptation Program (CCIAP). Environment Canada, Toronto (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We included the following reference in the section: Mortsch LD, Ingram J, Hebb A, Doka S (eds) (2006). Great Lakes Coastal Wetland Communities. *
268	41022	26	12	28	0	0	Since the boreal could be considered part of the North American Chapter but also the more northern parts of the boreal part of the Polar Chapter and it would be impossible to edit out the potentail duplication could I suggest that the writers should alert readers to this "grey area" in both Chapters. The same would apply of the EurAsian Chapters I assume (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We have contacted those chapters and attempted to mimize any overlap on the SOD. In particular, we discuss boreal impacts mostly of forest ecosystems relevant to North American human populations. We try to avoid arctic regions especially.
269	51573	26	12	29	12	29	Where the phrase "assigned a high probability" is used, the author team should clarify if this high probability was a result of the study or an assumption used in it. (Katharine Mach, IPCC WGII TSU)	Addressed
270	36334	26	12	30	12	35	The meaning of "climate velocity" is not clear. (Steven Chan, Newcastle University)	We define these in the FOD as - the rate at which climate isotherms move across the land per year _ but now in the SOD we avoided talking about climate velocities (LVR)
271	36335	26	12	30	14	33	There are many occurrences that field specific jargons are used, which meanings are unclear even to technical audiences. Usage of such jargons should be avoided unless they are clearly explained. (Steven Chan, Newcastle University)	We tried to omit jargons in the SOD (LVR)

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
272	37537	26	12	52	13	2	Consider to include information on drought and forests in Mexico http://www.mexicoforestal.gob.mx/files/Sequia%20ok.pdf (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	We make reference to Conafor 2012 in the section
273	47221	26	13	0	14	0	In northern ecosystems, tree mortality will also increase with an increase in the loss of cold tolerance in a warming climate (Schaberg et al. 2000, Zhu et al. 2002, Lazarus et al. 2004; Bourque et al 2005, Hawley et al. 2006, Dumais et Prévost 2007, Zhu et al. 2001, 2002). Many species develop a tolerance to cold temperature over the fall and early winter but as the temperature warms and freeze-thaw cycles become more frequent, these species do not fully develop their tolerance. In addition, this loss in tolerance is positively correlated with an increase in acidic atmospheric depositions (Schaberg et al. 2000, Zhu et al. 2002, Hawley et al. 2006). For example, this phenomenon is so important for red spruce that it is largely responsible for its population decline over north-eastern North America (Schaberg et al. 2000, Hawley et al. 2006). References: Bourque CP-A, Cox RM, Allen DJ, Arp PA, Meng F-R. 2005. Spatial extent of winter thaw events in eastern North America: historical weather records in relation to yellow birch decline. <i>Glob. Change Bio.</i> 11: 1477-1492. Dumais D, Prévost M. 2007. Management for red spruce conservation in Québec: The importance of some physiological and ecological characteristics-A review. <i>For. Chron.</i> 83: 378-392. Hawley GJ, Schaberg PG, Eagar C, Borer CH. 2006. Calcium addition at the Hubbard Brook Experimental Forest reduced winter injury to red spruce in a high-injury year. <i>Can. J. For. Res.</i> 36: 2544-2549. Lazarus BE, Schaberg PG, DeHayes DH, Hawley. 2004. Severe red spruce winter injury in 2003 creates unusual ecological event in the northeastern United States. <i>Can. J. For. Res.</i> 34: 1784-1788. Schaberg PG, DeHayes DH, Hawley GJ, Strimbeck GR, Cummin JR, Murakami PF, Borer CH. 2000. Acid mist and soil Ca and Al alter the mineral nutrition and physiology of red spruce. <i>Tree Physiol.</i> 20: 73-85. Zhu XB, Cox RM, Meng F-R, Arp PA. 2001. Responses of xylem cavitation, freezing injury and shoot dieback to a simulated winter thaw in yellow birch seedlings growing in different nursery culture regimes. <i>For. Ecol. Manage.</i> 145: 243-253. Zhu, XB, Cox RM, Bourque C-PA, Arp PA. 2002. Thaw effects on cold-hardiness parameters in yellow birch. <i>Can. J. Bot.</i> 80: 390-39 (Diane Chaumont. Ouranos)	We agree entirely. We have attempted in the SOD to highlight tree mortality across all three countries, but due to space constraints are unfortunately not able to dig into all the various causes and pathways in depth.
274	41215	26	13	4	13	6	Section 26.4 pg 13 line 4-6 – The statement seems to only apply to the review of forest systems in section 26.4.1 and not the review of coastal systems in section 26.4.2. Remove or reword. (Susan Evans, WWF-Canada)	We rewrote the paragraph.
275	51574	26	13	9	0	0	The author team should consider and potentially cross reference Chapter 4 in this section. (Katharine Mach, IPCC WGII TSU)	Was cross-referenced with chapter 4.
276	51575	26	13	11	13	34	"likely" on lines 11 and 34 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Agree, we will use the term properly.
277	46737	26	13	17	13	17	The author refers to the common name "trembling aspen" as the common name for <i>Populus tremuloides</i> , however it is also known as quaking aspen. That is the name predominantly used in Colorado (perhaps they use the other common name in Canada or the northern Rockies, but perhaps it is best to either use both common names or change it to quaking aspen seeing as this is the North America chapter and quaking aspen seems to be used more than trembling aspen as the common name). (Maria Caffrey, National Park Service and University of Colorado, Boulder)	will include, but common names are for general reference only as they vary greatly in the three countries of NA
278	42097	26	13	20	0	21	It would be useful to explain what "climate change-type drought" means. What is it that it makes a climate change -type drought different to other types of drought? (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Agree removed the words And we left the explanation of severe drought to avoid confusion
279	51576	26	13	20	13	21	It would be preferable to explain more specifically what is meant by "climate change-type drought events." (Katharine Mach, IPCC WGII TSU)	word problems of interpretation, was excluded
280	49484	26	13	43	13	46	Consider some improvements in the edition of the paragraph. "The decline of oak forests in the state of Guanajuato, Mexico, was associated with extreme temperatures and severe droughts, making the trees vulnerable to infestation susceptible fungal pathogens (Vázquez Silva, L., J.C. Tamarit Urias, J. Quintanar Olguín, and L. Varela Fregoso, 2004)." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	The phrase was restructured and the reference updated
281	51577	26	13	51	13	52	As possible, it would be helpful to indicate more specifically which regions have experienced this effect and over what time frame it has occurred. (Katharine Mach, IPCC WGII TSU)	We included more recent references and identified geographic areas of North Am+L279erica as well as seasonality
282	53605	26	14	4	14	23	These paragraphs repeat the same information. (Kristie L. Ebi, IPCC WGII TSU)	The MPB box is not included any longer, so we rewrote the paragraphs are included in the text, without repetition of phrases
283	44947	26	14	4	14	33	Be consistent in the terminology used (MPBB versus MPB) and ensure that content is appropriate given headings. The final paragraph of Box 26-2 does not deal with MPB, and therefore either the paragraph should be removed or the title of the Box changed. Box fails to capture what is arguably the most significant recent developments in MPB - its eastward expansion within the Boreal Forest. The map found at http://cfs.nrcan.gc.ca/pages/49 showing expansion since 2008 from BC into Alberta would be a useful addition. As well, updated figures on area of impact can be obtained from Government websites (BC 2012 - 18.1M hectares affected). Finally, use consistent units - either km2 or hectares. (Don Lemmen, Canada National Study)	Due to space limitations, the MPB box was excluded and the content was included in paragraph 26.4.1 Infestations Tree Mortality and Forests. Rewrote this section regarding as a geographically broader problem in Canada western and southwestern U.S. and Northern part of Mexico. The website was consulted and included.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
284	41023	26	14	5	14	26	I am not aware of Mountain Pine Beetle reported to occur in Alaska- instead the Spruce Bark Beetle does - a close relative (same genus but different species). It occurs in both Alaska and the Yukon. (I did a web search to see if my information is out of date and could see no reference to MPB for Alaska) The hosts are different. They are both endemic to their range but there populations bhave been released by warmer temperatures during the winter resulting in major infestations a forest change. As per my comment re Chapter 28 Page 21 line 1 shows the Mountain Pine Beetle is moving north and has almost reached the Yukon Boundary and is now projected to extend its range north of 60 degrees north. Again on line 18. Note figure 26-3 that refers specifically to Mountain Pine Beetle (not Spruce Bark Beetle) does not show range extending into Alaska. There have been recent suggestions that the large scale forest die offs are having a major impact on water tables and also priming slopes for slumping. Check with Tom Pedersen at the Pacific Institute for Climate Solutions 250 853 3595 Also http://www.unbc.ca/assets/qrrc/mountain_pine_beetle__hydrological.pdf and http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/stewardship/hydrology/ are two sites with information. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Indeed there are different species of beetle also hosts the three countries, due to space limitations, removed MPB box, became general climate effects on populations and the affected areas and these ideas were in paragraph 26.4.1 .
285	41061	26	14	9	14	9	the species invasion issues are much bigger than reviewed here. There are some papers on invasive species in agriculture and their effects Koleva, N.G., U.A. Schneider, and B.A. McCarl, "Pesticide and greenhouse gas externalities from US agriculture - The impact of their internalization and climate change", Climate Change Economics, forthcoming, 2012 plus ones on plant species Gan, J., J. Miller, H. Wang, and J. Taylor. 2009. Invasion of tallowtree (Triadica sebifera) into southern US forests: Influencing factors and implications for mitigation. Canadian Journal of Forest Research 39:1346-56. and i would imagine one could find items on fire ants, nutria and other items (Bruce McCarl, Texas A&M University)	The issue of invasive species is discussed in Chapter 4 in land use change (invasive species, chemicals in land use and N deposition). In this chapter we're focused on this other North American problem.
286	42098	26	14	15	0	17	Provide references. The statement that the influence of climate change on ecosystem disturbance could have a major influence on NA economy needs to be supported by references. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	References were included as economic costs in terms of how the carbon stores outbreaks infestations can turn forests into carbon sources
287	51578	26	14	17	14	20	The author team should consider indicating the time frames over which these events occurred. (Katharine Mach, IPCC WGII TSU)	We will need to address this in the final version of the chapter
288	41060	26	14	28	14	28	I terms of southern beeltels you might want to reference Gan, J. (2004). Risk and damage of southern pine beetle outbreaks under global climate change. Forest Ecology and Management, 191(1-3): 61-71. doi: 10.1016/j.foreco.2003.11.001 (Bruce McCarl, Texas A&M University)	References included in discussion on beetle population in the southwestern United States and Northern part of Mexico
289	51579	26	14	28	14	28	For the described "profound effects," what kind of effects are meant here? Temperature-mediated effects only, or are others relevant? It would be clearest to indicate further the nature of these effects. (Katharine Mach, IPCC WGII TSU)	We deleted the term "profound effects" and the text focuses mainly on what the literature says about weather variables and their effect on beetle populations in this case the temperature.*
290	46738	26	14	28	14	33	Fire suppression (particularly in exurban communities) could also be a problem. You want to cite Romme, W. 1982. Fire and landscape diversity in subalpine forests of Yellowstone National Park. Ecological monographs, 52: 199-221. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	This is a very good point. We have included discussion of this in the Wildfires Box in two areas. We highlight the importance of legacies in forest management like fire suppression in the observed impacts. And we discuss possibilities of forest management in the adaptation section.
291	51580	26	14	32	14	32	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. The author team should avoid casual usage of this reserved likelihood term. (Katharine Mach, IPCC WGII TSU)	Done (LVR)
292	41216	26	14	33	14	40	Section 26.4.2 pg14 line33-40 – review of acidification impacts is biased towards corals. Other marine species will also be impacted by acidification and should be included in this review. Also notably absent is any mention of changes in anoxic conditions as a result of climate change. The following is a list of resources that would help to broaden the scope of this chapter and provide a more balanced review. ADDITIONAL REFERENCES: Crawford, W., D. Johannessen, F. Whitney, R. Birch, K. Borg, D. Fissel, and S. Vagle. 2007 Appendix C: Physical and Chemical Oceanography in B. G. Lucas, S. Verrin, and R. Brown, editors. Ecosystem overview: Pacific North Coast Integrated Management Area (PNCIMA). Canadian Technical Report of Fisheries and Aquatic Sciences 2667. Whitney, F.A., H.J. Freeland, and M. Robert. 2007. Persistently declining oxygen levels in the interior waters of the eastern subarctic pacific. Progress in Oceanography 75(2):179–199. Whitney, F. A. 2011. Nutrient variability in the mixed layer of the subarctic Pacific Ocean, 1987-2010. Journal of Oceanography 67:481-492. McClatchie, S., R. Goericke, R. Cosgrove, G. Auad, and R. Vetter. 2010. Oxygen in the Southern California Bight: Multidecadal trends and implications for demersal fisheries. Geophysical Research Letters 37:L19602 Koslow, J. A., R. Goericke, A. Lara-Lopez, and W. Watson. 2011. Impact of declining intermediate-water oxygen on deepwater fishes in the California Current. Marine Ecology-Progress Series 436:207-218. Grantham, B.A., F. Chan, K.J. Nielsen, D.S. Fox, J.A. Barth, A. Huyer, J. Lubchenco, and B.A. Menge. 2004. Upwelling-driven nearshore hypoxia signals ecosystem and oceanographic changes in the Northeast Pacific. Nature 429:749–754. Dybas, C.L. 2005. Dead zones spreading in world oceans. BioScience 55(7):552–557. Chan, F., J.A. Barth, J. Lubchenco, A. Kirincich, H. Weeks, W.T. Peterson, and B.A. Menge. 2008. Emergence of anoxia in the California Current large marine ecosystem. Science 319(5865):920. Wootton, J.T., C.A. Pfister, and J.D. Forester. 2008. Dynamic patterns and ecological impacts of declining ocean pH in a highresolution multi-year dataset. Proceedings of the National Academy of Sciences of the United States of America 105:18848–18853. (Susan Evans, WWF-Canada)	Thanks for sending references, were considered most in paragraph 26.4.2 Coastal Ecosystems favoring current dates
293	36336	26	14	38	15	20	Is the risk posed by tropical cyclone storm surge higher or lower than gradual sea level change? This may have important implications to manage the impacts. (Steven Chan, Newcastle University)	This topic is beyond the North America chapter, but is appropriate for Work Group I

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
294	41024	26	14	38	15	40	We need to begin to consider synergistic effects of climate induced changes such as sea level rise and how it may change the effects of other natural or man made events or processes- especially with respect to human values. On the west coast of North America I think of seismic events and their associated tsunamis and the survivability of adaptation measures such as dikes or the lessening of natural coastal as a result of loss of mangroves or other vegetation communities, beaches etc. similar to the kind of processes discussed on page 15 lines 17-20. The probability of a significant seismic event over the period of these climate projections is well known and the one time impact of the event and the high water mark it triggers will in many areas dwarf any effects of rising sea level during the same time period. The difference being seismic events will be discrete events and the impacts are very much dependent on coast line shape and variables such as water depths. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We have not come across literature that discusses this for North America
295	51581	26	14	40	14	46	For these statements, the author team should clarify the relevant time frame--do they all pertain to the 20th century as a whole? Also, where the "Atlantic Coast" is mentioned on line 42, did the study evaluate the Atlantic Coast in the US alone or across national borders? (Katharine Mach, IPCC WGII TSU)	Rewrote the text about sea level rise with observational data increases in certain sites in Canada, U.S. and Mexico, identifies the most significant increases reported for the Atlantic
296	42059	26	14	40	14	47	Regarding data for sea level rise, this section should refer to chapter 5 as the data in chapter 26 differ in part and are not as detailed. (Liette Vasseur, Brock University)	It's not clear to us which data the reviewer is talking about.
297	44948	26	14	40	14	47	It is not clear that this info on sea level rise should appear under the heading of Ecosystems and Biodiversity. It likely better fits into 26.2. References should be expanded to include most recent materials (e.g. Committee on Sea Level Rise in California, Oregon and Washington; 2012; http://www.nap.edu/catalog.php?record_id=13389) as well as more complete spatial coverage (there are no references to Canadian studies). (Don Lemmen, Canada National Study)	The theme of coastal ecosystems is totally restructured emphasizing climate change impacts on biological groups were included updated references for NA three countries.
298	36428	26	14	40	15	15	These two paragraphs place a deserved emphasis on the Atlantic and Gulf Coasts, which are predicted to experience the greatest sea level rise in North America, but there is no mention of how even more moderate sea level rise on the Pacific Coast, and particularly on the California Coast, will likely lead to massive levee collapse in the Sacramento-San Joaquin Delta. Such collapse would turn freshwater and brackish ecosystems into brackish and saltwater ecosystems, respectively, and would submerge, perhaps permanently, Delta tracts and islands. At the same time, saltwater flooding of the Delta might well affect the water supply for upward of 20 million Californians. The point is that vulnerability is not always tied to greatest sea level rise, but rather to the socio-ecological systems in place at the point where that sea level rise takes place. The references to Chapter 26 include Lund, J., E. Hanak, W. Fleenor, R. Howitt, J. Mount, and P. Moyle, 2007: Envisioning futures for the sacramento san joaquin delta. San Francisco, USA, Public Policy Institute of California, San Francisco ed., pp. 285, so it is surprising that the severe threats to the Delta are not included here. A more recent reference that could be added is Lund, J., E. Hanak, W. Fleenor, W. Bennett, R. Howitt, J. Mount, and P. Moyle, 2010: Comparing futures for the sacramento san joaquin delta. Berkeley and Los Angeles, USA, University of California Press, and San Francisco, USA, Public Policy Institute of California, pp. 229. For the history of land subsidence, saltwater intrusion, and flooding in the Sacramento-San Joaquin Delta, see also Garone P., 2011: The Fall and Rise of the Wetlands of California's Great Central Valley. Berkeley and Los Angeles, USA, University of California Press, pp. 422, especially Ch. 5 and Epilogue. (Philip Garone, California State University, Stanislaus)	Tectonic movements effectively mask the rise of sea level in the Pacific, including the reference of Sn Joaquin-Sacramento Delta.
299	42060	26	14	41	14	53	We go for a complete paragraph without references. Surprising since all the others had. (Liette Vasseur, Brock University)	Thanks for the comments, references included at the end of the paragraph that do not break the easy reading sentences.
300	49485	26	14	45	14	46	Consider some improvements in the edition of the paragraph. "observed in Ciudad. Madero, Tamaulipas (9.2mm per year), while that for the Pacific was observed in Guaymas, Sonora (4.2mm per year). This trend provides evidence of an increasing rate of sea level rise (Zavala-Hidalgo,...." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Thanks for your improvements to the paragraph, re-wrote and included some references suggested.
301	42099	26	15	1	0	5	It should be clarified if this statement refers only to the US part of the Gulf and south Atlantic or if it also includes the Mexican part. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Rewrote the text specifying the areas of U.S. and included references to Mexico and to the Pacific coast.*
302	46739	26	15	1	15	5	Need to cite here Sallenger et al. 2012. Hotspot of accelerated sea-level rise on the Atlantic coast of North America. Nature climate change, online: 1-5. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	Thanks for the reference, is included the appointment of Sallenger et al 2012.
303	51582	26	15	2	15	3	It would be helpful to clarify if this result considered both Mexico and the US. (Katharine Mach, IPCC WGII TSU)	In particular the reference is to U.S. but included references to Mexico that make consistent.
304	49486	26	15	4	15	5	Consider some improvements in the edition of the paragraph "2011) estimate that the areas more exposed to SLR are located in the south Atlantic and Gulf Coast states, while the west coast is, in general, less exposed." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Suggested wording was considered Thanks.
305	52190	26	15	7	15	9	I am amazed that this list does not include the Chesapeake Bay, which is the largest estuarine system in the country. The land in this area is subsiding at something like 15 cm per century, sea level is rising, it is subject to hurricane induced storm surges, etc. Adjacent lands are already being impacted with streets near the coast in the Norfolk area already being raised, and more. I am also surprised that the San Francisco Bay/Sacramento-San Joaquin delta region is not also mentioned--especially being in an earthquake prone region, this makes what seem like simple adaptation measures much more complex (i.e., the inland "islands" in the Delta area are really, as Marc Reisner put it in his book on the dangerous situation faced in the region, "empty reservoirs" that will be increasingly stressed as sea level rises and the peat soil of the islands is oxidized. (Michael MacCracken, Climate Institute)	We have worked to include references and some discussion of these two regions in the SOD.
306	53606	26	15	7	15	15	Please describe time slice and critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	Specify timeline and areas or critical assumptions (LVR)

