



**IPCC WGII
Fourth Assessment Report
Climate Change Impacts, Adaptation and Vulnerability**

Expert Review of First Order Draft

Specific Comments

Chapter 14

December 5, 2005

Discussion of expert review comments and record keeping

IT IS RECOMMENDED THAT:

- AUTHORS BEGIN WORK ON THE COMMENTS IMMEDIATELY. SUBSTANTIVE COMMENTS NEED TO BE SEPARATED FROM NON-SUBSTANTIVE, AND THE TWO SHOULD BE TREATED DIFFERENTLY
- CONTACT IS MADE BETWEEN AUTHORS AND THEIR REVIEW EDITORS IN DECEMBER

Substantive comments

- The chapter writing team should discuss all substantive expert review comments, by email and/or at Merida.
- Substantive comments require full and proper consideration. The *Principles Governing IPCC Work* state that:
 - genuine controversies should be reflected adequately in the text of the Report and
 - it is the role of the Review Editors to advise the lead authors on how to handle contentious/controversial issues
- You must record the outcome of these discussions in this document, under the column 'Notes of the Writing Team'.

Non-substantive comments

- For non-substantive comments, a very brief entry should be made in the column 'Notes of the Writing Team'. The following terms are acceptable:
 - Addressed
 - Not applicable
 - Text removed
 - A tick to denote a comment has been addressed (somewhere on the document this should be stated)

General

- The record can be kept electronically, or with pen-and-paper.
- The document becomes part of the traceable account of the Working Group II Fourth Assessment. When completed to the satisfaction of the Review Editors, a copy should be returned to the TSU by the **28th February 2006**.

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|-----------------|-------|-----------|-----------|---------|---------|---|--|
| 14-0 | A | 0 | | | | <p>Co-chair and TSU comments</p> <p>There is a huge amount of information in this chapter, and I complement the authors on putting it together.</p> <p>There is still some organization to be done, and especially synthesising so that there is suitable material for the SPM and Technical Summary, and so that the key findings and new material since the TAR are emphasised for the readership (mainly non-specialist). Some summarizing/synthesising tables and figures could be added. Good examples are Ch 4 Table 4.5 (impacts for increments of global temperature change) and Ch 11 Table 11.11 (Impacts at future timeslices under different SRES scenarios). If Chapter 14 could do something like this, it would be great material for the SPM/TS, and would give the chapter much more punch. For examples of the kind of figures we are looking for, I refer you to Chapter 4 Fig. 4.9 (map of global impacts for three different temperature changes) and 4.10. Fig 4.10 is a sectoral burning embers diagram, but could be easily adapted for the regional case.</p> <p>Amazingly, I could only find one table. But tables are exactly the tool you need to (i) radically shorten the text and (ii) really synthesise material and present it clearly and succinctly for your audience.</p> <p>The authors have not followed the Plenary-agreed headings as carefully as they should have done. They have separated out Section 15.1 Introduction and Section 15.2 Summary of Knowledge Assessed in the TAR so that all following headings are +1 compared to the other core chapters. This will be confusing for readers trying to read across chapters, and should be modified to bring this chapter into line</p> | <p>- ok</p> <p>Extensive reorganization for SOD</p> <p>We feel that the approach in chapter 11 reinforces the misimpression that the impacts of climate change occur in isolation.</p> <p>We prefer to emphasize the multi-factor, multi-response nature of global change impacts, as per the guidance from the TSU.</p> <p>We considered a large number of tables. All took more space per unit of information.</p> <p>Fixed, we misunderstood the guidance</p> |