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
307	51583	26	15	12	15	13	For this projection, the author team should consider indicating the relevant time frame and climate/socioeconomic scenarios. (Katharine Mach, IPCC WGII TSU)	This sentence has been reworked to be contingent on sea-level rise projections but focused instead on the ecosystem impacts. Thus, in the revised sentence due to this contingency, we do not go into the assumptions on SLR.
308	52191	26	15	14	15	15	Where is mention of the vulnerability of urban areas around the US, many of which are right at sea level and are especially vulnerable to potential storm surge damage? Even if covered in another chapter, this vulnerability simply has to be mentioned in this chapter. (Michael MacCracken, Climate Institute)	Section 26.8 addresses vulnerabilities in urban areas.
309	42061	26	15	17	0	0	This paragraph should be more consistent with Chapter 5 as there are differences (and again a paragraph with less references?). (Liette Vasseur, Brock University)	The section on coastal ecosystems completely restructured organized in: observed impacts and Projected Future Impacts and Risks for NA so compacted some issues, and suggested quotes include cross references are made as the theme to acidifying oceans the box compiled by Chapters 5, 6, 19 and 30.
310	46740	26	15	17	15	20	Some mention of the evidence (or lack of evidence) for changes in storm paths needs to be made here. Lines 17-20 make it sound as though the whole coastal zone will experience more hurricanes, however there are some hypothese that storm frequency will decrease and that storm tracks will be different too - therefore some regions could get less "direct hits" from storms (see Knutson et al. 2010. Tropical cyclones and climate change. Nature Geoscience, 3: 157-163). (Maria Caffrey, National Park Service and University of Colorado, Boulder)	Section was improved storms and cyclones with updated references added, the information is organized into two themes: observed and projected impacts in NA ecosystems.
311	51584	26	15	18	15	18	It may be clearest to indicate here that the described "increase" is a "projected increase." (Katharine Mach, IPCC WGII TSU)	The text was divided into impacts observed and projected impacts and future risks.*
312	53607	26	15	18	15	19	What are the projections for hurricanes? (Kristie L. Ebi, IPCC WGII TSU)	Addressed in 26.2
313	51585	26	15	22	15	40	For these paragraphs, the author team should consider and cross-reference chapter 6 and 30. (Katharine Mach, IPCC WGII TSU)	Cross-referenced with the acidification Box, compiled by Chapters 5, 6, 19 and 30.L300
314	52192	26	15	35	15	35	Delete "are allowed to"--unnecessary and seems to get into policy. Also, use of the word "if" should be avoided--rephrase to something like "As CO2 levels rise beyond 450 ppm, damage to reefs (etc.) is projected to significantly increase" or something like that. (Michael MacCracken, Climate Institute)	It was synthesized and restructured the sentence, thanks for your comments (LVR)
315	51586	26	15	38	15	38	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	the word likely was excluded, will be used only in very specific cases.
316	41217	26	15	43	0	0	Section 26.4.3 Pg 15 line 43-- This section focuses only on the forest sector, and will need to be expanded to present adaptation and mitigation strategies from the other sectors reviewed. ADDITIONAL REFERENCE: Brinkham et al. 2012. Climate Change Adaptation Planning for Northwest Skeena Communities. Brinkman Forest Ltd. New Westminster, BC. (http://brinkmanforest.com/ffesc/wp-content/uploads/2012/03/Chapter-1.pdf) (Susan Evans, WWF-Canada)	We included new and updated references on the subject of adaptation and mitigation by balancing different orientations for the three NA countries.
317	51587	26	15	43	0	0	Section 26.4.3. The author team may wish to additionally consider adaptation and mitigation as relevant to coastal zones (per 26.4.2) in this section. (Katharine Mach, IPCC WGII TSU)	This section covers adaptation and mitigation of NA ecosystems, addresses the issue of strengthening the resilience knowing the ecosystem processes and in particular terrestrial and coastal ecosystems that were discussed in the previous sections.
318	44949	26	15	43	16	23	This section deals only with forests. Given the current structure it should also include coastal zones. Suggest thought be given to these stand-alone sections on adaptation and mitigation so they do not become lists of possible options, but rather include consideration of criteria for assisting decision-making. What are "Canadian adaptation options" (p. 15, l. 52)? Presumably this should read "... some adaptation measures that have been proposed / implemented in Canada ...". (Don Lemmen, Canada National Study)	This section addresses based on the documents from the three countries. These issues include coastal resources
319	49488	26	15	43	16	23	Adaptation strategies to reduce impacts on coral reefs are missing in section 26.4.3 (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This is a broad topic. This section discusses strengthening resilience and then identifies some proposals for three countries and various ecosystems.
320	53608	26	15	49	15	49	How many studies were done? (Kristie L. Ebi, IPCC WGII TSU)	We rewrote the section and included more citations
321	51588	26	15	52	15	52	The author team should further clarify and specify what is meant here by "the key." (Katharine Mach, IPCC WGII TSU)	Term excluded
322	41025	26	15	52	16	13	One challenge not referred to is the lack of adaptation by some tree species or specific genetic stocks to varying daylength. I have made specific comemnts in my comments to Chapter 28 page 3 line 8 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We make the point that climate change and ecosystem degradation reduces resilience, this includes changes in the daylength variations.*
323	49489	26	16	3	16	3	Consider to include the following information. 'Adaptation strategies to reduce climate change impacts on Mexican forests include improve land-use regulation effectiveness to prevent forest cover loss, promote environmental services' payment for carbon capture and water sources conservation, support agroforestry practices, incorporate weather information in forestry programs, and implement reforestation practices using native species.' Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change (Fabiola S. Sosa-Rodriguez, University of Waterloo)	There is limited space to address this. So, this section discusses the resilience of different ecosystems to climate change and identifies some adaptation measures by country.*
324	49490	26	16	8	16	8	Typo: "above preindustrial levels. (Mansourian ...". (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Noted, thanks
325	49491	26	16	12	16	12	Typo: "productivity of forests; in order to..." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Noted, thanks
326	36337	26	16	15	16	19	What do CDM and REDD+ stand for? (Steven Chan, Newcastle University)	The IPCC contains a glossary

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
327	49492	26	16	15	16	19	Lessons learn from REDD in Mexico can be found in FONAFIFO, CONAFOR, MMAE. 2012. Lecciones aprendidas para REDD+ desde los programas de pago por servicios ambientales e incentivos para la conservación. Ejemplos de Costa Rica, México y Ecuador. Banco Internacional de Reconstrucción y Fomento/ World Bank. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	given the short space available, this section focused more on how biodiversity and conservation helps adaptation and resilience to the effects of climate change. (LVR) Given the short space that is available, this section focused more on how biodiversity and conservation of terrestrial and coastal ecosystems help adaptation and resilience to the effects of climate change (LVR)
328	48230	26	16	26	16	26	Devoting about three pages to wildfires seems excessive when other critical issues, such as food security and water supplies, are given just a few paragraphs. (David Sauchyn, University of Regina)	Agree and this topic is now synthesized in a box.
329	44950	26	16	26	19	4	From an organizational perspective this section on Wildfire stands out in that it is the only one that is focused on a specific impact, rather than on a system or sector. This divergence needs to be explained. It would seem much more appropriate for Wildfire to be addressed as part of ecosystems, rural communities, and other relevant systems / sectors. Were the issue not discussed previously it might deserve higher profile, but Wildfire did receive significant attention in Chapter 14 of the AR4 (both in Executive Summary and Box 14.1 under "Ecosystems"). (Don Lemmen, Canada National Study)	Because of its importance, we have put wildfires in a box.
330	48691	26	16	30	0	0	"doubled": compared between which two periods? (Yongqiang Liu, USDA Forest Service)	Wildfires will be synthesized in a box and the reference in the draft was mid-80. In other words annual acres burned at the time of writing is twice what it was in 2000.
331	48692	26	16	32	0	0	"six-fold increase": again compared between which two periods? (Yongqiang Liu, USDA Forest Service)	Rewrote paragraph noting that the reference period is mid 80 (1986).
332	49493	26	16	32	16	33	"Westerling et al., 2006). In the past decade 11 of the 20 largest fires on record occurred in California (CDFFP, 2010)." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	wildfires was synthesized in a box and we avoided the paragraph in the final draft. This interpretation is not correct. It is 11 of the 20 largest fires IN CALIF occurred in the past decade.
333	48693	26	16	33	0	0	add the following evidence of increased fire potential trends? Present seasonal fire potential have been increasing over the period of 1971-2000 in various continental U.S. regions except some seasons in Pacific North and Southeast(Table from Liu et al. 2012a). (see additional information in supporting material) (Yongqiang Liu, USDA Forest Service)	Thanks for sending the references, the wilfires topic will be in a box which includes extreme events and trends.
334	42100	26	16	33	0	37	This does not necessarily mean that the average is indeed higher. It would be more appropriate to compare average values with average values. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	The 5 million figure DOES refer to the annual average.
335	49494	26	16	37	16	37	Clarify the sentence. Some information is missing. "...hectares several times since ????? (Peter et al., 2006)." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	wildfires was synthesized in a box and we did not include the paragraph in the final draft.*
336	49496	26	16	37	16	38	Clarify the cause of recent fire events. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Clarified that fire events are related to the long and warm spring and summer droughts with wind events of each year.
337	49495	26	16	39	16	41	"In Mexico, between 1999 and 2009, 216 thousand hectares per year were lost in wildfires, but in 2011 were 954. 72 thousand hectares were lost due to wildfires exceeding the area burned in 1998 (CONAFOR (National Forestry Comission), 2011)) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Wildfires was synthesized in a box and we did not include the paragraph in the final draft.
338	48672	26	16	44	17	6	This first paragraph does not sound "non-climate-related". Gillett et alii, 2004 (GRL, 10.1029/2004GL020876) may be useful here. (Dáithí Stone, University of Cape Town)	Wildfire was synthesized in a box. Subtitle excluded did not correspond to the section.
339	46741	26	16	44	17	26	Sub section on non-climate-related contributing factors: The historical fire record is difficult to interpret because of out history of fire suppression. Why not use paleo records to augment these statements? For example, on page 16 line 49 Yellowstone is mentioned, but the work by Cathy Whitlock and colleagues could shed much more light on this than Pierce and Meyer, 2008. See: Higuera et al. 2011. Linking tree-ring and sediment-charcoal records to reconstruct fire occurrence and area burned in subalpine forests of Yellowstone National Park, USA. The Holocene, 21: 327-341. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	wildfires was synthesized in a box. General topics are addressed, one of them is Climate variability, extreme events and trends, in quoting Pierce and Meyer, 2008.
340	48694	26	16	46	0	0	The relations of ENSO to wildfires in the U.S. are statistically significant only for certain regions. Wildfires in the Southeast and Southwest are found to be more active during La Nina events (Simard et al. 1985, Swetnam and Betancourt 1990), while warming in the North Pacific is a major feature in the SST spatial pattern related to intense Northwest wildfires (Liu 2006). (Yongqiang Liu, USDA Forest Service)	Wildfire was synthesized in a box. Climate variability, noted positive and negative phases of ENSO to include La Niña and its effects.
341	48671	26	16	46	16	47	Is this the case for arid areas (i.e. grass fires) where generation of fuel is sensitive to climate? (Dáithí Stone, University of Cape Town)	Wildfires was sythesized in a Box. It emphasizes human presence in the wildland-urban interface .
342	36338	26	16	46	17	6	The subsection title ("Non-climate related factors") suggests focus on non-climate issue, but this paragraph is devoted to climate variability role in wild fire. Either the subtitle has to be changed, or the paragraph has to be moved. (Steven Chan, Newcastle University)	Agree and the section has been revised.*
343	44951	26	16	46	17	6	This first paragraph under the heading of "Non-climate-related contributing factors" only talks about climate-related factors (drought)! This type of organizational carelessness makes reviewing frustrating. (Don Lemmen, Canada National Study)	Agree and apologize for presenting these inconsistencies. Restructured and synthesized the wildfires issue in a box.
344	36339	26	17	8	17	20	The case used here refers to Mexico. How about US and Canada? Are wildfires in US and Canada relate to increase visitors to forests (e.g. number of tourists to national parks or hikers)? I am not sure if this has been studied before, but shouldn't the National Park Service has tourist figures? (Steven Chan, Newcastle University)	We have synthesized impacts of wildfires in the Wildfires Box. We have not seen studies regarding projections of visitations of parks or forests due to climate-change-mediated wildfire changes. If such studies exist, we would be happy to include them if the reviewer could point us towards them.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
345	49497	26	17	9	17	10	"2011). in Mexico, the agricultural practice of burning stubble in the dry season near forests is a primary cause of 11 ignition (CONAFOR (National Forestry Comission), 2011)." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Wildfires was synthesized in a box and we removed the paragraph in the final draft.
346	53609	26	17	18	17	26	These sentences repeat the same information. (Kristie L. Ebi, IPCC WGII TSU)	Agree and apologize for presenting these inconsistencies. Restructured and synthesized the wildfires issue in a box.
347	36043	26	17	23	17	26	Duplicate paragraph needs to be removed (Michael Brewer, NOAA)	Agree and apologize for presenting these inconsistencies. Restructured and synthesized the wildfires issue in a box.
348	42101	26	17	31	0	0	Change "forecast" for "project". Scenarios do not forecast, they project possible future evolutions. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	done
349	53610	26	17	31	17	31	Scenarios do not forecast. (Kristie L. Ebi, IPCC WGII TSU)	done
350	48695	26	17	33	0	0	add the following? Liu et al. (2012a) projected the trends in wildfire potential under a changing climate in the continental U.S. using a dynamical regional climate change scenario provided by the North America Regional Climate Change Assessment Program (Mearns 2009). The projection indicates significant increases in the Southwest, Rocky Mountains, northern Great Plains, Southeast, and Pacific coast, most pronounced in summer and autumn. Fire seasons will become longer in many areas. The increasing trends are mainly caused by future warming trends (Yongqiang Liu, USDA Forest Service)	Thanks for the reference, included comment
351	51589	26	18	5	18	6	The author team to further clarify the citation supporting this statement. (Katharine Mach, IPCC WGII TSU)	It is justified with more references, paragraph was restructured and the wildfires issue is synthesized in a box.
352	36044	26	18	6	0	0	Canadian or US Dollars? (Michael Brewer, NOAA)	Statement removed.
353	42102	26	18	6	0	0	ibid? (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Wildfires was synthesized in a box and we removed the paragraph in the final draft.
354	47758	26	18	10	18	12	This increased population and increased exposure to wildland fires is not limited to the Southwestern US. (Eric Toman, The Ohio State University)	We restructured the topic and this paragraph was removed from the text. *
355	36045	26	18	11	0	0	WUI is introduced as an acronym and then never used again. No sense introducing it in those cases. (Michael Brewer, NOAA)	removed when rewrote paragraph
356	41026	26	18	18	0	0	The Okanagan Mountain Fire in the Kelowna area of British Columbia in 2003 is another good example of a wild land urban interface fire that reached fire storm levels Several web sites including http://www.sfu.ca/geog351fall03/groups-webpages/gp3/index.htm Also this years fires in Colorado and in the US South west. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Included the subject of urban-wilfires interface with updated references.
357	47759	26	18	20	18	23	The second sentence seems out of place here as the first and thir talk about health threats and the second focuses specifically on fire-related deaths. I suggest including a definiton of what is meant by health effects including both non-fatal effects (short and long-term impacts) to death at the extreme end of the spectrum (both from the fire itself and measures taken to respond to and/or manage the fire (e.g., including traffic related fatalities during evacuations). (Eric Toman, The Ohio State University)	section was revised.*
358	36046	26	18	30	0	0	PM used as acronym but not defined (Michael Brewer, NOAA)	The acronym was excluded
359	51590	26	18	35	18	36	"High confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	Term removed
360	47760	26	18	40	19	4	I suggest being more explicit about the distinction between actions taken on public lands and those taken on private lands as there is a substantial body of literature regarding both. Substantial research in the US has found considerable public acceptance for fuels reduction efforts on public lands (see for example, several papers including Absher and Vaske 2006, McCaffrey 2006, Toman and Shindler 2006, Vogt et al. 2007, Brunson 2008, McCaffrey 2008a, McCaffrey et al. 2008, Lim et al. 2009, Shindler et al. 2009, Toman et al. 2011). On private lands, several studies have found that many residents are taking action to reduce their risk (Kent et al. 2003, Nelson et al. 2005, Absher and Vaske 2006, Brenkert-Smith 2006, Cvetkovich and Winter 2008, McCaffrey 2008, Jarrett et al. 2009, Kyle et al. 2010, Ryan 2010, McCaffrey 2011). I am a co-author on a summary of social science research on fire management that is due out soon. If desired, I can forward the final report. It will be available here (http://www.treesearch.fs.fed.us/). The draft citation is: Toman, E., M. Stidham, S. McCaffrey, and B. Shindler. Forthcoming. Social science at the wildland-urban interface: A Compendium of research results to create fire-adapted communities. USDA Forest Service General Technical Report. An abridged version was recently published in the International Journal of Wildland Fire. McCaffrey, S., E. Toman, M. Stidham, B. Shindler. 2012. Social science research research related to wildfire management: An overview of recent findings and future research needs. International Journal of Wildland Fire. Print forthcoming. (Published online 12 July 2012) (Eric Toman, The Ohio State University)	The topic of adaptation is very broad and different, not only between public and private lands but between countries in NA. Given the limited space, adaptation and mitigation strategies that strengthen the resilience of ecosystems were briefly discussed in section 26.4 be presenting some country experiences and efforts.*
361	44952	26	18	45	18	46	Comments regarding reduction of flammable vegetation also applies to Canada. While likely captured in per-reviewed literature, it may also be helpful to make connections to tools that assist adaptation, such as https://www.firesmartcanada.ca/ . (Don Lemmen, Canada National Study)	The theme of adaptation was restructured into some strategies proposed or implemented by countries as well as on the overall ecosystem resilience as a measure of adaptation and mitigation to climate change.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
362	48696	26	19	5	0	0	Add the following about adaption using prescribed burning tool? Prescribed burning is a useful technique to reduce accumulation of understory fuels and therefore reduce wildfire risks. Thus, increasing applications of prescribed burning could be a useful tool to offset the increasing wildfire risks due to climate change (Liu et al. 2012b). Assuming that the current fire potential is at a moderate level and that prescribed burning is conducted every four years, the corresponding wildfire frequency is assumed to be twice every 100 years. Under a changing climate, fire potential is projected to increase to a higher level. If prescribed burning remains once every four years, wildfire frequency would increase to three times every 100 years. One of the mitigation options could be to double the rate of prescribed burning, to every two years. As a result, wildfire frequency would remain at twice per 100 years. Climate change, however, could bring serious limits to prescribed burning. There are only a certain proportion of days in the year that are within prescription for fire. When weather conditions are too dry, hot, and/or windy, prescribed burning has an elevated risk of escaping control and becoming a wildfire fire. Moreover, the intensity of prescribed burning during those times, even if confined to the burning unit can result in excessive mortality to the adult trees in the stand. The days available for prescribed burning are expected to decrease in the future in many U.S. regions, as indicated in Figure XX (Liu 2012). The current percent of available days generally increases from about 0.1 in west to 0.4 during winter or 0.6 during spring in southeast. The Southeast is predicted to decrease the proportion of days in prescription by up to 0.3. The decrease is greater during summer and fall than the increase in the winter and during spring. (see added figure in supporting material) (Yongqiang Liu, USDA Forest Service)	Wildfires was synthesized in a box and we refer to prescribed burning for Canada and U.S. In the case of Mexico it is a sensitive issue. Agricultural burning is a practice still prevalent in the country, the misapplication of prescribed burn technique has increased the risk of wildfires because they are conducted near national forest areas to promote land use change. Regulations and forestry programs are related to fire management, fires in many cases are carried out in dry season and the fire has no control. The text emphasizes fire management more than prescribed fire.
363	51591	26	19	7	0	0	Section 26.6. The author team should consider and potentially cross reference Chapter 7 within this section. (Katharine Mach, IPCC WGII TSU)	Okay.
364	52193	26	19	7	19	19	It is really important that the discussion make clear that the issue of "Food Security" is very different than the health and well-being of farmers and farm communities. This is not really done here. The US has the wealth to purchase food from around the world, so what matters on food supplies is rally how well agriculture is doing around the world and the state of the international food trade and market. On the other hand, the well-being of the agriculture industry in the US has to do with how conditions for farmers here compare with changing conditions for farmers elsewhere, both within the US and outside the US. This is all not explained very well here and this needs to be done (Michael MacCracken, Climate Institute)	Agree it is an important distinction and have revised accordingly.
365	44953	26	19	7	23	25	Again organizational problems. Under the heading of food security there should be two subheading - Agriculture and Fisheries - and then sub-sub headings as appropriate. There are other elements to food security related to hunting and gathering, of primary relevance to Aboriginal communities. Assuming these are dealt with in some detail in Chapter 28, a cross-reference here may be sufficient. There is also a need for more balance and consistency in approach between the agriculture and fisheries sections. (Don Lemmen, Canada National Study)	Due to limited space we have removed fisheries from 26.6 and added an abbreviated discussion of fisheries to the Ecosystems section and refer to other chapters.
366	41062	26	19	9	19	9	The sentence Climate change is projected to cause food price increases and declines in caloric availability globally (Nelson et al., 10 2009) is misleading and inaccurate from the standpoint of the total literature. The nelson et al study is a real outlier in terms of appraisalas and i think has major omissions. i think one should refer to some of the other analyses like the 2001 us national assessment or the epa assessments. a recent unpublished one is McCarl, B.A., "US Agriculture in the climate change squeeze: Part 1: Sectoral Sensitivity and Vulnerability", report to National Environmental Trust, 2006. http://agecon2.tamu.edu/people/faculty/mccarl-bruce/papers/1303Agriculture%20in%20the%20climate%20change%20squeeze1.doc . these all show decreasing prices. (Bruce McCarl, Texas A&M University)	The sentence has been revised.
367	41063	26	19	27	19	27	I don't agree with "Attempts to attribute observed changes in productivity to anthropogenic climate change remain inconclusive (Lobell 28 et al., 2011), " as a large number of studies have found liknks see for example (McCarl, B.A., X. Villavicencio, and X.M. Wu, "Climate Change and Future Analysis: Is Stationarity Dying", American Journal of Agricultural Economics, Volume 90, Issue 5, 1242-1247, 2008. and McCarl, B.A., X. Villavicencio, X.M. Wu, and W.E. Huffman, "Climate Change Influences on Agricultural Research Productivity", Climatic Change, under secongnd review, 2012. In general there is a lot of literature missed here with pieces by Khanna, Devadoss and others) (Bruce McCarl, Texas A&M University)	It is indeed the case that we have limited ability to attribute observed changes in productivity to ANTHROPOGENIC climate change. This is not to say that observed changes have not been attributed to climate change. In any case this section has been revised substantially, and this sentence has been removed; thank you for the references, we have updated literature.
368	51592	26	19	30	19	31	It would be beneficial to indicate the timeframe over which this reduction has occurred. (Katharine Mach, IPCC WGII TSU)	Timeframe has now been added to this statement, which now occurs in a different part of the section.
369	48673	26	19	34	19	35	Also Barnett et alii, 2008 (Science, 319, 1080). (Dáithí Stone, University of Cape Town)	Thank you; this reference has been added.
370	51593	26	19	43	19	44	The author team might wish to consider if further qualification of this statement would be beneficial, in terms of the timeframe over which this outcome is projected or in terms of types of crops to which it pertains, etc. (Katharine Mach, IPCC WGII TSU)	We have done so.
371	53611	26	19	43	19	46	Please describe time slice, scenario, and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	This sentence has been removed
372	42103	26	19	51	0	0	Please provide the correct name of the climate model. Had3 does not exist. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Revised to read Hadley III
373	49498	26	19	53	19	53	"(Jackson, L. 2009) warns of new agricultural pests and diseases in California..." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Jackson reference is used in general discussion of pests and diseases as source supporting climate-pest link.
374	51594	26	19	54	19	54	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Term has been removed.
375	53612	26	20	1	20	1	Please describe time slice, scenario, and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	Revised accordingly

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
376	42104	26	20	5	0	0	Please provide the correct name of the climate model. UKHadley does not exist. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Revised accordingly.
377	41064	26	20	8	20	8	More likely needs to be said about livestock. Hahn and colleagues plus Mader and colleagues have found changes in productivity. Mu, McCarl and Wein have found land use changes from crops to livestock and lower stocking rates (Mu, J.E., B.A. McCarl, and A. Wein, "Climate Influences on Livestock and Crop Land Use", Mitigation and Adaptation of Strategies for Global Change, forthcoming, 2012.) zhang et al have found a substitution in breeds in warmer areas (Zhang, W., A. d. Hagerman, and B.A. McCarl, "How climate factors influence the spatial distribution of Texas cattle breeds", Climatic Change, Second review, 2012.) (Bruce McCarl, Texas A&M University)	We have added what we were able to find that has been published to date. Unfortunately we cannot add the suggested references here until they are published.
378	49499	26	20	12	20	12	"reduced forage quality, and declined herbicides effectiveness (United States..." (Fabiola S. Sosa-Rodríguez, University of Waterloo)	thank you for the suggested revision. It has been adopted.
379	41065	26	20	13	20	13	A recent study on co2 finds a significant proportion of recent technical change for some crops is due to co2. Attavanich, W., and B.A. McCarl, "How is CO2 Affecting Yields and Technological Progress? A Statistical Analysis", under submission, 2012. (Bruce McCarl, Texas A&M University)	The manuscript was not made available to us, so we were unable to consider it in preparing the SOD.
380	41066	26	20	15	20	15	the statement "Moisture deficits are likely to negate forecasted warming-induced increases in productivity" might be qualified to indicate this is only in some regions as others are forecast to have moisture increases. (Bruce McCarl, Texas A&M University)	The section has been sufficiently revised that this suggested revision is no longer pertinent, however we were careful to qualify similar statements in revisions.
381	51596	26	20	15	20	16	For this statement, it would be helpful to indicate as appropriate the relevant time frame, climate/socio-economic scenarios, geographic areas, and crops for which the conclusion holds--or if it holds broadly across ranges of these different factors. (Katharine Mach, IPCC WGII TSU)	We have done so throughout the section to the extent relevant and possible in revised version, although it should be noted that in some cases statements (such as the one referred to here) are not time-frame, geographically- or model-specific: moisture deficits counter warming-induced productivity regardless of either of these qualifications.
382	53613	26	20	15	20	18	Please describe time slice. (Kristie L. Ebi, IPCC WGII TSU)	In revised version we now have a single statement with multiple references rather than a summary of multiple individual references, thus time slice, etc. are only noted where we refer to individual studies.
383	51595	26	20	15	20	44	"likely" on lines 15, 23, 39; "virtually certain" on line 22; "very likely" on line 23, 44 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Revised accordingly.
384	49500	26	20	17	20	18	Consider to include the following information. 'Irrigation systems are inefficient, and many areas are still irrigated by gravity since water costs are low. This situation increases the vulnerability of this sector' Reference Sosa-Rodríguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodríguez, University of Waterloo)	The manuscript was not made available to us, so we were unable to consider it in preparing the SOD.
385	51597	26	20	20	20	24	It would be beneficial to indicate what these changes in extreme events imply more specifically for agricultural outcomes, as supported by the literature. (Katharine Mach, IPCC WGII TSU)	We have now done so, to the extent noted in literature.
386	49501	26	20	28	20	33	"The agricultural sector employs 1.9% of Americans, 2.8% of Canadians, and 25% of Mexicans(892 Saldaña-Zorrilla, S.O. 2006). While this sector in Canada and the U.S. is largely commercial, the Mexican..." (Fabiola S. Sosa-Rodríguez, University of Waterloo)	This information has been moved to rural communities section and revised.
387	49506	26	20	29	21	25	Provide more examples of adaptation strategies used by the agricultural sector in USA, Canada, and Mexico (Section 26.6.3. Adaptation and Adaptive Capacity, page 21-22) (Fabiola S. Sosa-Rodríguez, University of Waterloo)	We have attempted to do so as space allows.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
388	49507	26	20	29	21	25	Include measures implemented in the production of corn to deal with temperature and precipitation changes (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We have added substantially to the adaptation section with specific reference to recent studies on corn production. [Mercer, K, Perales, H and Wainwright J 2012 Climate change and the transgenic adaptation strategy: Smallholder livelihoods, climate justice and maize landraces in Mexico. Global Environmental Change 22:495-504, argue that farmers will likely to continue to experiment with seed variety selection, drawing from local knowledge and seed exchange networks; Ureta C, Martinez-Meyer E, Perales H, Alvarez-Buylla E 2012 Projecting the effects of climate change on the distribution of maize races and their wild relatives in Mexico. Global Change Biology 18:1073-82: argue that while some local land races will be affected by climate change (suitable area reduction) others may have new potential distribution areas suggesting that farmers can effectively manage these land race adaptations and maintain agrobiodiversity through in situ conservation; similarly Bellon, MR, Hodson D, and Hellin J 2011 Assessing the vulnerability of traditional maize seed systems in Mexico to climate change. PNAS 108:13432-13437 find that despite significant shifts in the agroclimatic zones associated with traditional maize under climate change, for most areas, farmers are already accessing seeds within a 10 km radius that encompasses the ecological variability needed to be able to adapt to new conditions... Farmers in higher altitudes may need to acquire seed from outside their traditional geographical ranges.
389	47890	26	20	47	0	0	land values decline in Mexico - in 2010 dollars? Any estimates for US or Canada - any evidence that those values will decline? It seems counterintuitive that values would decline as food demands grow, unless it is impossible to get a crop anymore. That would be a huge generalization for Mexico, or anywhere. (Louis Iverson, US Forest Service)	Statement revised to read "}); farmers may ... experience losses in land value {{886 Schlenker, W. 2007}}; {{912 Mendelsohn, R. 2010}}."
390	37538	26	20	50	0	0	Consider to include information regarding economical impacts in farmers in Mexico http://mexico.cnn.com/nacional/2012/02/09/la-sequia-en-mexico-causa-perdidas-millonarias-en-el-campo-mexicano (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	Vulnerability content has been moved to the rural communities section, but we will highlight observed impacts of current events such as the recent drought there.
391	49502	26	20	52	20	52	"Vulnerability is related to the degree of dependence on farm income" (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Thank you for all the suggested improvements in sentence structure! Vulnerability content has been moved to the rural communities section, and this particular sentence no longer exists, but greater attention to readability is noted.
392	42105	26	21	1	0	0	Change "72% of these" for "72% of them" (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	See above.
393	49503	26	21	1	21	2	"For example, 20% of Mexicans live in extreme poverty, and the livelihood of 72% of these is in farming ((890 1 Saldaña-Zorrilla,S.O. 2008), which are concentrated in the South (Araujo et al. 2002)." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	See above.
394	42106	26	21	2	0	0	Delete "these" (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	See above.
395	41067	26	21	7	21	7	I think more details are needed on "(Feng et al., 2010) estimated the emigration" telling where the people are projected to go (Bruce McCarl, Texas A&M University)	We have revised the migration content and moved it to the rural communities section.
396	51598	26	21	7	21	8	As appropriate, the author team should specify the relevant climate/socio-economic scenarios considered in this study, or if the estimated range presented reflects outcomes across all scenarios of climate change considered. (Katharine Mach, IPCC WGII TSU)	Discussion of this citation has changed (and moved to rural communities section) such that such information is no longer pertinent.
397	44955	26	21	7	21	11	Curious sandwiching of a study from Alberta with local implications (Gilbert and McLeaman) with two studies related to outmigration in Mexico. It is not obvious that the Gilbert and Mcleman conclusions are as broadly applicable as this paragraph implies. One of many cases where it is not possible to assess the confidence that can be placed in statements provided. (Don Lemmen, Canada National Study)	Agreed, we have made substantial revision to migration discussion and moved to rural communities section.
398	53614	26	21	7	21	11	Please describe scenario and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	Due to subsequent critique of this particular reference, we have qualified and reduced discussion of its findings (migration content moved to rural communities section).
399	49504	26	21	13	21	13	Clarify or provide examples of non-climatic stress experience by farming households (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We havenow discussed multiple stressors and vulnerability at greater length, thank you. This content is now in the rural communities section.
400	52194	26	21	19	21	25	This paragraph seems in significant conflict with the one earlier (page 10, lines 36-37) that said 50% of US withdrawals were to cool thermoelectric power plants. If page 10 is right, then closing such power plants would be a very positive step for agriculture and communities. (Michael MacCracken, Climate Institute)	Interesting point.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
401	49505	26	21	20	21	20	Typo –clarify 20 “Program ... holders will be likely be withheld first...” (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This sentence has been removed.
402	51599	26	21	20	21	22	"likely" on lines 20 and 22 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	This sentence has been removed.
403	41027	26	21	28	22	0	Trend towards more urban agriculture is an adaptive measure- Also has the potential to help mediate temperature rises in urban areas. Recent announcements of roof top greenhouses being built in cooperation with a large food retailer in New York. http://www.nytimes.com/2012/04/06/nyregion/rooftop-greenhouse-will-boost-city-farming.html . I could boast about the 12 month greenhouse operation at Yukon College in Whitehorse that is supplying salad vegetables for the College Cafeteria - mentioned in my comments to Chapter 28. A recent 2 acre garden utilizing raised beds resting on an abandoned asphalt parking lot in Vancouver has benefited from the heat absorption of the asphalt. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Thank you, we now refer to urban agriculture as an adaptation strategy.
404	41068	26	21	35	21	35	the statement "Price increases due to climate-induced yield declines" is an assumption not an anticipated outcome. The real issue is differential effects across the country where some regions have declining relative productivity and lower prices. (Bruce McCarl, Texas A&M University)	The sentence has been modified to read: "Investments in adaptation may be motivated if climate-induced yield declines result in price increases "
405	48455	26	21	40	21	41	Comment: reference ECLAC 2006 is not listed in the bibliography of the chapter. Information is not clear and not very relevant as the Mexican example provides old information. Should it be reviewed the recent trends in agricultural credit. (Carlos de Miguel, United Nations Economic Commission for Latin America and the Caribbean)	Sentence has been removed.
406	52195	26	21	40	21	47	An important adaptive step for the agricultural sector would seem to be education on a range of crops in that farmers will likely have to go from growing one crop (or set of crops) for their whole lives (or the lives of many generations) to being able to grow different crops that are suitable to their changing climate and availability of water resources, and the changing competitive situation as other areas are adapting to their changing climate and situation. (Michael MacCracken, Climate Institute)	Crop shifting is now addressed in greater detail.
407	44954	26	21	45	21	46	Check consistency of this statement regarding impacts of reduced flow with comments on p. 11 (lines 9-19) that collaborative approaches to water management resulted in farm production that was not significantly reduced. (Don Lemmen, Canada National Study)	Thank you from drawing attention to this inconsistency in the literature.
408	41069	26	21	49	21	49	This section on adaptation is somewhat naïve. The statement "Heavy capital investments in crop-specific technologies constrain management decisions" neglects the fact that investments are often replaced on a 7-10 year cycle and given the slow onset of climate change readily permits adaptation (Bruce McCarl, Texas A&M University)	This discussion topic has now been heavily modified.
409	41072	26	21	49	22	2	this whole section to me gives the wrong impression. Agriculture has been adapting to climate change for thousands of years and certainly will continue to do so . A more positive message is needed. We just did two studies on adaptation. One looks at the effect of climate on crop mix and it shows a change in crops as climate warms with corn replacing wheat, cotton replacing corn, rice replacing cotton (JIYUN PARK "ESSAYS ON IMPACTS OF CLIMATE CHANGE ON AGRICULTURAL SECTOR IN THE U.S." Unpublished PhD Dissertation, Department of agricultural economics, Texas A&M University, July, 2012 in the essay therein "THE EFFECTS OF CLIMATE ON CROP MIX AND CLIMATE CHANGE ADAPTATION". this was based on US agricultural census data observed over last 30 years. we also examined the effects of climate on land allocation between crops and livestock finding hotter and drier switches land to livestock and also decreases livestock stocking rates. this was also based on US agricultural census data observed over last 30 years. Mu, J.E., B.A. McCarl, and A. Wein, "Climate Influences on Livestock and Crop Land Use", Mitigation and Adaptation of Strategies for Global Change, forthcoming, 2012. (Bruce McCarl, Texas A&M University)	We have added to the adaptation section considerably, including additional information on adaptation options. Our tone is, however, still cautious, and we believe this is an accurate synthesis of existing literature on adaptation, particularly when social scientific studies of adaptation constraints are accounted for.
410	41070	26	21	50	21	50	I question the relevance of the statement "In Canada, cold-hardy French hybrid grapes have been replaced with higher-quality varieties that are more sensitive to winter injury (e.g., (Alayon-Gamboa and Ku-Vera, 2011; Belliveau et al., 2006))." first if it profitable so what. second what is relevance to climate change. third climate change might fix this with milder winters. (Bruce McCarl, Texas A&M University)	This sentence has been removed.
411	41071	26	21	52	22	1	I also question the statement " One study of small-holder farmers in Mexico ironically showed that subsistence based farmers recovered from Hurricane Isidore (2002) sooner than commercial farmers due to higher labour investments and earlier sowing post-hurricane (Alayon-Gamboa and Ku-Vera, 2011)" as it is a statement with no point. one could say that this means some farming systems will adapt faster and better. otherwise what is the climate change relevance. (Bruce McCarl, Texas A&M University)	This sentence has been removed.
412	53615	26	22	4	22	5	Some examples would be helpful. (Kristie L. Ebi, IPCC WGII TSU)	We now address institutional constraints in greater detail.
413	37539	26	22	5	0	0	Consider to include Mexican government responses http://www.presidencia.gob.mx/el-blog/atencion-integral-a-agricultores-y-ganaderos-para-enfrentar-impacto-de-sequia-segunda-parte/#more-75607 (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	The impact of drought and other events on farming communities is now covered in the rural communities section. We have attempted to incorporate information on institutional responses where possible.
414	41073	26	22	8	22	8	Somewhere in this agriculture section one might note than adaptations like northern migration of crops changes land use and demands for infrastructure with resultant economic and transport demands Attavanich, W., B. Rashford, R.M. Adams, and B.A. McCarl, "Land Use, Climate Change and Ecosystem Services", Oxford Handbook of Land Economics, edited by Joshua M. Duke and JunJie Wu, forthcoming, 2011. and Attavanich, W., B.A. McCarl, S.W. Fuller, D.V. Vedenov, and Z. Ahmedov, "The Effect of Climate Change on Transportation Flows and Inland Waterways Due to Climate-Induced Shifts in Crop Production Patterns", Selected paper presented at the 2011 Annual Meetings of the Agricultural and Applied Economics Association, Pittsburgh, July, June, 2011. (Bruce McCarl, Texas A&M University)	We think it is a great idea to discuss the second order effects of climate change impacts on crops, and would be interested in reading these materials once in print, but I just do not think we have the space to raise this issue here.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
415	51600	26	22	12	22	13	The author team should specify the range of outcomes projected, not just the maximum value. Additionally as appropriate, the author team should consider specifying the climate/socioeconomic scenario used in the analysis. (Katharine Mach, IPCC WGII TSU)	We have now done so.
416	42107	26	22	13	0	0	There is a follow up to the study of Gay et al. 2006. Suggested addition: Using a risk management approach, Estrada et al. (2012) showed that the accumulated losses for coffee production in Veracruz, Mexico by 2050 would be equivalent to up to 14 times the current annual value of coffee production in the state. Reference: Estrada, F., Gay C., Conde C., 2012. A methodology for the risk assessment of climate variability and change under uncertainty. A case study: coffee production in Veracruz, Mexico. Climatic Change 113:455-479 DOI:10.1007/s10584-011-0353-9 (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	This study has now been referred to in the text.
417	41218	26	22	35	0	0	Section 26.6.4 Pg 22 line 35 – I think this section needs expansion, and could benefit from the inclusion of further specificity on what these impacts mean for wild and aquaculture populations, how this will impact the economic industry – especially for shell fish, which is simply identified as being impacted, with no further information on how it will be impacted. Additional resources can be found in a recently published report Okey, T.A, H.M. Alidina, A. Montenegro, V. Lo, S. Jessen. 2012. Climate Change Impacts and Vulnerabilities in Canada’s Pacific Marine Ecosystems. CPAWS BC and WWF-Canada, Vancouver BC. (Susan Evans, WWF-Canada)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
418	41219	26	22	35	0	0	Section 26.6.4 pg 22 line 35 – I really think this section should be moved to 26.11 “Key Economic Sectors”. (Susan Evans, WWF-Canada)	Thank you for the suggestion; we will discuss. I am not convinced that fishing constitutes a key economic sector for North America however.
419	51601	26	22	35	0	0	Section 26.6.4. The author team should consider and potentially cross-reference chapter 6 and 30 in this section. (Katharine Mach, IPCC WGII TSU)	Were not able to do so, but can do in Final draft.L415
420	41028	26	22	40	0	0	re Alaska- see my comments in Chapter 28 on the 2012 situation with the Chinook run on the Yukon River. Also Chapter 26 Page 23 line 4-5 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
421	51602	26	22	41	22	42	The author team should indicate drivers relevant to this change and their relative importance, including consideration of climate- and non-climate-related factors. (Katharine Mach, IPCC WGII TSU)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
422	51603	26	22	45	22	47	For this statement, the author team should indicate the relevant climate/socioeconomic scenarios, as well as the range of outcomes projected (in addition to the upper bound value given). (Katharine Mach, IPCC WGII TSU)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
423	53616	26	22	46	22	47	Is this driven by temperature? (Kristie L. Ebi, IPCC WGII TSU)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
424	46742	26	22	49	22	50	Is this section supposed to include the Caribbean basin? It is discussed more so in chapter 30. The sentence "Further declines in coral...(Trotman et al., 2009)." seems out of place here. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
425	51604	26	22	49	22	50	For this statement, the author team should clarify the relevant baseline used, as well as other drivers (climate and non-climate related). (Katharine Mach, IPCC WGII TSU)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
426	49508	26	22	52	22	52	“express ...temperatures will “caus[e] significant ...” (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
427	51608	26	22	52	22	52	"High confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	Thank you. After some difficult discussion regarding what to cover and to what extent in our chapter, the fisheries discussion has been limited due to space, and moved to Ecosystems section.
428	51605	26	23	9	23	9	For the described increases in frequency and intensity of storms, the author team should adopt a more conditional framing, potentially considering and cross-referencing relevant findings from the working group one contribution to the 5th assessment report and possibly also the special report on extremes. (Katharine Mach, IPCC WGII TSU)	Thank you for the suggestion, we will do as advised. Vulnerability of fishing communities is now covered in rural communities section.
429	49509	26	23	20	23	25	Provide more examples of adaptation strategies used by fisheries in USA, Canada, and Mexico (Section 26.6.4.2 Adaptive Capacity-Fisheries, page 23) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Thank you for the suggestion, we will do as advised. Vulnerability of fishing communities is now covered in rural communities section.
430	53617	26	23	22	23	25	You could discuss voluntary efforts to set fishing limits. (Kristie L. Ebi, IPCC WGII TSU)	Thank you for the suggestion, we will do as advised. Vulnerability of fishing communities is now covered in rural communities section.
431	51606	26	23	28	0	0	Section 26.7. For this section, the author team should consider and potentially cross reference Chapter 9. (Katharine Mach, IPCC WGII TSU)	Thank you, we will do so.
432	41074	26	23	30	23	30	is the17-20% for "North America’s rural population" really "proportionally small" I think 20% is not so small (Bruce McCarl, Texas A&M University)	We believe it is compared to the urban population.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
433	44956	26	23	30	23	42	Reference to Lemmen et al (2008) would seem appropriate here as it explicitly recognizes the vulnerability of resource-dependent (rural) communities in Canada. (Lemmen, D.S., Warren, F.J., and Lacroix, J. 2008. Synthesis, in From Impacts to adaptation: Canada in a Changing Climate 2007, edited by D.S. Lemmen, F.J. Warren, J. Lacroix and E. Bush, Government of Canada, Ottawa, ON, p. 1-20.) (Don Lemmen, Canada National Study)	We have now done so.
434	53618	26	23	34	23	34	Please describe irreversible climate changes. (Kristie L. Ebi, IPCC WGII TSU)	Sentence has been removed in revision process
435	42108	26	23	40	0	0	Change "forecasts" for projections or scenarios (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We have done so.
436	51607	26	23	41	23	41	"Medium confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	Thank you.
437	51609	26	23	49	23	51	The author team should clarify the timeframe for this statement. (Katharine Mach, IPCC WGII TSU)	We have done so.
438	53619	26	23	49	23	51	Please describe the time frame. (Kristie L. Ebi, IPCC WGII TSU)	We have done so.
439	41029	26	23	53	24	2	Extreme event response also includes accessibility to redundant services such as power supplies and telecommunications, emergency measures services etc. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	The following sentence has been added: "The lack of redundant power and communication services compromises extreme event response capacity."
440	47953	26	24	0	0	0	Important to include mention of vulnerability of indigenous Peoples in Mexico as currently section only focuses on indigenous peoples in US and Canada. See for instance: Brodziak, F., Garcia, A.L., and Gomez-Chow, L., (2011) Climate Change Impacts on Socio-Environmental Conflicts: Vulnerability in FACING Climate Change and Conflicts in Mexico. See also Sanchez-Cortes, M.S., and Lazos Chavero, E., (2011) Indigenous perceptions of changes in climate variability and its relationship with agriculture in a Zoque community of Chiapas, Mexico. In Climatic Change. 107(3-4): 363-389. And Sanchez Cohen, Ignacio et al. (2012) Force Migration, Climate Change, Mitigation and Adaptive Policies in Mexico: Some Functional Relationships. In International Migration. (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	Thanks for the cites. The Sanchez-Cortez and Chavero reference has been incorporated into the food security section. The new human settlements section now includes the following: "In North America, among the most significant migration flows that have been influenced in part by climate change is the outmigration of many in the Mexican agrarian sector {{889 Saldaña-Zorrilla, S.O. 2009}}--estimated to be 480,000 per year {{Sánchez et al 2008}}--particularly among rain-fed corn producers {{Cohen et al. 2012}}; but urban-urban migration levels are high as well."
441	52196	26	24	4	24	5	The critical question here is whether being prepared for the climate extremes of the past will be adequate as preparation and knowledge about the extremes likely to be coming in the future. The conclusion here that there might be adequate adaptive capacity seems to me far more tenuous than indicated here. The situation in 2012 around the country is a good indication of the many problems that can arise with an extreme typical of the future--and that such a large fraction of the counties around the US are being declared disaster areas is a pretty clear indication of how limited adaptive capacity for past climate extremes is likely to be for the future. (Michael MacCracken, Climate Institute)	We agree. Our discussion of adaptation has changed significantly, and we highlighting a number of limits and constraints.
442	42109	26	24	26	0	0	High extreme poverty? Change for extreme poverty (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Extreme poverty is a specific income category.
443	53620	26	24	26	24	26	Please define extreme poverty. (Kristie L. Ebi, IPCC WGII TSU)	Definition now added to the text.
444	37540	26	24	40	0	0	Consider to include social sensitivity of Raramuri Indians (Northern part of Mexico) to cold and drought: http://www.presidencia.gob.mx/2012/01/atiende-sedesol-a-36-mil-familias-tarahumaras/ and http://www.cruzrojamexicana.org.mx/?p=1045 (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	Thank you; the following sentence is now added to discussion of the recent drought: "Among the most severely affected were indigenous peoples, such as the Rarámuri of Chihuahua {{Imison 2012}}"
445	49510	26	24	43	24	52	Provide more examples of adaptation strategies implemented by native (indigenous) communities in USA, Canada, and Mexico (Section 26.7.1.2 Adaptive Capacity-Indigenous Communities, page 24). Discuss how effective these strategies have been to cope with climate change and if they can be emulated in other spatial-social contexts (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Discussion of adaptation strategies among indigenous farmers is covered in the food security section; and the new Human Settlements section also has some statements about adaptation and indigenous peoples.
446	47954	26	24	48	24	50	This contradicts what has been said in previous sections re: how adaptive capacity is enhanced by indigenous peoples use of Traditional knowledge. The way the sentence is currently written reads that only 'contemporary' (which is rather unclear) knowledge enhances adaptive capacity (Ameyali Ramos Castillo, United Nations University - Institute of Advanced Studies)	This section has been completely revised and this sentence has been removed.
447	53621	26	24	50	24	52	References are needed. (Kristie L. Ebi, IPCC WGII TSU)	This section has been completely revised and this sentence has been removed.
448	41790	26	25	0	25	0	Section 26.7.2 - Placing the tourism sector in 'rural communities' versus 26.11 'economic sectors' is somewhat curious, as not all tourism takes place in rural areas. I understand (and agree) that these are likely to be the more vulnerable components of the tourism system, but perhaps this rationale for focusing on this aspect of the tourism system needs to be articulated. See discussion in the following regarding the most vulnerable components of the tourism system that would justify this focus: Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232) and the much more comprehensive book that this summary review is based on Scott, D., Gössling, S., Hall, C.M. (2012) Climate Change and Tourism: Impacts, Adaptation and Mitigation. London: Routledge. (Daniel Scott, University of Waterloo)	The intention was to characterize different types of rural communities by predominant economic activity. Hence only rural tourism communities are discussed here. The association of limited economic diversity with vulnerability is also discussed.
449	41791	26	25	0	25	0	Section 26.7.2 - Is not comprehensive of the literature for this sector in North America. The CLAs, CAs responsible for this sector might find the following reviews useful in updating the SOD: Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232) and the much more comprehensive book that this summary review is based on Scott, D., Gössling, S., Hall, C.M. (2012) Climate Change and Tourism: Impacts, Adaptation and Mitigation. London: Routledge. (Daniel Scott, University of Waterloo)	Thank you for directing us to this literature. Unfortunately, in the revision process we have been forced to make difficult choices regarding content, and we have reduced our discussion of tourist-based communities and integrated it into the human settlements section. The US and Canadian national assessments both cover this sector in more detail, so readers have other options.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
450	41793	26	25	5	0	18	While alpine, coastal and water bodies (add 'forests?') are mentioned as potentially vulnerable tourism destinations, the discussion is largely restricted to alpine areas in terms of ecosystem change and ski tourism. There is a boarder literature that discusses forests, specific species (fishing, polar bears) and more information is needed on coastal areas. The above mentioned review paper provides informaiton on these themes, but also see the following specific papers: Dawson, J, Stewart, E, Scott, D (2010) The Carbon Cost of Polar Bear Viewing Tourism in Churchill, Canada. Journal of Sustainable Tourism, 18 (3), 319 – 336.; Dawson, J. and Scott, D. (2010). Climate change and tourism in the Great Lakes Region: a summary of risks and opportunities. Tourism in Marine Environments, 6 (2/3), 119-132.; Hall. M.C., Scott, D., Gössling, S. (2011) Forests, Climate Change and Tourism. Journal of Heritage Tourism, 6 (4), 353-363. (Daniel Scott, University of Waterloo)	Thank you for directing us to this literature. Unfortunately, in the revision process we have been forced to make difficult choices regarding content, and we have reduced our discussion of tourist-based communities and integrated it into the human settlements section. The US and Canadian national assessments both cover this sector in more detail, so readers have other options.
451	41030	26	25	5	25	7	Simplistic assumption and seems to reflect the sightseeing, "beach and weiner", winter snow sport and pleasure driving . I spent 28 years in the Canadian National Park system across this country and would agree that the areas identified probably get the greatest number but I would also suggest that the committed "eco tourist " recognizes that different environments provide different opportunities. Natural Prairie ecosystems provide unique opportunities for both activities (example horse back riding) and wildlife viewing. The eastern hardwood forests- especially during the fall "colour season" are a massive draw as are the rainforests of the west coast. The north in general has a romanticism though as you suggest is usually experienced during the summer along coast lines , rivers or in alpine areas. However in winter tourists are attracted increasingly by unique experiences such as winter camping, dog sled "mushing" , extreme sports and watching the aurora. Asian cultures are particularly drawn to the later. Many tourists now combine oportuniteis to experience and gain an understanding of aboriginal cultures with "nature tourism". This obviously occurs in a number of eco-regions. Farm based tourism is increasing as is tourism that is associated with business travel. Bicycle based tourism has attracted people to less mountainous regions. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Thank you for directing us to this literature. Unfortunately, in the revision process we have been forced to make difficult choices regarding content, and we have reduced our discussion of tourist-based communities and integrated it into the human settlements section. The US and Canadian national assessments both cover this sector in more detail, so readers have other options.
452	41792	26	25	6	0	7	highly differentiated by region and type of activity' - Fully agree, but then no supporting information is provided or references for interested readers to follow up with. The recent review article provides a citation rich source that might be useful supporting information here: Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232). (Daniel Scott, University of Waterloo)	Thank you for directing us to this literature. Unfortunately, in the revision process we have been forced to make difficult choices regarding content, and we have reduced our discussion of tourist-based communities and integrated it into the human settlements section. The US and Canadian national assessments both cover this sector in more detail, so readers have other options.
453	36047	26	25	10	0	0	e.g. should be at the beginning of the parenthetical, not the end (Michael Brewer, NOAA)	Thank you.
454	41794	26	25	10	0	12	The paper identified on potential changes in national park visitation covers much more than just mountain parks (system wide as well as primarily coastal regiona parks, etc). (Daniel Scott, University of Waterloo)	Thank you. Revised sentence now refers to outdoor activities rather than solely mountain park visitation.
455	51610	26	25	10	25	11	For this statement, the author team should clarify the range of visitation outcomes projected (not just the upper bound value), as well as the relevant climate/socio-economic scenario. (Katharine Mach, IPCC WGII TSU)	This content has been removed.
456	41795	26	25	13	0	16	The discussion of winter sports tourism (skiing and snowmobiling) needs to be redone. There are much more regional insights available, as well as critique of the some misinformation in the US media about the ski industry in Colorado. The analogue analysis of supply and demand-side impacts in record warm winters also needs mention. See the sources below to address this. Furthermore, the section needs to be written more clearly, as cannot decipher whether the impacts listed for Canada are for skiing or snowmobiling. That only the ski modeling that incorporates snowmaking as an adaptation (the current operational reality) must also be emphasized as the literature indicates strongly. See the following sources for related discussion: Scott, D. and Steiger, R. (2012) Climate Vulnerability of the Ski Industry. In: Climate Vulnerability. (Eds) Roger Pielke Sr.. Elsevier, San Diego; Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232) and the much more comprehensive book that this summary review is based on Scott, D., Gössling, S., Hall, C.M. (2012) Climate Change and Tourism: Impacts, Adaptation and Mitigation. London: Routledge; Dawson, J. and Scott, D. (2012) Managing for Climate Change in the Alpine Ski Sector. Tourism Management; Dawson, J. Havitz, M. Scott, D. (2011) The Influence of Ego Involvement on Climate-Induced Substitution and Place Loyalty among Alpine Skiers. Journal of Travel Tourism and Marketing, 28, 388–404; Dawson, J. and Scott, D. (2010). Examining climate change vulnerability for the US Northeast ski tourism sector using a systems based approach. Journal of Tourism Hospitality and Planning Development, 7: 3, 219 – 235; Dawson, J, Scott, D, McBoyle, G. (2009) Analogue Analysis of Climate Change Vulnerability in the US Northeast Ski Tourism. Climate Research, 39 (1), 1-9. (Daniel Scott, University of Waterloo)	See above. Discussion of tourism has been reduced.
457	42110	26	25	14	0	0	Change A1Fi for A1FI (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Done, thank you.
458	36048	26	25	14	25	15	"range depicting regional variations" seems to be out of place (Michael Brewer, NOAA)	Statement now reads "range of projections depicting model and regional variation"
459	48674	26	25	15	25	16	What is the baseline for this? If it is a century ago then this might sound sensible, but if it was only say the ten years preceding that study then I'm puzzled because we can barely expect to detect global mean temperature changes over that period. (Dáithí Stone, University of Cape Town)	Sentence has been changed. (PRL)