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| | | | | | | <p>with the others. Section 14.5 should be 'Key future impacts and vulnerabilities' but includes sensitivities and adaptation. And so on - headings should agree with the list of Reduced-form subheadings which are available from the authors closed web site.</p> <p>(Jean Palutikof)</p> <p>General comments Length: The chapter is currently too long, needs to be shortened in about 18.5 pages. The number of contributing authors is not the ideal could ask for more CA. Headings: the introduction is missing.</p> <p>(Carla Encinas)</p> | <p>SOD shortened by more than 40%</p> <p>Done fixed</p> |
| 14-1 | A | 0 | | | | <p>In general: this chapter is very much geared towards impacts of climate change on humans and how they will either mitigate or make things worse. There was not much presented on the impacts of climate change on the natural systems. For ex. I thought that as a case study, the fate of National Parks was of interest and so were the possible mitigation options while habitats for charismatic may be shifting outside Park boundaries. The salmon issue in the PNW is an important one that ties together fish population dynamics responding to sea surface temperatures and climate indices, fishing pressure from both industry and local commercial fishermen and sport enthusiasts. Land management choices such as logging and grazing affecting stream temperatures, hydropower generation and dams affecting natural fish movement up streams, water pollution and diseases from numerous fish hatcheries, and loss of genetic diversity, will all interact with climate change to determine the survival of the salmon as we know it today. It could have also been the subject of a special case study.</p> <p>2nd general comment: I don't think this chapter highlighted the requested 3 time slices 2030s, 50s and 80s. Some details were given for the climate change scenarios but no results from models of terrestrial biosphere were presented following specifically following this guideline.</p> <p>3rd general comment: The impacts of climate change in the future were fairly vague, including a lot of discussion of possible human impacts but little data (model output) are presented.</p> | <p>We focused on the things that are unique to NA. Given that there is already a chapter on ecosystems, we developed the themes where a NA-centric approach adds real value.</p> <p>Fixed in SOD</p> <p>Fixed in SOD</p> |

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| | | | | | | <p>4th general comment: of course, this chapter will need to be updated with regard to the 2005 hurricane season and the Louisiana disaster. The first papers are coming out in EOS and show extent of the flooding, discuss the reasons for the breaching of levies along the lake vs along the coastline, and associated pollution issues such as the release of oil slicks in the Gulf.</p> <p>5th general comment: since the authors discussed at length human impacts they should also include the following reference: Evan Mills. Insurance in a climate of change. Science 12 Aug 2005 vol 309 pp 1040-1044. The author highlights a few issues that are not discussed in this chapter that I thought were interesting. First, earthquakes and terrorist attacks, while independent of climate and weather, will affect the population and "conspire with climate change impacts to amplify negative impacts". Neither earthquakes which have a significant chance of affecting the western US in the 21st century nor terrorist attacks for which the US government has been overspending its budget are discussed in this chapter. The lack of infrastructures necessary to deal with large scale disaster such as what occurred in New Orleans and the lack of funding for FEMA already strapped for money to deal with current events could really heighten the danger of climate extremes combined with another disturbance such as a large earthquake. This remark should be construed as apolitical but is however an issue that should be addressed globally. Examples in SE Asia and now Pakistan can illustrate the dangers in developing countries but the New Orleans example pinpoints the lack of preparedness in this country. Secondly, Mills mentions briefly the loss of power generation during heat waves. In the summer of 2003, nuclear power plants in France which provide over 80% of the electricity were reaching maximum temperatures and would have needed to be shut down dramatically if the heat had continued. The danger of nuclear power plants lacking a source of cooling in the face of rising stream water and sea surface temperatures has not been discussed in the media and yet should become an important subject directly related to climate change. It was an issue in Europe during the 2003 heat wave and has now been documented.</p> <p>general comment: This chapter does not include much discussion of potential impacts on industry (not agriculture, not tourism, not forestry) despite the fact that mandatory reduction in emissions, changing public awareness and thus choice in courses of energy and means of transport, mandatory changes in building codes, for ex, will affect investment discussions in corporate boardrooms.</p> <p>(Dominique Bachelet, Oregon State University)</p> | <p>yes</p> <p>yes</p> <p>Extensively discussed in SOD</p> <p>Increased emphasis in SOD</p> |