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
460	41796	26	25	17	0	18	This statement about impacts on beach resorts/coastal tourism needs much more consideration. The studies cited found 3 groups of tourist responses, those that felt cheated by marketing, those who were largely indifferent, and those who understood and accepted the adaptive responses of resorts to stop further erosion despite the aesthetic impact. They do NOT know what proportion these three groups represent and the beach was still more than 50% pre-hurricane impact, which will not be the case after prolonged erosion from sea level rise. Furthermore, in this same study area (but perhaps not discussed in these papers), tour operators demanded immediate discounts to send tourists there (30% I was told), which changes the economics of these resorts (no longer profitable in some cases), there were criminal cases filed for illegal sand mining to try to repair the beach, and Cancun eventually invested over \$80million to nourish the beach. These are hardly trivial impacts as this sentence suggests. I suggest the author(s) of this section also see the discussion on studies on the impact of SLR on beaches in California and North Carolina as but two other studies that reinforce this point (all are discussed in the coastal tourism section of the review paper by Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232). (Daniel Scott, University of Waterloo)	Thank you; these are important clarifications. Unfortunately discussion of coastal tourism has been removed in revised version due to space limitations.
461	49511	26	25	18	25	18	Consider to include the following sentence/information. 'Nevertheless, more frequent and intense hurricanes, heat waves, and sea-level rise in the Caribbean, the Gulf of Mexico, and the Mexican Pacific may affect Mexican beach resorts infrastructure, as well as the population that lives and works in these areas, who can be displaced after disasters. Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Unfortunately Referral to coastal tourism has been removed in revised version due to space limitations.
462	41797	26	25	21	0	0	what is the reference that goes with '2008'? (Daniel Scott, University of Waterloo)	This has been corrected.
463	42111	26	25	21	0	0	Add references (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	This section has been revised and references have been included
464	51611	26	25	21	25	21	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Likelihood terminology has been removed.
465	49512	26	25	25	25	36	Develop section 26.7.2.2 social sensitivity of the tourism sector considering the socio-economic, geographical and cultural differences among the countries analyzed (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Thank you. Discussion of tourism in particular has been reduced, however we do discuss cultural sensitivity in the new human settlements section.
466	41798	26	25	29	0	0	Further discussion of community-specific impacts such as employment might include discussion of the system wide impacts in the ski tourism market of New England, where it has been shown the ski industry will continue to contract into climatically advantaged communities in Vermont and NH. Some communities will need to prepare for tourism losses, while others will gain market share as competitors leave the market and have a different set of adaptation challenges (development pressures, congestion, employment, etc). See this discussion in: Scott, D., Dawson, J. and Jones, B. (2008) Climate change vulnerability of the Northeast US winter tourism sector. Mitigation and Adaptation Strategies to Global Change, 13 (5-6), 577-596; Dawson, J. and Scott, D. (2012) Managing for Climate Change in the Alpine Ski Sector. Tourism Management; Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232). (Daniel Scott, University of Waterloo)	Thank you for the suggestions. Discussion of tourism in has been reduced due to space limitations.
467	49513	26	25	39	25	45	Consider to include the following sentence/information. 'Some adaptation strategies to reduce climate change impacts in the tourism sector in Mexico include improve early warning systems, promote the use of insurance and climate information in planning, build infrastructure, advance building regulations for tourist facilities to withstand extreme weather events, and diversify economic activities in tourist areas. Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change (Fabiola S. Sosa-Rodriguez, University of Waterloo)	These assessment chapters are not intended to be prescriptive. Thus we did not add this citation.
468	41799	26	25	41	0	45	There is a much broader discussion of adaptive capacity in the sector (see Scott, D., Gössling, S., Hall. (2012) International Tourism and Climate Change. Wiley Interdisciplinary Reviews – Climate Change, 3 (3), 213-232), including region specific studies on the adaptive capacity / state of adaptation among tourism operators. (Daniel Scott, University of Waterloo)	These assessment chapters are not intended to be prescriptive. Thus we did not add this citation.
469	41800	26	25	45	0	0	What evidence is there that 'marsh restoration' was being done to support tourism? (Daniel Scott, University of Waterloo)	This was the observation made in the peer-reviewed article cited.
470	49514	26	25	45	25	45	Provide more examples of adaptation strategies implemented by the tourism sector in USA, Canada, and Mexico (Section 26.7.2.3 Adaptive Capacity-Tourism-based communities, page 25) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Unfortunately we ju+L466st do not have the space to address this.
471	42062	26	25	48	0	0	Should this section be integrated with the section on forests then same way that agriculture is linked (or should be) with rural populations. (Liette Vasseur, Brock University)	It's a good idea, and we considered it, but we have opted to keep all hman settlements together, with the exception of discussion of adaptation/adaptive capacity among farmers.
472	51612	26	26	5	26	8	As appropriate, the author team should consider indicating the relevant climate/socioeconomic scenarios. (Katharine Mach, IPCC WGII TSU)	Thank you, we have now done so.
473	41031	26	26	10	0	0	Also removed dead trees (salvage logging) for processing before fibre value was lost (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Thank you.
474	53622	26	26	16	26	16	Please provide some examples. (Kristie L. Ebi, IPCC WGII TSU)	Thank you, this has been removed in revision process.
475	35535	26	26	19	26	19	A significant portion of US corn production goes to biofuels production, thereby negatively impacting on food security. (Hans Baer, University of Melbourne)	This is acknowledged in the food security section.
476	44957	26	26	19	26	30	This is an example but is applicable throughout the chapter - there is a need to use terms like adaptive capacity consistently. In this case most of the section is devoted to adaptation options, not adaptive capacity. (Don Lemmen, Canada National Study)	Thank you for the important clarification; we believe our use of terms is more clear now.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
477	49515	26	26	19	26	30	Provide more examples of adaptation strategies used by forest-based communities to face climate change impacts in USA, Canada, and Mexico (Section 26.7.3.2 Adaptive Capacity- Forest-based communities, page 26) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Due to space limitations we have opted not to focus on this here.
478	53623	26	26	23	26	25	Please provide some examples. (Kristie L. Ebi, IPCC WGII TSU)	Due to space limitations we have opted not to focus on this here.
479	51613	26	26	33	0	0	Section 26.8. For this section, the author team should consider and potentially cross reference Chapter 11. (Katharine Mach, IPCC WGII TSU)	Cross-reference has been added at the beginning of the section.
480	49516	26	26	38	26	39	Provide reference. "There is also a growing literature addressing climate-related health risks in Mexico." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Edited out this sentence, as I do not have a reference
481	51614	26	26	50	26	50	The author team should cite the specific relevant chapters from the working group 1 contribution, as well as from the special report, by the 2nd order draft. (Katharine Mach, IPCC WGII TSU)	Placeholders are now included.
482	42461	26	26	50	27	35	There should be a discussion of deaths and death rates from extreme weather events (see Goklany 2009c). This discussion should note that despite the attention paid to them, their cumulative contribution to all-cause deaths are trivial (0.06% for the U.S.). Also, U.S. trends in death and death rates are downwards for all categories of extreme weather events (extreme heat and cold, tornados, hurricanes, floods, lightning) regardless of any climate change or whether such events are becoming more frequent or intense. The declines suggest that adaptive capacity has increased in the past few decades. There should also be a discussion as to whether (or why) adaptive capacity might change (up or down) and what that implies for future deaths and death rates from such events. (Indur Goklany, Independent)	I have noted decline over time over 20th century referenced. I also looked at the period of recent warming, after 1970, and note steady or slight increase in deaths from hurricanes.
483	49517	26	27	5	27	5	Be consistent (singular or plural). "on diarrheal disease morbidity and mortality are particularly relevant in Mexico, where these diseases are more.." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	tenses has been fixed
484	41032	26	27	7	0	0	This comment should be considered for Chapter 28 The issue of elevated indoor black mold is a serious problem in polar regions- a problem exasperated by tighter building design with insufficient air exchange, poor construction including inadequate insulation levels and poor building envelopes. The problem is made worse by the large percentage of time spent indoors in winter. Whether a warming trend will improve this situation is unknown, however increasing flooding as well as increasing relative humidities may worsen the problem. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	added a short section on indoor air quality, and mold in particular
485	37541	26	27	12	0	0	Consider to include: Implementation of early warning responses should be promoted in order to face severe climate-relate events and protect the susceptible populations, such as infants, children, elderly; individuals with existing respiratory/cardiovascular disease or autonomic dysfunction in temperature control; and those living in social and economic disadvantage conditions (Pinkerton, 2012). Pinkerton, K. E., W.N. Rom, M. Akpinar-Elci, J.R. Balmes, H. Bayram, O. Brandli, J.W. Hollingsworth, P.L. Kinney, H.G. Margolis, W.J. Martin, E.N. Sasser, K.R. Smith, and T.K. Takaro, 2012: An Official American Thoracic Society Workshop Report: Climate Change and Human Health. Proc Am Thorac Soc, 9 (1), 3–8. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	added this comment at end of storm section
486	48470	26	27	15	27	15	Medina-Ramon and Schwartz, 2007, seems applicable here: Occup Environ Med 2007;64:827-833 doi:10.1136/oem.2007.033175 (Marcus Sarofim, US EPA)	The 2006 paper by same authors seems most relevant
487	42462	26	27	17	27	35	It should be noted that excess winter mortality (EWM) accounts for far more deaths than all extreme weather events combined in developed countries. [EWM is a chronic condition and would occur even in the bsence of extreme cold]. EWM accounted for 108,500 deaths in the U.S (2008 data), which is about 4.5% of all deaths (Goklany 2009a). It accounted for 10,200 deaths in Canada (2007 data) (Goklany 2012a). Also, note that Deschenes and Moretti (2009) estimate that 4%–7% of the total gains in life expectancy in the U.S. population from 1970 to 2000 may be due to continuing migration from the cold Northeastern states to the warmer Southern states. (Indur Goklany, Independent)	winter season excess mortality is discussed
488	51615	26	27	18	27	18	It would be preferable to indicate when this heat wave occurred. (Katharine Mach, IPCC WGII TSU)	done (2006)
489	51616	26	27	28	27	28	"High confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	done
490	37542	26	27	31	0	0	Consider to include: Poor people, as those living in the US-Mexico border, are considered vulnerable to lack of basic services, including acclimatization. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	We mention poverty as a general vulnerability factor for climate and health. We lack a specific reference for this statement which addresses heat vulnerability in the US-Mexico border.
491	37543	26	27	35	0	0	It has been suggested that additional research is needed on how mortality estimates vary with definitions of heatwaves and whether advance warning systems prevent deaths (Harlan and Ruddell, 2011). Harlan, S.L. and D.M Ruddell, 2011: Climate change and health in cities: impacts of heat and air pollution and potential co-benefits from mitigation and adaptation. Current Opinion in Environmental Sustainability, 3, 126–134. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	included portions of this statement and the reference, in the heat section.
492	37544	26	27	35	0	0	Deschenes et al., 2009, using inter-annual variation from long-run county-level temperature distributions, have estimated that exposure to extreme ambient temperatures have deleterious effects on fetal health, resulting in a decrease in birth weight and an increase in the probability of low birth weight. Deschenes, O., M. Greenstone, and J. Guryan, 2009: Climate Change and Birth Weight. American Economic Review, 99(2), 211–217. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	added this reference L488
493	48469	26	27	38	27	38	Add citation to this section: Post ES, Grambsch A, Weaver C, Morefield P, Huang J, Leung L-Y, et al. 2012. Variation in Estimated Ozone-Related Health Impacts of Climate Change due to Modeling Choices and Assumptions. Environ Health Perspect :- http://dx.doi.org/10.1289/ehp.1104271 (Marcus Sarofim, US EPA)	added it

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
494	53624	26	27	52	28	9	These sentences are not consistent, particularly from the end of page 27 to the end of the first paragraph on page 28. (Kristie L. Ebi, IPCC WGII TSU)	edited this for consistency
495	51617	26	27	53	27	54	It would be preferable to specify which scenarios of climate change were considered in the analyses, as well as the time frames. Additionally, "medium confidence," as calibrated uncertainty language, should be italicized. (Katharine Mach, IPCC WGII TSU)	edits made
496	41075	26	28	1	28	1	ozone has been found to be deleterious for agricultural crop yields Adams, R.M., J.D. Glyer, S.L. Johnson, and B.A. McCarl, "A Reassessment of the Economic Effects of Ozone on US Agriculture", Journal of the Air Pollution Control Association, 39, 960-968, 1989. and forests (Bruce McCarl, Texas A&M University)	point well taken, but not relevant in health section where space is limited
497	49518	26	28	1	28	52	More information of climate change impacts on human health, their spatial distribution, and the groups more exposed can be found in Patz, J.A., Epstein, P.R., Burke, T.A., and Balbus, J.M., 1996, Global Climate Change and Emerging Infectious Diseases. JAMA 275, 217-223 (Fabiola S. Sosa-Rodriguez, University of Waterloo)	we are focusing on the more recent literature here
498	37545	26	28	9	0	0	There are some efforts to reduce GHG emissions and cool a city through changes in land use, transportation and built environment. The implementation of these measures could provide health co-benefits, including reductions in heat-related and respiratory illnesses, as well as 'lifestyle' diseases. There are obstacles to implementing costly aspects of city mitigation and adaptation plans under current economic conditions and further research is needed on how much health cobenefits reduce the cost of climate policies (Harlan and Rudell, 2011). Harlan, S.L. and D.M Ruddell, 2011: Climate change and health in cities: impacts of heat and air pollution and potential co-benefits from mitigation and adaptation. Current Opinion in Environmental Sustainability, 3, 126–134. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	added text to heat section
499	46743	26	28	12	28	52	Section 26.8.4: I have serious doubts about the validity of this section. More needs to be done to say that there is low confidence or at least disagreement about these results. While an increase in anemophilous pollen production *might* be possible (although I doubt it based on the paleo record), previous sections discuss how many anemophilous pollen species ranges will shrink in response to warmer temperatures. The only pollen type that might expand is grasses. The health effects of pollen projections need to be tied to the vegetation projections before anything can be said about pollen risks. Also, I think the author is including spores in his/her descriptions in this section. Spores are not pollen. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	this section is just reporting on the literature, and does not make any firm statements. There is no claim of increasing pollen production, as implied by the comments. I've added a note about vegetation projections, which needs to be linked to the appropriate chapter.
500	49519	26	28	16	28	16	Clarify the reference (Fabiola S. Sosa-Rodriguez, University of Waterloo)	ref is ok in word version; formatting problem in producing pdf I think
501	41534	26	28	21	28	27	Future patterns of production of pollen allergic to mammals were predicted in response to climate change by the end of the 21st Century in Japan (Kiyono et al., in press). Pollen production will gradually decrease chrono-sequentially as the clear cutting rate increases according to scenarios based on the national government policies. Predictions of the pollen production are based on the observed temperature data, while the predicted temperatures are out of the range of the observed temperature. Kiyono, Y., T. Kanazashi, M. Yoshikawa, K. Oka, S. Takano, and Y. Hijioka. Predicting sugi-pollen production under scenarios of climate change by the end of the 21st Century in Tokyo Metropolis and its neighboring four prefectures. Kanto Journal of Forest Research 63-1: 51-54 (in press) (Yoshiyuki Kiyono, Forestry and Forest Products Research Institute)	these findings for Japan are not directly relevant in NA and are not included due to space limitations
502	54008	26	28	35	28	48	Figure 26-7: is not referred in text (Yuka Estrada, IPCC WGII TSU)	fixed
503	37546	26	28	42	0	0	The Great Lakes region is projected to experience a rise extreme precipitation events and it is a drinking water source for more than 40 million people. Extreme precipitation based on projections may overwhelm the combined sewer systems and lead to overflow events that can threaten both human health due to waterborne diseases, and recreation in the region (Patz, 2008). Patz, J., S. J. Vavrus, C. K. Uejio, and S. L. McLellan, 2008: Climate Change and Waterborne Disease Risk in the Great Lakes Region of the U.S. Am J Prev Med, 35(5), 451–458. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	added this comment
504	49520	26	28	42	28	42	Clarify the reference. (Jiménez-Moleón and Gómez-Albores, 2011)) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	ok in the word version; must be a pdf conversion or reworks issue
505	49521	26	28	42	28	42	Consider include the following sentence/information. 'In Mexico City, due to the decline of water source quality, the use of chlorine as the only disinfection mechanism is no longer sufficient for providing safe water. In consequence, bacteria such as Helicobacter pylori, fecal coliforms, Streptococci and Vibrio spp. have been found in some water samples from the city' References (Fabiola S. Sosa-Rodriguez, University of Waterloo)	ok added that
506	49522	26	28	42	28	42	Sosa-Rodriguez, FS (2010). Exploring the Risks of Ineffective water supply and sewage disposal: A case study of Mexico City. Environmental Hazards, 9 (2010), pp. 135-146. Mazari-Hiriart, M., Lo'pez-Vidal, Y., Ponce-de-Leo'n, S., Calva, J. J., Rojo-Callejas, F. and Gonzalo, C.-R., 2005. Longitudinal study of microbial diversity and seasonality in the Mexico City metropolitan area water supply system. Applied and Environmental Microbiology, 71(9). 5129–5137. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	included
507	49523	26	28	42	28	42	'In the city, intestinal infectious diseases (including typhoid, salmonella, bacterial food poisoning, amebiasis, and dysentery) are the 19th cause of death, accounting for 0.6% of the total deaths. Although in general the intestinal infectious diseases give the impression that they do not constitute a health problem in the city, this is the main cause of death for infants under four years, explaining 9.7% of the total number of deaths in children under four years. Reference: Sosa-Rodríguez FS (2012). Chapter 22. Assessing water quality in the developing world: an index for Mexico City. En: Voudouris, K. y Voutsas, D. (Comp.). Water Quality Monitoring and Assessment. InTech. Pp. 495-508. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	point well taken but space constraints prevent inclusion