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| 14-2 | A | 0 | | | | <p>There is no discussion of the economic potential of arctic melting opening new shipping routes, etc. Not much is mentioned about pest shifts and invasive species increases. Potential and current pest outbreaks and shifting pest patterns seems to be overlooked. Need to be integrated in several sections Some inconsistencies between what's mentioned is summary and back section. Several refs have 2006 citations...need to check</p> <p>(Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan)</p> | <p>Check if dealt with in Polar chapter –</p> <p>Fixed in SOD</p> <p>Fixed Mostly fixed</p> |
| 14-3 | A | 0 | | | | <p>Time only permitted a cursory review of this chapter. I concentrated on those aspects with which I most familiar, freshwater resources, ecosystems, coastal areas and fisheries. The chapter does a credible job in summarizing a large amount of information of a variety of climate related effects. There are certainly some omissions, but in general the coverage is comprehensive, moderate in interpretation and well written.</p> <p>(Donald Boesch, University of Maryland Center for Environmental Science)</p> | Ok |
| 14-4 | A | 0 | | | | <p>Overall, good, balanced and realistic (not too pessimistic) chapter although the first sentence (Climate change does not introduce) could be debated. Some issues identified with 14.4 and 14.9 below. Many comments in "current sensitivities" also linked to "future sensitivities". Please note my access to gray literature (internal reports) which could be of use in the field of permafrost, coastal erosion, health, hydro-power generation and others</p> <p>(Alain Bourque, Ouranos Consortium)</p> | <p>Deleted first sentence</p> <p>Now cite grey literature from Ouranos</p> |
| 14-5 | A | 0 | | | | <ol style="list-style-type: none"> 1. For its importance Freshwater Resources section is relatively very short 2. In general, not nearly enough attention paid to extreme event trends to date and projections to future. 3. The relatively long section on Adaptation is sort of an "adapatation 101, is repetitive and not very North America-related 4. Case studies look good. <p>(James Bruce, Canadian Policy Representative, Soil and Water Conservation Society)</p> | <p>The whole chapter is relatively short Increased attention in SOD</p> <p>Extensively revised in SOD</p> <p>ok</p> |
| 14-6 | A | 0 | | | | <p>In all the chapter is well written but lacks information about impacts and adaptive strategies for First Nations (Canada) and Native Americans (US). The impacts in the north are very severe and should be more clearly noted.</p> <p>More information needed on the economic impact of cliamte change on small</p> | Increased emphasis in SOD, also in polar chapter |

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| | | | | | | communities. Where small communities are dependant on natural resources, there are huge economic risks, social risks as well as environmental risks. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | Increased emphasis in SOD |
| 14-7 | A | 0 | | | | The CLAs and LAs are to be congratulated on their first order draft. It is a comprehensive assessment of the state of knowledge of the potential impacts of climate change on North America. I have three global comments on the chapter. (1) The chapter gives the clear impression that there will be few, if any, impacts of climate change on North America and those impacts will easily be prevented by pro-active adaptation (which the appropriate actors will readily undertake). As much as I would like to believe this optimistic view, I think a more balanced perspective would be accurate (2) There is inconsistent, and sometimes inappropriate, use of the terms weather and climate. (3) There is inconsistent use of commas and semi-colons. (Kristie Ebi, Exponent) | Ok Fixed in SOD Fixed in SOD Fixed in SOD |
| 14-8 | A | 0 | | | | Chapter seems well balanced presentation of current information. I believe it makes the point well that climate change is an additional stress on top of an increasinly stressed system. I think it is an appropriate review & a balanced interperatation of the literature. (Douglas Fox, Colorado State University) | Ok |
| 14-9 | A | 0 | | | | some predicted impact that were presented with a medium to low confidence in chapter 5 ar now presented as if they were almost sure to happen. (increase in wood NPP, fire frequency increase, etc.) be careful about to strong statements (Sylvie Gauthier, Laurentian Forestry Center, Canadian Forestry Service) | Fixed in SOD |
| 14-10 | A | 0 | | | | I realize that the chapter framework that was supplied to the authors dictates much of the structure of the chapter. The result, in this case, at least, is that essentially the same information is repeated in several different places. Space would be saved, and readability would be improved, by giving the authors some freedom to present information more succinctly. (Thomas Graedel, Yale University) | Extensively edited for SOD |
| 14-11 | A | 0 | | | | I understand the request was not for editorial comments, but there are significant differences in format and style (very empirical/more general) through these chapters, repetition, errors with ways references are cited, etc. These need to be dealt with. 1. I understand recent research is to be highlighted, but this means that in many cases: (1) reference is made to papers that are submitted or in press and thus have not necessarily been fully reviewed and evaluated by the research community; (2) benchmark papers that define processes/issues are not cited rather papers that cite | Extensive editing for SOD Tried to balance compliance with guidance and acknowledgement of new findings. Somewhat addressed in SOD. Emphasis on |