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
508	49524	26	28	42	28	42	Consider to include the following information. 'In 2007, the Ministry of Health in Mexico City registered 280 deaths due to intestinal infectious diseases, mainly caused by diarrhea and gastroenteritis (93.6% of the total). These deaths primary occurred southeast of the city, where people with low income levels are more affected by the lack of these services.' Reference: Sosa-Rodríguez FS (2012). Chapter 22. Assessing water quality in the developing world: an index for Mexico City. En: Voudouris, K. y Voutsas, D. (Comp.). Water Quality Monitoring and Assessment. InTech. Pp. 495-508. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	we make the point that low income is a risk factor for water-related illnesses. However, this comment is too specific to be included in full due to space constraints
509	49525	26	29	5	29	5	"distribution of ...but also on land- use change, socio..." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	comment not clear; sentence seems fine as is
510	42112	26	29	20	0	0	Add reference after WHO (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	could not find ref so deleted sentence
511	49526	26	29	20	29	20	Provide the reference. "listed as high risk for dengue fever by the WHO (Reference)." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	same comment as immediately above
512	52197	26	29	22	29	22	You might also mention screening in addition to air-conditioning. I would also note there are important equity issues here--the poor generally are much less likely to have access and be able to afford air-conditioning, and the cost of air-conditioning is going to go up exponentially as the absolute humidity increases because it can take 20 or much times as much energy to control the humidity as to reduce the temperature of dry air. Thus, this indication of the results being uncertain seems to me to be ignoring some key issues that are likely to mean the US is far less resilient to the health aspects of climate change than has so far been indicated in analyses that do not look at the distributions of income, the effects of rising absolute humidity and the heat index, etc. (Michael MacCracken, Climate Institute)	I added a sentence aboutr SES being another key factor, and included screening in the sentence referenced.
513	37547	26	29	28	0	0	Consider to include: Gender issues should be taken into consideration in the formulation of policies for responding to climate change because of the different economic, social, reproductive and political roles played by women, they have different capaci-ties and different needs than men in response to impacts from climate change. Con-sequently, the policies, instruments, mechanisms and funds applied in response to climate change cannot be neutral in relation to gender, and should not be formulated and implemented without taking specific gender differences into account. Jungehülsing (2012) recognized the significance of inequitable gender relations for women's vulnerability to climate change in a study of a relocation programme that gave titles to new public housing to women implemented in response to severe flooding in the Mexican state of Tabasco in 2007, this effort contributed to modifying gender relations and strengthening gender equality. Jungehülsing, J., 2012: Gender relations and women's vulnerability to climate change. Heinrich Böll Stiftung, México, Centroamérica y el Caribe, Climate change. http://www.boell.org/downloads/estudio_tabasco_ingles.pdf 18 July, 2012 (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	The human health material just before this page/line reference deals with vector borne diseases, and the comment doesn't seem to apply to that.
514	37548	26	29	28	0	0	Consider to include: Multidisciplinary research efforts involving research scientists, clinicians, public health specialists, sociologists, local-state partners, climatologists, toxicologists, epidemiologists, and population scientists are required to address unanswered health-related consequences of climate change. Funding agencies should encourage multidisciplinary approaches and introduce newer funding mechanisms, collaborative program project grants, new investigator awards, and training awards to enhance research interest of newer investigators in this field (Pinkerton et al., 2012). Pinkerton, K. E., W.N. Rom, M. Akpinar-Elci, J.R. Balmes, H. Bayram, O. Brandli, J.W. Hollingsworth, P.L. Kinney, H.G. Margolis, W.J. Martin, E.N. Sasser, K.R. Smith, and T.K. Takaro, 2012: An Official American Thoracic Society Workshop Report: Climate Change and Human Health. Proc Am Thorac Soc, 9 (1), 3–8. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	Unfortunately, space is limited in the chapter. We briefly address research needs in the final section
515	37549	26	29	28	0	0	Consider to include: Resulting hot spots of vulnerability are critical for binational managers to consider in making decisions concerning land-use planning or policy change. Norman et al., 2012 developed a Modified Socio-Environmental Vulnerability Index focus on populations living in the U.S.-Mexico borderlands. They assessed the provision of erosion- and flood control services over a 9-year period and described how this coupling of data can form the base for an ecosystem services assessment across political boundaries that can be used by land-use planners. Results reveal potential disparities in environmental risks and burdens throughout the binational watershed in residential districts surrounding and between urban centers. This tool can be used as an important first step in addressing environmental justice for binational decision-making. Norman, L. M., M.L. Villarreal, F. Lara-Valencia c, Y. Yuan, W. Nie, S. Wilson, G. Amaya, and R. Sleeter, 2012: Applied Geography, 34 413e424. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	We wonder if this comment belongs here or elsewhere in the chapter.
516	51618	26	29	30	0	0	Section 26.9. For this section, the author team should consider and potentially cross reference Chapter 10. (Katharine Mach, IPCC WGII TSU)	Have added mention of the energy and transporation sections in chapter 10.
517	49529	26	29	30	30	21	Provide information of the investment require to expand, maintain, replace or rehabilitate water-related infrastructure in Mexico (26.9 Infraestructure, page 29-30) (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We are not aware of a publication providing such an estimate
518	44958	26	29	30	31	38	This is an extremely important section that requires more detail and greater structure. It is not sufficient to state that "other types of infrastructure such as water resources, coastal protection and communications will also likely be affected directly or indirectly by climate change". Reference to ongoing practical initiatives that are not yet in the peer-reviewed literature would be appropriate (e.g. Canadian Council of Professional Engineers (2008 - http://www.pievc.ca/e/Adapting_to_climate_Change_Report_Final.pdf) and subsequent updates http://www.pievc.ca/e/doc_list.cfm?dsid=42 .) (Don Lemmen, Canada National Study)	The report is being cited in the section
519	41033	26	29	32	29	33	add "shelter" (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Added.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
520	46744	26	29	36	29	38	In many national parks like Assateague Island National Seashore they are already impacts relative SLR. The park has installed a number of transportable, semi-permanent structures (bathhouses etc) that can be move as sea level changes or if there is an increase in storm surge. They have also had to move parking lots and change building materials in preparation for SLR. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	The comment is helpful, but space and a lack of a citation does not enable us to mention it
521	41034	26	29	37	0	0	I have noted nowhere has there been a mention of other wind events such as tornados. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Our understanding is that it is not clear how climate change will affect tornados.
522	42113	26	29	37	0	0	Change "they can and are" for "they are". The last implies the first. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	The sentence has been removed.
523	51619	26	29	39	29	39	It would be preferable to indicate the relevant time frame for the trends in losses. (Katharine Mach, IPCC WGII TSU)	The sentence has been removed.
524	41035	26	29	45	0	0	I would argue that because of the services from rural areas to urban areas- via transport routes, water supplies, transmission corridors and vica versa - ie services that urban areas supply to rural areas the suggestion that this is applies particularly to urban areas is false. There is a high probability that a serious event could impact more people in an urban area but as we saw in Manitoba in 2011 when rural farm lands (and farms) were sacrificed by breaching dikes to reduce the risk of floods in Winnipeg, rural areas may often suffer the brunt of the impact. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Mention of urban areas has been removed.
525	37717	26	29	49	0	0	Comment 1: I think this section should take advantage of the extensive U.S. National Climate Assessment and U.S. Department Homeland Security work on infrastructure: Add(?): U.S Department of Homeland Security concerns for infrastructure resilience to natural and manmade disasters has resulted in methods to determine the cost, characterization, timing, and benefits of adaption investments and operation to improve resilience (Vugrin et al 2011, Vugrin and Camphouse, 2011). Extensions of this work include the estimation of the resilience costs and benefits under uncertainty such as that associated with climate change (Vugrin and Turnquist, 2012). U.S. National Climate Assessment process has also addressed the impact of climate change on infrastructure (Wilbanks et al. 2012). [Vugrin E.D., D.E. Warren, and M.A. Ehlen, 2011: A resilience assessment framework for infrastructure and economic systems: Quantitative and qualitative resilience analysis of petrochemical supply chains to a hurricane. Process Safety Progress, 30(3), 280–290 DOI: 10.1002/prs.10437] (George Backus, Sandia National Laboratories)	Wilbanks et al. 2012 will be cited. The Vugrin et al. 2011 article is interesting, but does not appear to be about the effects of climate change on infrastructure.
526	37718	26	29	49	0	0	Comment 2: [Vugrin E.D., R.C. Camphouse, 2011. Infrastructure resilience assessment through control design. International Journal of Critical Infrastructures, 7(3)243 - 260. DOI: 10.1504/11.42994] [Vugrin, E. and M.A. Turnquist, 2012: Design for Resilience in Infrastructure Distribution Networks. Sandia National Laboratories. Report SAND2012-6050 Albuquerque, NM. Available at: http://www.sandia.gov/CasosEngineering/docs/Vugrin_resilient_design_2012_6050.pdf] [Wilbanks, T., S. Fernandez, et al, 2012: Climate Change and Infrastructure, Urban Systems, and Vulnerabilities: Technical Report For The U.S. Department of Energy in Support of the National Climate Assessment. Oak Ridge National Laboratory, Oak Ridge, Tennessee. Available at: www.esd.ornl.gov/eess/Infrastructure.pdf] (George Backus, Sandia National Laboratories)	See response above
527	42114	26	29	51	0	0	Change "Pubic" for "Public" (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Embarrassing! Change made.
528	52198	26	29	51	29	51	I presume you mean "public infrastructure." I would also note that the chapter's spelling of aging (or is it ageing) is inconsistent. (Michael MacCracken, Climate Institute)	Correct. Change made. We will live editing to the IPCC editors.
529	46745	26	29	51	29	52	"Public infrastructure...vulnerable to climate extremes." Do you have a source to support this statement? I can't speak for all government agencies, but the national park service is actively involved in changing our infrastructure to prepare for climate change. Feel free to contact me if you would like specific examples. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	Removed "is vulnerable to climate extremes." We are not aware of any literature that states that public infrastructure is generally vulnerable to climate extremes.
530	40866	26	29	51	30	2	I'm glad you note that deteriorating levees exacerbate vulnerability to flooding. (John Posey, East-West Gateway Council of Governments)	Comment welcome!
531	49527	26	29	52	29	52	"vulnerable to climate extremes. The American Society for Civil Engineers notes that of the more than 81,000 dams in the U.S., over 4,000 are deficient. The reliability of 85% of the 100,000 miles of levees is unknown. More (Fabiola S. Sosa-Rodriguez, University of Waterloo)	It is not clear what the reviewer's comment is.
532	46746	26	29	52	29	53	"The American Society...are deficient." Many of these dams should not have been built in the first place. Now we realize they should be demolished, so many of the defient dams are intentionally being left. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	Fair point, but whether the dams should have been built is not an appropriate topic for the IPCC
533	49528	26	29	53	29	53	Clarify 85% of what (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We think the sentence is clear.
534	35536	26	30	12	30	12	What is needed more in the United States than upgrading roads and highways is the development of good and reliable passenger rail service within cities and between cities. (Hans Baer, University of Melbourne)	This is a prescriptive comment, which we cannot address in IPCC.
535	42115	26	30	21	0	0	Remove "Impacts on one infrastructure can affect other infrastructure", it has laready been said. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Sentence has been remoed.
536	41036	26	30	24	30	54	No mention of the disruptions triggered by extreme events such as rainfall, snow or even wind and asociated issues such as avalanches, floods, slumps, washouts and forest fires in disrupting critical arterial routes (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	This is a good point, but we cannot find the effects of such events on infrastructure in North America mentioned in the literature.
537	42116	26	30	42	0	0	Remove quotation marks from modest. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Section has been rewritten and "modest" no longer appears.

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
538	51620	26	30	42	30	42	In drawing this conclusion, it would be helpful to indicate the relevant scenario of climate change considered (low or high levels of climate change?). (Katharine Mach, IPCC WGII TSU)	Scenarios have been added
539	49530	26	30	44	30	47	"(519 Chinowsky et al. , Submitted) estimated that a scenario corresponding to a 1.5°C increase ... corresponding to a 1.0°C increase... per year." (Fabiola S. Sosa-Rodriguez, University of Waterloo)	It is not clear what the reviewer's comment is.
540	41076	26	30	49	30	49	crop mix migrations also has major implications for infrastructure and transport demand Attavanich, W., B.A. McCarl, S.W. Fuller, D.V. Vedenov, and Z. Ahmedov, "The Effect of Climate Change on Transportation Flows and Inland Waterways Due to Climate-Induced Shifts in Crop Production Patterns pr", Selected paper presented at the 2011 Annual Meetings of the Agricultural and Applied Economics Association, Pittsburgh, July, June, 2011. (Bruce McCarl, Texas A&M University)	We unfortunately do not have space to address this comment
541	51621	26	30	49	30	50	For this statement, it would be helpful as appropriate to indicate the relevant climate/socioeconomic scenario. (Katharine Mach, IPCC WGII TSU)	Added in the SRES scenarios used in the analysis
542	49531	26	30	49	30	53	"(518 Wright et al. (L. 2012)) projected ... strengthened (Fabiola S. Sosa-Rodriguez, University of Waterloo)	The comment is not clear
543	44959	26	31	2	31	35	This section deals with energy production and demand, yet appears within a section on Infrastructure. The content should be retained (and perhaps expanded) in a section dealing with energy as an economic sector. There is important information on energy infrastructure, including pipelines, electricity transmission grids, hydroelectric dams, and off-shore oil and gas platforms, that could be usefully addressed under infrastructure. (Don Lemmen, Canada National Study)	We have combined infrastructure with other economic sectors, in part to address this concern
544	42117	26	31	10	0	0	annual mean hydropower supply (?) (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	"Supply" changed to "production."
545	51622	26	31	10	31	12	For this statement, the author team should consider indicating the relevant climate/socio-economic scenario, as well as the factors determining the differences in outcomes across the time slices considered here. (Katharine Mach, IPCC WGII TSU)	OK
546	53625	26	31	10	31	12	Please provide scenario and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	OK
547	51623	26	31	14	31	15	For this statement, the author team might indicate the climate/socio-economic scenarios used in the analysis, as well as the factors driving the large range of outcomes projected. (Katharine Mach, IPCC WGII TSU)	The paper surveys many scenarios
548	53626	26	31	14	31	16	There also are studies by Max Auffhammer. (Kristie L. Ebi, IPCC WGII TSU)	We could not find any on climate change impacts
549	41037	26	31	15	0	0	Doesn't take into consideration isolated grids. This morning the media covered a report from Yukon Energy suggesting they would need to increase their electrical generation by 50% in the next couple of years. http://www.yukonenergy.ca/news/releases/archive/117/ and more specifically http://www.yukonenergy.ca/downloads/db/1184_2012%20Resource%20Plan%20Overview.pdf see Figure 3-1 page 11 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We do not believe the comment is relevant
550	51624	26	31	25	31	37	"likely" on lines 25 and 37 -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	Ok will italicize. Want to indicate this not certain, but is likely.
551	44960	26	31	41	0	0	In terms of overall structure of the chapter, it would seem to make the most sense to have sections on rural communities and urban appear consecutively. The current structure, which separates them with Human health and Infrastructure, makes comparison of rural and urban issues less clear. (Don Lemmen, Canada National Study)	This is a very good comment and we have combined these sections
552	51625	26	31	41	0	0	Section 26.10. For this section, the author team should consider and potentially cross reference Chapter 8. (Katharine Mach, IPCC WGII TSU)	Addressed
553	49532	26	31	47	31	47	Consider to include the following information. 'Heavy rain or other extreme hydrometeorological events are expected to affect transportation and energy-production infrastructure in Mexico. For example, in the Gulf of Mexico 160 platforms may need to suspend their operation, leading to economic losses.' Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Added the comment. Will add Dr. Sosa-Rodriguez as a Contributing Autht.
554	41038	26	31	50	32	20	See comment Chapt 26 page 14 line 38 above Also Chapt 26 Page 32 lines 47-49 (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We included more references to Canadian cities
555	51626	26	32	15	32	18	The author team should consider and cross-reference findings from the working group one contribution to the 5th assessment report for this statement. (Katharine Mach, IPCC WGII TSU)	We redrafted this and integrated the section with the rural settlements one
556	46747	26	32	15	32	20	This paragraph is fine, but it may also be worth mentioning how there is some question about how fog will change. This could be potentially interesting in cities such as San Francisco. In the national park system this is a concern for us because fog is part of the character of many west coast national parks. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We didn't find literature to support this.
557	53627	26	32	23	32	23	Can socioeconomic data be predicted? (Kristie L. Ebi, IPCC WGII TSU)	Section head changed
558	36049	26	32	27	0	0	SLR used but not defined (Michael Brewer, NOAA)	Addressed
559	49534	26	32	27	32	27	Consider to include the following information. 'Climate change is expected to have several impacts on a number of sectors in Mexico. The different climates and natural resources allocation and the diverse environmental and urban problems mean that climate change impacts are likely to be unevenly distributed through Mexico's territory.' Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	This refers to Mexico as a country and not to urban settlements
560	49535	26	32	32	32	36	Clarify this sentence (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Sentence deleted

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
561	49536	26	32	32	32	36	"Retail, commercial and tourism services ((186 Scott, D. 2007); (1027 Manuel-Navarrete, David 2011), as well as industrial facilities may also be affected, especially if they are located in risk prone areas (Mendelsohn and Neumann, 2004);(Bin et al., 2007) or foster mass tourism increasing social inequalities, degrading ecosystems, and amplifying overall exposure to extreme events (e.g., Cancun; (1027 Manuel-Navarrete,David 2011)). (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Sentence deleted
562	37719	26	32	36	0	0	Comment 1: This section seems to avoid quantitative assessments that directly apply to specific area and make it tangible to readers. Add(?): Several studies have addressed state level economic impacts of climate change across a variety of industries in the absence of climate policy. (Niemi 2009a, 2009b,2009c, Repetto 2011a, 2011b, 2012a, 2012b, Backus et al., 2012). The Sandia National Laboratories risk assessment considers both uncertainty and the interactions across the individual, continental U.S. states for 70 industries, for climate-induced changes in water availability, though the year 2050 (Backus et al., 2012). The risk perspective generates costs that can be interpreted as the value of an insurance premium, useful for trading-off risk with adaptation investments.[Niemi E. (2009a). An Overview of Potential Economic Costs to Washington of a Business-As-Usual Approach to Climate Change. The Program on Climate Economics, Climate Leadership Initiative, Institute for a Sustainable Environment, Eugene, OR: University of Oregon.] (George Backus, Sandia National Laboratories)	We are generally addressing this as part of the infrastructure discussion
563	37720	26	32	36	0	0	Comment 2: [Niemi E. (2009b). An Overview of Potential Economic Costs to Oregon of a Business-As-Usual Approach to Climate Change. The Program on Climate Economics, Climate Leadership Initiative, Institute for a Sustainable Environment, Eugene, OR: University of Oregon.] [Niemi E. (2009c). An Overview of Potential Economic Costs to New Mexico of a Business-As-Usual Approach to Climate Change. The Program on Climate Economics, Climate Leadership Initiative, Institute for a Sustainable Environment, Eugene, OR: University of Oregon.] [Backus, G., T. Lowry and D. Warren, 2012: The near-term risk of climate uncertainty among the U.S. states. Climatic Change, Online First 23 June 2012. Doi: 10.1007/s10584-012-0511-8] [Repetto, R. 2012a: Economic And Environmental Impacts Of Climate Change In Virginia, DEMOS, New York, NY. Available at: http://www.demos.org/publication/economic-and-environmental-impacts-climate-change-virginia] [Repetto, R. 2011a: Economic And Environmental Impacts Of Climate Change In Nevada, DEMOS, New York, NY. Available at: http://www.demos.org/publication/economic-and-environmental-impacts-climate-change-nevada] (George Backus, Sandia National Laboratories)	We are generally addressing this as part of the infrastructure discussion
564	37721	26	32	36	0	0	Comment 3: [Repetto, R. 2012b: Economic And Environmental Impacts Of Climate Change In Florida, DEMOS, New York, NY. Available at: http://www.demos.org/publication/economic-and-environmental-impacts-climate-change-florida] [Repetto, R. 2011b: Economic And Environmental Impacts Of Climate Change In Arizona, DEMOS, New York, NY. Available at: http://www.demos.org/publication/economic-and-environmental-impacts-climate-change-arizona] (George Backus, Sandia National Laboratories)	We are generally addressing this as part of the infrastructure discussion
565	44961	26	32	47	32	53	The way this paragraph is worded it sounds as though there is no evidence that cities other than those listed face significant risks from climate change. This is absurd. In the case of Canada there is a single reference given in support of "Canadian prairie cities" despite the fact that there has been work in virtually all major Canadian cities (including, but not limited to - Halifax, Charlottetown, Quebec City, Montreal, Toronto, London and Vancouver) demonstrating significant risks. The simplest "solution" would be to state "for example", but a more useful assessment exercise would attempt to integrate the broader available knowledge. (Don Lemmen, Canada National Study)	We tried to address this and include more cities. We would like to get those references Don Lemmen refers to.
566	53628	26	32	47	32	53	Please provide information on time slice, scenarios, and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	Done whenever possible and given space constraints
567	49537	26	32	52	32	52	"North Carolina and Mexico City (Bin et" (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Addressed
568	42120	26	32	53	0	0	Suggested addition: The present value of the accumulated costs of climate change for Mexico City has been estimated to represent between 44% and 300% of the city's current gross domestic product (A2 scenario, 4% discount rate), and this phenomenon is expected to generate half a million additional persons under poverty (Estrada and Martínez, 2011; Sánchez et al., 2011). References: Estrada F., Martínez B., 2011. Economía del Cambio Climático en la Ciudad de México. Centro Virtual de Cambio Climático de la Ciudad de México. Universidad Nacional Autónoma de México. 88 pp. ISBN: 978-607-02-2112-5; Sánchez-Vargas A., Gay C., Estrada F., 2011. Cambio Climático y Pobreza en el Distrito Federal. Investigación Económica, LXX (278). (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We deleted the box
569	44962	26	33	4	0	0	This is an extremely curious statement in its present form. If it is meant to refer to the fact that recovery from natural disasters, or planning initiatives informed by past experience with natural disasters, provide opportunities to advance adaptation then state that clearly. A reference to the SREX would be appropriate. (Don Lemmen, Canada National Study)	Section deleted
570	52199	26	33	4	33	7	I am very surprised that this is the lead thought about urban vulnerability and resilience--it just seems totally out of place, and I would urge a rethinking of how this issue of urban effects is approached. If such a statement is going to be made anywhere in the revised section, it also needs to have a specific example given rather than just refer to some references (other than the near destruction of New Orleans led to a lot more construction jobs, etc.). Or, yes, the 1928 New Orleans/Mississippi River flood led to southern blacks being dislocated to northern urban areas, making northerners better understand the plight of poor blacks and ultimately push for the Civil Rights movement and all the benefits for equality, etc. A much more nuanced statement indicating the level of suffering that is induced is needed. And it would be useful to be thinking about more than relatively well to do cities and whether the statement applies if the frequency of extreme events increases--how often could New Orleans go through such devastation and recover, or would one then just say that the good outcome was that New Orleans would no longer be such a target for future storms? (Michael MacCracken, Climate Institute)	We redrafted this section, and integrated it with the rural settlements one. We also changed our framing of the reasons why some settlements and populations are more vulnerable than others

#	ID	Ch	From Page	From Line	To Page	To Line	Comment	Response
571	49538	26	33	8	33	8	"capacity, for example, differences in" (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Addressed
572	49539	26	33	9	33	12	Consider to include the following information. "Urban capacity to respond is also shaped by long-term processes (e.g., water overexploitation limits Mexico City capacity to manage flood risks, (6 Romero-Lankao, P 2010), ensure water supply and avoid groundwater pollution (Sosa-Rodriguez, 2010); and short-term triggers (e.g., droughts in Canadian prairie cities led to conservation imposed on urban water users (Wittrock and Kulshreshtha, 2011)." Reference Sosa-Rodriguez, FS (2010). Impacts of Water Management Decisions on the Survival of a City: From Ancient Tenochtitlan to Modern Mexico City. Journal of Water Resources Development. 27 (4), pp., 667-689. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Section was redrafted and integrated with rural settlements one
573	52200	26	33	15	33	16	This is a very strong and unqualified statement—"economic elites are able to monopolize the best land and enjoy the rewards of environmental amenities such as clean air, safe drinking water, open space, and tree shade." Phrased this way, it sounds like the basis for starting a class war. At least qualify it a bit--something like "economic elites are better positioned to deal with issues such as ..." Also, the electric energy needed to do this generally costs more than the natural gas to heat a room. So, this notion of savings seems to me simply wrong--for a given increase in minimum and maximum temperatures, keeping the relative humidity the same (and this is all for relative humidities in the eastern half of North America), I would suggest that the cost of air-conditioning far exceeds the savings from heating. (Michael MacCracken, Climate Institute)	Better positioned included. The mention to electricity energy needed ... is not clear in this context.
574	44963	26	33	21	33	23	I strongly recommend that you do NOT use Iqaluit as a Canadian example is support of this point. Firstly, Iqaluit would geographically fit into the Polar regions chapter. Second, the statement implies that that Inuit are a marginalized population, which is a value statement that is unlikely to be supported in a territory that features an Inuit government. It is not at all analogous to the other examples provided. In general, the term "peri-urban areas" will not resonate in Canada and I cannot think if a good Canadian example for this point. (Don Lemmen, Canada National Study)	Addressed
575	49540	26	33	36	33	38	Consider to include the following information. "For example, the vulnerability of Mexico City inhabitants to water-related risks is mainly caused by an economic factor (e.g., nonequitable distribution of income and unemployment). Another factor that explains citizen vulnerability concerns the physical characteristics of the environment where people live—since many reside in areas affected by floods, landslides or lack of basic services (i.e. water, sewage, electricity or gas). The third factor is the lack of political representation and the insufficient participation of citizens in the water management decision-making process. Finally, the fourth factor affecting vulnerable city residents regards the social conditions in which they live, related to the restrictions they face in terms of access to education, health services, safe housing and other basic services.' Reference: Sosa-Rodriguez, FS (2010). Exploring the Risks of Ineffective water supply and sewage disposal: A case study of Mexico City. Environmental Hazards, 9 (2010), pp. 135-146. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We redrafted this paragraph and included the reference
576	49541	26	33	40	33	49	Consider to include the following information. "Mexico City is an example of how water management decision reduced the city's resilience. Since Pre-Colombian times, the city's inhabitants have been exposed to several water-related risks, including an insufficient water supply, a low quality of water, a lack of sanitation services and catastrophic floods. These problems have posed an ongoing threat to the operation of the city, and to the lives of its population. City authorities, at different times, have implemented various measures to mitigate and prevent threat impacts. These actions, based on the perceptions and priorities of authorities, have focused their attention on the construction of hydraulic infrastructure to supply the city's population with water, but they have largely ignored non-structural measures. Furthermore, treatment of wastewater and the adverse health effects associated with low quality of water have not received the same level of priority that these water-related problems require to be solved. Water-management decisions, along with improper land use, profoundly transformed the physical and environmental characteristics of the Basin of Mexico. If past and present water-management decisions and practices continue to follow the same trend—mismanagement of natural resources and ineffective urban planning—Mexico City will experience an unsustainable water-management scenario.' Reference Sosa-Rodriguez, FS (2010). Impacts of Water Management Decisions on the Survival of a City: From Ancient Tenochtitlan to Modern Mexico City. Journal of Water Resources Development. 27 (4), pp., 667-689. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Because of space constraints, we couldn't include this long quote
577	42118	26	34	0	0	0	Mexico City formed an academic-governmental structure aimed to support decision-making on climate change issues for the city. This virtual structure is called Mexico's City's Virtual Center for Climate Change (CVCC) and has conducted policy-driven research regarding the potential impacts of climate change in health, ecosystems and land use, water, mitigation, vulnerability, economic and poverty (http://www.cvccm-atmosfera.unam.mx/ ; Conde et al., 2011). Reference: Conde C., Martinez B., Estrada F., Mexico City's Virtual Center on Climate Change. Box 3.6 in: Climate Change and Cities: First Assessment Report of the Urban Climate Change Research Network (ARC3). Edited by Cynthia Rosenzweig, William D. Solecki, Stephen A. Hammer and Shagun Mehrotra. Cambridge University Press; 1st edition (April 29, 2011) ISBN-10: 1107004209. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	Reference included in the three cities box
578	42063	26	34	1	0	0	26.10.4. Urban Climate Responses: there are a few more papers that could help in Canada which can help for smaller cities: e.g. HENSTRA (2012, Journal of Comparative Policy Analysis), Vasseur (2011, The International Journal of Climate Change: Impacts and Responses), etc. (Liette Vasseur, Brock University)	Two of the references included
579	53629	26	34	1	34	48	This should be focused on North America. Please refer to chapter 8 for the basics. (Kristie L. Ebi, IPCC WGII TSU)	We concentrated on findings from and about NA
580	49542	26	34	7	34	7	Clarify what 'safe saving schemes' means (Fabiola S. Sosa-Rodriguez, University of Waterloo)	Section deleted

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581	44964	26	34	24	34	31	Another useful example for a small municipality is the community of Elkford BC, notable because the results of the climate change risk assessment were incorporated directly into the Official Community Plan. Brief description is found in UNFCCC (2011, Assessing the costs and benefits of adaptation options: an overview of approaches - http://unfccc.int/files/adaptation/nairobi_work_programme/knowledge_resources_and_publications/application/pdf/2011_nwp_costs_benefits_adaptation.pdf) (Don Lemmen, Canada National Study)	Reference included in the three cities box
582	37550	26	34	25	0	0	Gutiérrez and Monterrey (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	To include it I need a reference I can cite
583	49543	26	35	16	35	12	Include the following reference and key findings. (1) Sosa-Rodriguez, FS (2010). Impacts of Water Management Decisions on the Survival of a City: From Ancient Tenochtitlan to Modern Mexico City. Journal of Water Resources Development. 27 (4), pp., 667-689. (2) Sosa-Rodriguez, FS (2010). Exploring the Risks of Ineffective water supply and sewage disposal: A case study of Mexico City. Environmental Hazards, 9 (2010), pp. 135-146 (Fabiola S. Sosa-Rodriguez, University of Waterloo)	I don't know what findings participation these references point to
584	51627	26	35	24	35	24	Are neither precipitation nor temperature changes thought to be influenced by climate change here at all? (Katharine Mach, IPCC WGII TSU)	The box was deleted
585	53630	26	35	24	35	24	None of the impact is due to climate change? (Kristie L. Ebi, IPCC WGII TSU)	The box was deleted
586	51628	26	35	44	35	44	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	The box was deleted
587	37551	26	35	50	0	0	poorer municipalities of the Metropolitan Area of Mexico City. (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	The box was deleted
588	42119	26	35	54	0	0	Replace "such as the Molina Center" for "such as the Molina Center and the CVCC" (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	The box was deleted
589	44965	26	36	18	38	20	It is not clear why this box should be placed here. The Section heading is "Urban" and yet this deals with regional and national government approaches outside of their relationship to municipal governments. This appears to be a relic of the "Governance" section of the ZOD. There is value in including information of this type to demonstrate that multiple levels of government are advancing adaptation, and that they likely have different roles. I would recommend a simple table (drop the text) that provides "examples" of actions in a balanced away. And it would have to appear in an appropriate section.. (Don Lemmen, Canada National Study)	The box was deleted
590	51629	26	36	20	0	0	Box 26-5. The author team should consider making this section a normal section of the chapter, rather than a box, given its length and thoroughness. (Katharine Mach, IPCC WGII TSU)	We agree and are making this a section.
591	53631	26	36	20	0	0	This text box could be shortened. (Kristie L. Ebi, IPCC WGII TSU)	Given that this will now be a section, some discussion is warranted. Being mindful that the chapter is too long, we will try to reduce the number of words in this section.
592	36718	26	36	24	36	24	Things like the Nunavut climate change strategy should be mentioned in the Polar chapter (ch 28) - note it is not mentioned there in the FOD and should be. (Sharon Smith, Geological Survey of Canada)	Can this comment be passed on to Ch 28?
593	41039	26	36	24	36	29	http://www.env.gov.yk.ca/monitoringenvironment/ccactionplan.php (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Due to limited space we were unable to incorporate this
594	44966	26	36	24	36	32	If one is compiling a list of states and provinces that are addressing adaptation it is not possible to exclude Quebec - which has long been the leader among Canadian jurisdictions in terms of research, policy and investment. Most recently (on June 3, 2012) the Quebec government released its 2013–2020 Climate Change Action Plan and the accompanying Government Strategy for Adapting to Climate Change 2013–2020 (http://www.quebecvert2020.gouv.qc.ca/le-gouvernement-en-action/agir-en-adaptation/) (Don Lemmen, Canada National Study)	Agreed
595	44967	26	36	38	0	0	Canada is NOT developing a national policy. It has developed a federal adaptation policy framework. Distinction between federal and national is extremely important. (Don Lemmen, Canada National Study)	All references to national, federal, policy, plans etc in Canada have been revised to say: Federal Adaptation Policy Framework
596	53632	26	36	51	36	51	This is a Mexican program? (Kristie L. Ebi, IPCC WGII TSU)	Yes, we try to describe it.
597	49545	26	36	51	37	2	Consider to include the following information. 'The mitigation strategies of the Special Climate Change Program are focused on promoting renewable and energy-efficient technology use and development, reducing GHG emissions in production processes, and regulating sustainable land-use management. Adaptation strategies are oriented to assess sectors' vulnerability to climate change and strengthen sectoral and regional adaptive capacity'. Reference Sosa-Rodriguez, F.S. (in review). From Federal to City Mitigation and Adaptation Strategies: Exploring Climate Change Policy in Mexico. Mitigation and Adaptation Strategies for Global Change. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We are not addressing mitigation activities, but will reference the submission on adaptation
598	36050	26	37	10	37	25	Mentioning the actual amount of money in these paragraphs seems out of place and a little self-serving. Besides, it is not that much money and may give the opposite message that is intended. Recommend removing. (Michael Brewer, NOAA)	Have removed mention of individual funding levels.
599	44968	26	37	10	37	25	Presentation of Canadian national adaptation programming is challenging as it is not captured well in a single location. However if retained this should be reorganized to show progression from 2007 through 2001. The Federal Adaptation Policy Framework exists but it is not publically available. Bracketed text on line 15 is inappropriate. Reference to "2007 assessment" on line 20 is the first reference to this document (Lemmen et al., 2008) in the chapter and hence needs more context. It would be logical to remove all the text of this section and create a table instead that illustrates the types of roles and activities played by different orders of government. (Don Lemmen, Canada National Study)	We revised the presentation to (we hope) be clearer.

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600	51630	26	37	20	37	20	Presumably the author team here means the 2007 assessment of the IPCC? It would be helpful to clarify the reference for the reader. (Katharine Mach, IPCC WGII TSU)	We have clarified
601	36720	26	37	24	37	24	The reference to the Nunavut mining vulnerability assessment and related Nunavut regional adaptation collaborative should also be made in the Polar chapter (ch 28) - note that in ch 28 FOD there is currently no reference to these initiatives and there should be. Also note that the reports that were produced are available at: http://www.climatechangenunavut.ca/en/project/nunavut-regional-adaptation-collaborative (Sharon Smith, Geological Survey of Canada)	Reviewer is correct. We will mention Nunavut only to point out they were the first province or state in North America to publish an adaptation plan.
602	41040	26	37	26	0	0	You may want to reference the report by the Canadian Environment Commissioner - Office of the Auditor General when he looked at Canada's Adaptation Program http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201012_03_e_34426.html . There has been suggestions in the media that the Federal Minister asked for this audit. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We considered the report
603	49544	26	37	36	36	38	Mexico already has a National Climate Change Strategy. Thus, similar to USA, federal, regional and local governments are working on developing adaptation plans. (Fabiola S. Sosa-Rodriguez, University of Waterloo)	We have rewritten the discussion about Mexico
604	46748	26	37	41	37	43	"There are other, less comprehensive..." The national park service created a climate response team that now includes a NPS climatologist (Patrick Gonzalez - co-author of of chapter 4 of this report). (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We unfortunately do not have space to discuss the adaptation efforts of each federal agency
605	44969	26	38	8	38	9	The sentence about "Most Canadian cities ..." is inaccurate - I am unaware of any Canadian community that has created a commission (some have created committees) and I don't know what "inventorying adaptation activities" means. An overview of adaptation in Canadian municipalities is presented by Richardson, G. R. A. (2010). Adapting to Climate Change: An Introduction for Canadian Municipalities. Ottawa, Ont., Natural Resources Canada, 40 p. - http://www.nrcan.gc.ca/earth-sciences/climate-change/community-adaptation/municipalities/373 . (Don Lemmen, Canada National Study)	We have corrected this
606	41041	26	38	11	38	12	More than likely not constitutionally possible- certainly the case in Canada. The Federal Government's only leverage on the Provinces would be through providing funding and the cities and municipalities are creations of the provinces so the same would apply. Territories are a bit different since they fall under the Federal Crown. This doesn't prevent the Federal Government taking the moral high ground and show leadership. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We have revised the description of the Canadian federal government's adaptation activities
607	44970	26	38	11	38	12	Recommend that the final sentence be deleted as it suggests either a bias of the authors towards top-down policy approaches or is hinting at being policy prescriptive. (Don Lemmen, Canada National Study)	The sentence has been removed, although we believe the observation would be appropriate
608	42121	26	38	18	0	0	Suggested addition: Furthermore, recent works have shown the convenience of strengthening the scientific evaluation process of the national and state-level technical documents that are aimed for supporting decision-making (Estrada et al., 2012; Estrada et al., submitted). References: Estrada F, Martínez-López B, Conde C, Gay-García C (2012) The new National Climate Change Documents of Mexico: What do the regional climate change scenarios represent?. Climatic Change 110:1029-1046. DOI: 10.1007/s10584-011-0100-2; Estrada, F., Papyrakis E., Tol, R.S.J., Gay, C. The 'Economics of Climate Change in Mexico': A Critical Case Study of the Scientific Basis for National Climate Policy-Making. Submitted to Global Environmental Change. (Francisco Estrada Porrua, Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México)	We do not have space to address this
609	51631	26	38	23	0	0	Section 26.11. For this section, the author team should consider and potentially cross reference Chapter 10. (Katharine Mach, IPCC WGII TSU)	We have referenced Chapter 10
610	54010	26	38	30	38	31	What are the climatic sensitivities? (Yuka Estrada, IPCC WGII TSU)	We added examples of climatic sensitivities, to clarify the term.
611	51632	26	38	36	38	36	"likely" -- If this term is being used per the uncertainties guidance for authors (reflecting a probabilistic basis for its assignment), it should be italicized. Casual usage of this reserved likelihood term should be avoided. (Katharine Mach, IPCC WGII TSU)	We removed the word 'likely', and rephrases the sentence
612	41042	26	38	39	38	42	Figure 26-9 Does Agriculture include the more general food industry that is vulnerable not only to specific climate impacts on specific crops but also a wide mix of feed stocks - usually from a broad range of areas- for this larger sector transport, energy, water and product distribution storage etc. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Agriculture is addressed in the Food Security section
613	44971	26	38	39	38	42	I question the value of including this figure. It does not appear in Lazo et al. (2011), nor is the data used to develop the graph clearly evident. But most important is the fact that mining, as defined for the purposes of Fig 26-9 is much broader than is addressed in section 26.11.1.2 - which will confuse the readers. Strongly recommend you delete the figure but retain the reference to Lazo et al (2011) in the preceding paragraph. (Don Lemmen, Canada National Study)	We removed the figure
614	37722	26	38	42	0	0	There is no information on projected impacts or on the interaction among industries. If we want industry to be response, it needs to understand its own risks. Add(?): The direct impact in one industry, such as chemicals, can have spillover impacts in other industries, such as construction, textiles, and agriculture. These impacts can be multiples of the direct impacts. A Sandia National Laboratories' study considered the impact of projected change in precipitating on 70 industries in each of the interconnect U.S. states through the year 2050. Industries like construction and transportation potentially benefited from climate change because of adaptation investments, and the migration of population and businesses (Backus et al., 2012). [Backus, G., T. Lowry and D. Warren, 2012: The near-term risk of climate uncertainty among the U.S. states. Climatic Change, Online First 23 June 2012. Doi: 10.1007/s10584-012-0511-8] (George Backus, Sandia National Laboratories)	Thank you for the suggestion. We added this reference, and incorporated the proposed text as appropriate.
615	53633	26	38	44	38	50	Please provide information on time slice, scenarios, and other critical assumptions. (Kristie L. Ebi, IPCC WGII TSU)	We think the qualitative statements are appropriate

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616	52201	26	39	1	39	2	This statement is not supported by a citation, perhaps because it is mainly a myth. As the temperature rises, so does the absolute humidity, and an elementary thermodynamics calculation will indicate that, for warm, humid conditions, it takes something like 20 times as much energy to extract the moisture from air as it does to change its temperature by a few degrees. (Michael MacCracken, Climate Institute)	We did not cite this in the SOD, but will consider doing so in the final draft.
617	36719	26	39	13	0	0	Section 26.11.1.2 - There was also a report by the Mine Environmental Neutral Drainage (MEND) Program at Natural Resources Canada that examined climate change and risks to mining sector: Mine Environmental Neutral Drainage (MEND) Proprogram (2011) Climate change and acid rock drainage - risks for the Canadian mining sector, MEND 1.61.7. http://www.mend-nedem.org (Sharon Smith, Geological Survey of Canada)	Thank you, we will consult this report, to add relevant material. (
618	46749	26	39	13	39	54	Section 26.11.1.2: Perhaps include a couple sentences on why water-intensive activities, such as fracking, is a very bad idea given the amount of water stress predicted in the states that are currenting pursuing fracking. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We could not find literature on fracking and climate change impacts
619	52202	26	39	15	39	33	This is a prime example of a paragraph having so many references that the message is totally hidden, especially in that one reference is cited something like 4 times and "et al." is not used. It is really vital that the text have content and not be overwhelmed by too many citations, etc. Overall, this paragraph is just incomprehensible the way it has been done. (Michael MacCracken, Climate Institute)	We reduced the number of citations
620	51633	26	39	31	39	33	The author team should consider and cross-reference the findings of working group 1 for this statement. (Katharine Mach, IPCC WGII TSU)	The sentence has been revised.
621	41043	26	39	46	39	54	I spent several years as Director of Environment in the Yukon. Our primary responsiibty was to conduct environmental assessments. Water balances were always a challenge for proponents- especially since it could impact the operation of heap leach operations as well as more traditional underground and open pit mines. Heap leaches were large operations where crushed ore is piled on impervious surfaces- in some cases hundreds of hectares in size and sprayed with a solution meant to take up the target minerals into solution. The loaded solution (called a pregnant solution) was drained from the heap- generally by gravity taking advantage of the slope of the land and fed into ponds and a treatment facility where the metals were extracted and the now "barren" solution was directed back onto the heap- Miss calculation of inputs could result in either the need to add water or to store, treat and discharge treated water from the systems. My understanding is the technology was developed first in arid areas. The challenge was the potential for extreme rain events that could over load the system. The solutions we dealt with were either cyanide or sulphuric acid. The acid leaches also had the possibility of accelerating acid geration in the rock heaps drainage meaning that long term maintenance of the system may be needed long after the mine was no longer generating product. I understand that this might have been less of a problem in extremely arid regions since there was little or no water being added to the abandoned heap. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Thank you for the information, we will re-search the literature with this in mind.
622	37723	26	39	51	0	0	There is no discussion of how the impact on mining affects the entire regional economy. Add(?): Nonetheless, mining is quite sensitive to water availability. The local support industries for the mining sites are also adversely affected, causing multiplier affects on income and unemployment, for example in U.S. states with significant mining activity, that may be ten times larger than the economic impact of climate change in states having no significant mining activity (Backus et al. 2012).[Backus, G., T. Lowry and D. Warren, 2012: The near-term risk of climate uncertainty among the U.S. states. Climatic Change, Online First 23 June 2012. Doi: 10.1007/s10584-012-0511-8] (George Backus, Sandia National Laboratories)	Thank you for the suggestion, we cited the paper (Backus et al., 2013), to add material to strengthen the discussion.
623	41220	26	40	29	0	0	Section 26.11.3 pg 40 line 29 - you will need to provide details of where in the chapter readers can find this information (Susan Evans, WWF-Canada)	The chapter table of contents lists Food Security as a section
624	52203	26	40	29	40	31	As suggested in my general comment, it seems to me that this section should be used to address national to international couplings of effects in North America with impacts elsewhere, considering issues of economic coupling, coupling of markets of commodities and trade, issues of the spread of pests and diseases, and more. While the chapter text does discuss impacts on the indicated systems here in North America, issues that would arise due to impacts elsewhere in the world seem to be totally avoided, and this would be a good place to do this. (Michael MacCracken, Climate Institute)	We are unable to find literature on this topic.
625	42274	26	40	31	0	0	I suggest to spend at least one page on this topic. All the other continent chapters have a lot of information on agriculture and I suggest to have a common structure for all continents. (Klaas Van der Hoek, RIVM)	Agriculture is addressed in the Food Security section
626	51634	26	41	7	41	14	The author team should clarify if the citations at the end of the paragraph support all statements in the paragraph. Additionally, it would be beneficial to indicate the years pertaining to the "past decade" referenced in the 1st line of the paragraph--and then, this timeframe presumably also applies to the 2nd sentence of the paragraph? (Katharine Mach, IPCC WGII TSU)	We will address this in the SOD.
627	37552	26	41	21	0	0	Consider to include agricultural insurance in Mexico http://www.proagroseguros.com.mx/ (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	Thanks, we will review this additional literature.
628	36051	26	41	23	41	28	There should be a mention of insurance rates or at least median home values between the countries. It could be that the insurance in Mexico is actually not a good deal compared to home price.... (Michael Brewer, NOAA)	The section has been rewritten.
629	41801	26	41	37	0	0	An extensive literature is identified for tourism, yet it is not synthesized in this section nor in section 26.7.2. Very tight space limitations are understood, but some effort to identify the range of work available is needed so that interested readers could follow up. (Daniel Scott, University of Waterloo)	The tourism was revised and is discussed in more depth in the settlements section