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| | | | | | | <p>those papers are. I think this is a mistake.</p> <p>1. In both chapters, the sections on human settlements (urban areas), which I focused on, do not make explicit the distinction between risk to the infrastructure of cities and risk to the human inhabitants. This has important implications for the discussion. This results, for example, in an emphasis on coastal cities as those most at risk. They are in terms of infrastructure. However, events of 2003 in Europe (heat wave), and elsewhere in other summers, indicate that the threat in terms of human life and health is greater in continental cities.</p> <p>(C Sue B Grimmond, Indiana University & King's College London)</p> | <p>new literature makes this tough.</p> <p>Fixed in SOD</p> <p>The impact of hurricanes on coastal areas with inadequate preparation (or even prepared areas in harm's way) on both human life and infrastructure has been revealed to be impressive.</p> |
| 14-12 | A | 0 | | | | <p>The authors have developed a balanced and comprehensive review of the current state-of-the-art in assessing potential impacts of climate change in North America. As would be expected the coverage of some topics is more complete than others. For example, the attention to climate sensitivity and impacts with environmental systems is given considerably more attention than climate sensitivity in social systems. Yet, it is the social impacts that are most likely to garner the attention of policy makers. An overall conclusion of the chapter might be that the impacts of climate variability, climate change, and climate extremes on people and urban infrastructure are less well studied and understood than is the case for natural and managed ecosystems. It is also likely that the relatively independent assessments by WGII and WGIII results in a less effective overall process.</p> <p>The treatment of past impacts and scenarios for future patterns of climate extremes seems underrepresented relative to impacts of gradual climate change. It is the extreme events that will most likely threaten both ecosystems and human welfare in North America. While the capabilities of GCM's for producing usable information on extremes at regional scales is limited to non-existent, there are some impacts areas where this assessment could be more detailed (e.g., impacts and adaptation to heat wave in urban systems and large-scale infrastructure). Much of the current work on threats to national infrastructure by WMD and major natural disasters could be applied to climate change assessment. Most of the experts in this area are at LANL, Sandia National Laboratory, and other national laboratories.</p> <p>Case Studies: The case studies add great value to this chapter. Ultimately, all mitigation and adaptation actions that save lives and reduce property damage will be place-based or regional and there will be few, if any, general rules at the North American scale that are useful. I would urge the addition of at least one case study that enhances the roles of poverty, community size, rural location, and other similar factors as key components of vulnerability to climate change impacts.</p> <p>(Robert Harriss, NCAR/ESIG)</p> | <p>Ok</p> <p>Shifted balance throughout SOD</p> <p>Increased emphasis on extremes in the SOD</p> <p>Some effort in SOD. This deserves further thought.</p> <p>Poverty and inequality discussed throughout chapter</p> |