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630	41802	26	41	39	0	0	The three (actually there are four) categories of impacts we identified in that report are not specifically related to 'extremes' as indicated here. Direct changes in mean climate as well as extremes are relevant. Similarly the indirect environmental and socio-economic changes are driven by both change in mean climate as well as extreme events. This needs to be clarified if this is to be utilized in this section. As this typology of impacts is not germane to understanding the new literature available, I would recommend this space be dedicated to articulating the specifics of new work on impacts and adaptation in this sector. Furthermore, the citation provided contains science as of AR4 and newer more comprehensive reviews are available that use the same typology of impacts (see Scott, D., Gossling, S., Hall, C.M. (2012) Climate Change and Tourism: Impacts, Adaptation and Mitigation. London: Routledge). (Daniel Scott, University of Waterloo)	Tourism is addressed in the settlements section
631	51635	26	42	2	42	3	For the statement on these lines, the author team must consider and cross-reference the findings of the working group one contribution to the 5th assessment report and potentially also of chapter 3 of the special report on extremes. Casual usage of the word "likely" should be avoided. (Katharine Mach, IPCC WGII TSU)	The section has been rewritten.
632	52204	26	42	9	42	10	I like having a box focused on the US-Mexico border area. That should be done for other critical areas around North America, so include the Great Lakes, Great Plains, and on and on. There needs to be a way to pull together a focus on the various regions of North America, for many people want to know what is happening in their sub-regional area and not have to search through each of a dozen or so disciplinary topics (as noted in my general comment, the SAR was so strongly organized in a disciplinary way that the IPCC was forced to prepare a special report that included chapters organized by region. Well, this applies to the present so-called regional chapters--when a region is as large as a continent, there needs to be a pulling together of findings for subregions. (Michael MacCracken, Climate Institute)	Whenever possible we made reference to particular regions. We also included other box comparing adaptation responses in three cities
633	51636	26	42	25	42	28	Citations supporting the statements in this paragraph should be provided. (Katharine Mach, IPCC WGII TSU)	Besides a box on the border we are including one comparing climate policies in three cities
634	41077	26	42	33	42	33	you might add reference to the 2012 midwest us drought (Bruce McCarl, Texas A&M University)	Addressed
635	41078	26	42	49	42	49	the statement "Population growth, economic development and urbanization are already fragmenting and degrading the region's 50 highly diverse habitats, species and ecosystems, such as the California sage and chaparral, the Sonoran desert, the 51 Chihuahuan desert, and the Tamaulipan mezquital." needs references (Bruce McCarl, Texas A&M University)	addressed
636	53634	26	43	5	43	10	References are needed. (Kristie L. Ebi, IPCC WGII TSU)	addressed
637	37553	26	43	10	0	0	Tecate and Mexicali have the worst quality of air in the border area (WHO, 2011). http://www.who.int/phe/health_topics/outdoorair/databases/en/index.html July 29, 2012- (Ana Rosa Moreno, School of Medicine, Universidad Nacional Autónoma de México)	We refer to these in the box and include some references
638	36052	26	43	19	0	0	SOD used but not defined (Michael Brewer, NOAA)	We already included references
639	41044	26	43	19	0	0	SOD ??? I have no idea what this refers to. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	Addressed
640	44972	26	43	24	0	0	Concluding remarks should not be a brief section. I assume that it will provide the multi-sector (integrative) synthesis noted in the approved outline for the regional chapters. This is a significant opportunity for value-added analysis / assessment, and will likely generate points that should also be included in the Executive Summary. (Don Lemmen, Canada National Study)	Addressed. We close with a first draft of our own assessment of key present and future risks and with an assessment of research gaps and directions
641	44973	26	43	31	43	38	The answer to FAQ 26.1 seems to have a strong North American bias. In particular the first sentence is applicable to many, if not all, other regional chapters. While there are many distinctive characteristics of North America (e.g. integrated trade system) I do not know that any are unique. Suggest deleting the Question. (Don Lemmen, Canada National Study)	We intend to redraft the FAQ for the next version of the chapter
642	52205	26	43	31	43	38	I think the proposed answer to this question, except for the last sentence, is totally inadequate--other continents have the supposedly unique aspects listed here. It might be said that the continent is strongly market oriented, with many people living in ways that are largely disconnected from the land and environment. Another uniqueness is the Great Plains, that supplies grains to much of the world due to its productive soils. It also has a strong legal framework for dealing with issues, to the extent that legal mechanisms can work. It might also say it has two governments that are really doing very little, or trying not to respond, or controlled by fossil fuel interests, etc. (Michael MacCracken, Climate Institute)	We intend to redraft the FAQ for the next version of the chapter
643	48675	26	43	33	43	34	I think Asia ranks broader on every one of these measures. North America and Australia/New Zealand are the only two populated continents (as the definitions go for these chapters) with no dictatorship, so the diversity of governance systems is much narrower than elsewhere. (Dáithí Stone, University of Cape Town)	We intend to redraft the FAQ for the next version of the chapter
644	45920	26	43	33	43	38	It may be worthwhile to mention about "warming hole" here, because this is an active research topic for the North America Climate (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We intend to redraft the FAQ for the next version of the chapter
645	45919	26	43	37	43	38	see my above comment related to simulated drying trend in Mexico and Southwestern USA (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We intend to redraft the FAQ for the next version of the chapter
646	48231	26	43	40	43	40	Projections of changes in annual precipitation mask seasonality variability. Much of the projected increase is in winter and spring. A majority of models project decreases in summer, the season of water demand. (David Sauchyn, University of Regina)	We intend to redraft the FAQ for the next version of the chapter
647	52206	26	43	40	43	47	This focus on precipitation needs to be broadened or adjusted. What matters for agriculture is soil moisture, so this means evaporation matters, and this is not really covered in the answer to this question. There are also issues of runoff, timing, and more--for example, as the heavy convective precipitation systems shift toward the northern Great Plains, the geography/topography/hydrology of the region is not as well-suited to heavy precipitation as the more southern areas that have been carved out by heavy precipitation in the past. (Michael MacCracken, Climate Institute)	We intend to redraft the FAQ for the next version of the chapter

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648	45921	26	43	41	43	42	put the projections in the context of observed uncertainty (see Kumar et al. (b) submitted to J. Clim. Fig. 5) (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We intend to redraft the FAQ for the next version of the chapter
649	48676	26	43	43	0	0	Draught beer? Now there is a climate impact! ;) (Dáithí Stone, University of Cape Town)	We intend to redraft the FAQ for the next version of the chapter
650	45922	26	43	43	43	44	Variability in precipitation hallmark of future climate": Is precipitation not variable in the present climate (see Kumar et al. (b); and Sheffield et al. (b). (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We intend to redraft the FAQ for the next version of the chapter
651	48677	26	43	44	43	47	These last two sentences are about vulnerability and not the question being asked. (Dáithí Stone, University of Cape Town)	We intend to redraft the FAQ for the next version of the chapter
652	48232	26	43	49	43	49	The vulnerability of southwestern Canada to decreasing runoff seems to contradict the projection of increases in precipitation identified in the previous FAQ. (David Sauchyn, University of Regina)	We intend to redraft the FAQ for the next version of the chapter
653	52207	26	43	49	43	53	It needs to be said somewhere here that North America is so developed that it is utilizing virtually all of the water resources available over the continent, and that substantial investments have been made in aqueducts, reservoirs and much more to make optimal use of the water, and so shifts in precipitation are likely to significantly disrupt the management system, especially with rain events becoming more extreme. In addition, it might be said that some rivers (like the Colorado) have been over-allocated because inadequate account was taken of variability, etc. (Michael MacCracken, Climate Institute)	We intend to redraft the FAQ for the next version of the chapter
654	46750	26	43	49	44	11	FAQ 26.3: What about sea level rise? If current projections are correct, much of Florida could be lost. The national park service lists 105 coastal park units that they consider vulnerable to SLR. At least two parks (Cape Hatteras and Assateague Island) are expected to be lost completely. (Maria Caffrey, National Park Service and University of Colorado, Boulder)	We intend to redraft the FAQ for the next version of the chapter
655	48678	26	43	50	0	0	Maybe the "except in the south" should go in brackets, otherwise this could be ready as "except in the south, much of...". (Dáithí Stone, University of Cape Town)	We intend to redraft the FAQ for the next version of the chapter
656	51637	26	43	51	43	51	Casual usage of the reserved likelihood term "likely" should be avoided. (Katharine Mach, IPCC WGII TSU)	We intend to redraft the FAQ for the next version of the chapter
657	41079	26	44	1	44	1	when you say most vulnerable is "Agriculture in Mexico" I might include US southwest (Bruce McCarl, Texas A&M University)	We intend to redraft the FAQ for the next version of the chapter
658	51638	26	44	2	44	2	Casual usage of the reserved likelihood term "likely" should be avoided. (Katharine Mach, IPCC WGII TSU)	We intend to redraft the FAQ for the next version of the chapter
659	36053	26	44	5	0	0	Make sure to really add something about the wet tropical South or remove the placeholder (Michael Brewer, NOAA)	We intend to redraft the FAQ for the next version of the chapter
660	44974	26	44	13	44	29	The first paragraph in the answer to FAQ 26.4 does not convey that adaptation, including implementation of "on the ground actions", is happening in many jurisdictions - possibly most visibly in municipalities. I would also suggest that governments and industry are much more focused on assessing risk than they are vulnerabilities. As implementation is not a research activity, it is less likely to get addressed in academic journals and if it is documented anywhere, it will be in grey literature. While there is clearly a great deal that remains to be done to advance adaptation, the answer to this question could be much more positive than it is presently formulated. (Don Lemmen, Canada National Study)	We intend to redraft the FAQ for the next version of the chapter
661	41046	26	44	19	44	24	I am pleased to see this point being made though I am not sure it is a strong enough statement. To me this deals with everything from all levels of government, many industries, professional societies, developers, many financial institutions, standards organizations and individuals. (Ian Church, Canadian Foundation for Climate and Atmospheric Science/ IPY Canada)	We intend to redraft the FAQ for the next version of the chapter
662	45923	26	44	30	44	30	Add a FAQ: How does our climate choice (RCP8.5 versus RCP4.5) will affect future climate in North America? (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	We intend to redraft the FAQ for the next version of the chapter
663	52208	26	44	32	95	21	While it is nice to be complete, having 50 pages of references (so far) is far too much--some selection has to be done, and maybe find some other way of making a fuller set of relevant materials accessible to the reader really interested in details. I also did not see reference to anything but the 2009 US assessment, which seems too limited. (Michael MacCracken, Climate Institute)	We assess in the SOD the Canadian Assessment and Mexican National Communication. As for the references included many reviewers ask for more and not for a selected ser of references. All the Las and the TSU need to discuss what policy to apply to address this concern.
664	41998	26	56	36	0	0	Engle and Lemos is not cited in the text, but appears here in the references section. (Nathan L. Engle, 2011-2012 AAAS Science and Technology Policy Fellow)	This time we tried to make sure we only included the references we cited
665	36429	26	96	0	0	0	Table 26-2. For California, consider adding the important 2006 Global Warming Solutions Act (Assembly Bill 32), which imposed the nation's first mandatory statewide program for reducing greenhouse gases. (Philip Garone, California State University, Stanislaus)	Table deleted
666	36721	26	96	0	0	0	Table 26-2 -- Note that the Nunavut Permafrost Monitoring Network was a collaborative effort between the Nunavut Government and Natural Resources Canada (Geological Survey of Canada). Details can be found in Ednie and Smith (2010, 2011). Reference to this network should also be made in the Polar chapter (ch 28) which it currently is not. Refs: Ednie, M., and Smith, S.L. 2010. Establishment of community-based permafrost monitoring sites, Baffin region, Nunavut. In GEO2010, 63rd Canadian Geotechnical Conference & 6th Canadian Permafrost Conference Calgary. GEO2010 Calgary Organizing Committee, pp. 1205-1211. http://www.aina.ucalgary.ca/scripts/minisa.dll/1039/1/0?SEARCH Ednie, M., and Smith, S.L. 2011. Establishment of community-based permafrost monitoring sites and initial ground thermal data Baffin Region, Nunavut, Geological Survey of Canada Open File 6727. http://geoscan.ess.nrcan.gc.ca/cgi-bin/starfinder/0?path=geoscan.fl&id=fastlink&pass=&format=FLSHORTORG&search=R=287873 (Sharon Smith, Geological Survey of Canada)	Table deleted
667	44975	26	96	0	0	0	Table 26-2. Add Quebec to the Table. It is debatable whether the example provided for Nunavut is appropriate as it is an activity focused on collecting data on impacts. While this is useful to inform adaptation, it is not an adaptation activity. (Don Lemmen, Canada National Study)	Table deleted

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668	51639	26	96	0	0	0	Table 26-1. The author team might consider if the 3rd column heading should be made slightly more qualified, as in "Potential impacts." (Katharine Mach, IPCC WGII TSU)	We only refer to impacts as a dimension of vulnerability
669	45924	26	97	0	0	0	Fig. 26-1: (1) Is results based on Multi-model averaging. If so please make it clear in the figure captions. (2) Multi-model averaging generally provides a conservative estimate of local/regional projections (se Kumar et al. (a) and (b) submitted to Journal of Climate). Have you made any special consideration in multi-model averaging? (3) I think for bottom panel only land area should be fine, so that reader can focus on regional details, also change the projections for the figure. (4) A parallel figure for RCP4.5 scenario would be helpful. References are provided in a separate pdf sheet. (Sanjiv Kumar, Center for Ocean-Land-Atmosphere Studies)	Figure was removed
670	48134	26	97	0	0	0	Figure 26.1: This figure provides a limited view on climate parameters relevant to impacts: maps for the end of the century are missing, the uncertainty is not shown, and there might be additional useful indexes regarding eg. dry years (JJA). Consistency and comprehensiveness of the report could be improved by adding figures similar to those provided in other chapters, such as for example chapter 23 (this remark may also apply to other chapters : some harmonisation would be welcome). (Philippe Marbaix, Université catholique de Louvain)	Figure was removed
671	54013	26	97	0	102	0	It appears that all figures in the chapter are directly drawn from other sources. It could be useful to come up with a figure or two specifically made for this chapter. (Yuka Estrada, IPCC WGII TSU)	We designed most of the figures included in the SOD
672	47891	26	98	0	0	0	The Mexico map is not a map of species migration, as implied by the figure title. It is a map of potential changes in suitable habitat for these plant functional types. (Louis Iverson, US Forest Service)	Map deleted
673	47892	26	98	0	0	0	I suggest you also look at and publish equivalent maps for other parts of north america. For example, these citations cover species and forest types for the eastern United States: Iverson L., Prasad A.M., Matthews S. and Peters M. 2011. Lessons learned while integrating habitat, dispersal, disturbance, and life-history traits into species habitat models under climate change Ecosystems 14: 1005-1020. Iverson L.R., Prasad A.M., Matthews S.N. and Peters M. 2008. Estimating potential habitat for 134 eastern US tree species under six climate scenarios. Forest Ecology and Management 254: 390-406. Iverson L.R. and Prasad A.M. 2001. Potential changes in tree species richness and forest community types following climate change. Ecosystems 4: 186-199. (Louis Iverson, US Forest Service)	Map deleted
674	51640	26	98	0	0	0	Figure 26-3. The author team should specify the timeframe over which this outbreak occurred, as plotted here. (Katharine Mach, IPCC WGII TSU)	Figure was removed
675	54003	26	98	0	0	0	Figure 26-2: The text in the figure should be included as part of caption. It is a little hard to see even the most drastic changes at glance. It may be useful to highlight where the changes are expected to occur either graphically (i.e., point the region with arrows) or in word. (Yuka Estrada, IPCC WGII TSU)	Figure was removed
676	54004	26	98	0	0	0	Figure 26-3: If the main purpose of the figure is to illustrate the extent of the mountain break, it would make a more clear case to remove panels b and c. As there is no mention of a specific case study in Box 26-2, panel b (which seems to be a study area of some sort) seems to be unnecessary and confusing to readers. (Yuka Estrada, IPCC WGII TSU)	Figure was removed
677	51641	26	99	0	0	0	Figure 26-4. It would be helpful to further clarify the source of data used in this figure. (Katharine Mach, IPCC WGII TSU)	Figure was removed
678	51642	26	99	0	0	0	Figure 26-5. It would be beneficial to further explain interpretation of the figure in the caption. Most basically, these data pertain to observed relationships, not projected relationships? (Katharine Mach, IPCC WGII TSU)	Figure was removed
679	54005	26	99	0	0	0	Figure 26-4: It needs units for the Y-axis numbers and title. As it is not clear what exactly is depicted in this chart, it would be useful to have further clarification, such as addition of word "average" in caption. It also could be useful to provide some insights on changes illustrated over time. (Yuka Estrada, IPCC WGII TSU)	Figure was removed
680	52209	26	99	1	99	1	Figure 26-4 looks virtually useless--I would think the limited information available here could easily be in the text and a more informative graphic could be provided. (Michael MacCracken, Climate Institute)	Figure was removed
681	54006	26	100	0	0	0	Figure 26-5: The visibility of this figure should be improved, especially for the printed version. Readers could not interpret this figure with provided information and legend (e.g., how is temperature incorporated in these charts?). It needs further clarification how this figure is indeed illustrating the nonlinear relation between temperature and yields so that readers would not need to hunt down the original sources literature. (Yuka Estrada, IPCC WGII TSU)	We will work on this once the figure is ready for publication
682	54007	26	100	0	0	0	Figure 26-7: The visibility of this figure should be improved. Once again, it needs further clarification; for instance, what is hab? What are the boundaries showing – county? City? Unlike Figure 26-3, this could benefit to have an accompanying map illustrating where this study area is located in a Mexico. (Yuka Estrada, IPCC WGII TSU)	Figure was discharged
683	44976	26	100	0	101	0	Photographs in the absence of supporting analytics may not be the most effective use of the limited real estate in an IPCC report. (Don Lemmen, Canada National Study)	Photo removed
684	52210	26	101	1	101	1	Figure 26-8 does not seem to offer much value. And for 26-9, what is the horizontal axis, etc. (Michael MacCracken, Climate Institute)	Figure was removed
685	54009	26	101	0	0	0	Figure 26-9: It needs further clarification in order for audience to fully understand this figure. It is not quite clear from the caption title: "The most weather-sensitive sectors U.S. production and weather data, 1930-2008." (Yuka Estrada, IPCC WGII TSU)	Figure was removed
686	54011	26	102	0	0	0	Figure 26-10: I am not sure this figure adds any valuable information in the section. It seems to be sufficient to mention in the text that 100km border zone along the US-Mexico was defined by the La Paz Agreement (Yuka Estrada, IPCC WGII TSU)	Figure was removed
687	51643	26	102	0	0	0	Figure 26-11. For anomalies presented here, it would be helpful to indicate the baseline used for comparison. (Katharine Mach, IPCC WGII TSU)	Figure was removed

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688	53635	26	102	0	0	0	Figure 26-11 will be dated soon. Maybe show a long-term trend? (Kristie L. Ebi, IPCC WGII TSU)	Figure was removed
689	54012	26	102	0	0	0	Figure 26-11: The visibility of this figure should be improved. (Yuka Estrada, IPCC WGII TSU)	Figure was removed