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| 14-13 | A | 0 | | | | I have not had time to complete my comments, rather I will forward them shortly to a coordinating lead author (Mortsch). However I would note that I am impressed by the progress since the zero order draft, and feel that the comments and suggestions I submitted on the zero order draft are addressed well in the present version. (Donald Lemmen, Natural Resources Canada) | Ok |
| 14-14 | A | 0 | | | | Some discussion of the 2005 North Atlantic hurricane season would probably be appropriate, with care taken regarding attribution of this anomaly to global warming. This chapter needs consistent spelling of 'conterminous.' (Brent Lofgren, NOAA/Great Lakes Environmental Research Laboratory) | Extensive material added to SOD Conterminus it is |
| 14-15 | A | 0 | | | | Comments on the whole chapter: This is a large undertaking to assess the state of knowledge regarding climate change impacts and adaptations for North America. The document is informative and vast in scope. Some parts, particularly 14.2 and 14.3, read like a list of specific facts without providing a general point. Section 14.3.1 is a good example and could be reduced in my opinion. The authors might consider adding a summary sentence (or two) to each major section to help keep the readers focused on the major take-home points. Comments on the whole chapter: The 2005 hurricane season and particularly the effects of Hurricane Katrina make the document read as if it is already obsolete. I recommend some strategic editing to integrate some of the implications of these recent events into each of the sections and sub-sections to which it should apply. This appears to be most of the sub-sections. The timing is unfortunate for the authors in some ways (as are the events for those involved) but clearly these recent hurricanes are having a huge impact on our understanding of climate impacts and adaptation in North America. (Hank Margolis, Université Laval) | Reorganized and shortened throughout Hurricanes discussed extensively in SOD |
| 14-17 | A | 0 | | | | I cannot comment on all aspects of this regional chapter, so a number of sections are skipped. Overall, I find this chapter one of the more polished ones - of the four I have reviewed so far. Very well done. The executive summary is strong and reflects the rest of the chapter quite well. I appreciate the distinction and consideration of impacts that will happen in NA and outside of NA and still impact the US and Canada. I appreciate the explicit statement that high adaptive capacity does not mean, actual adaptation. I also think it's great that you discuss quality of life issues. (Susanne Moser, National Center for Atmospheric Research) | Ok |
| 14-18 | A | 0 | | | | I was slightly struck by how little I learned in reading this chapter. An overall | Ok |

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| | | | | | | <p>impression is that not much has been learned in the past five years despite many references to recent literature (almost all of which I have not read). Many topics covered are really at the level of trivia. Who would not know that the ski or snowmobile industries would be affected? Much of this could have been delivered by a focus group of educated laymen. On the other hand, I found very little here that I would disagree with. My experience with climate models suggests that there are no contradictions with my understanding of what is going on. The section is pretty well written and accessible to a general audience. Finally, I think it is a shame that the chapter has no more than a perfunctory reference to the likelihood of increased intensities of hurricanes and the impact these might have. I realize the manuscript was completed before this information was available, but the terrible consequences of Atlantic and Gulf hurricanes this year will no doubt be of great interest to the readers of this report. I suggest that the committee writing this chapter be commissioned to add an appendix on these events and supplement it with the recent results in papers that have appeared in Science and Nature. Even though these papers were published later than the nominal deadline for their use, they shed important light on the problem of future hurricane intensities and frequencies, and this is perhaps the most profound impact that is likely to occur in the next hundred years in the Southern United States.</p> <p>(Gerald North, Texas A&M University)</p> | <p>Addressed with extensive revisions in the SOD</p> <p>Increased emphasis on hurricanes</p> |
| 14-19 | A | 0 | | | | <p>The impacts of climate change on indigenous residents of north America is poorly handled by this chapter. In fact, I'm not sure if one could say that the authors made any attempt to address these issues. I strongly suggest that an author with expertise in this area are be brought in to contribute to this chapter as it is very important to include such a discussion. The authors should not make the decision to exclude this discussion because it affects people who are in a minority. I would be happy to provide suggestions of possible authors.</p> <p>(Aynslie Ogden, Government of Yukon)</p> | <p>Increased emphasis in the SOD, plus clearer links to polar chapter.</p> |
| 14-20 | A | 0 | | | | <p>The chapter is very well written and highly informative. I was dissapointed by the anthropocentric focus of it, however. I am not certain if this is deliberate (natural and managed systems in Chapter 1) or reflects the disciplines of the authorship. Just a comment.</p> <p>(Kevin Percy, Canadian Forest Service)</p> | <p>Ok</p> <p>Revised balance in SOD</p> |
| 14-21 | A | 0 | | | | <p>This chapter does also not address the impact of flooding and the impact of sea-level rise although both issues seem to be relevant also for North America.</p> <p>(Klaus Radunsky, Umweltbundesamt GmbH)</p> | <p>Addressed in SOD</p> |
| 14-22 | A | 0 | | | | <p>It is noted that this chapter does not address the impacts of hurricanes, despite some</p> | <p>It does now, in the SOD</p> |

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| | | | | | | findings in other parts (e.g. chapter 10) and although such impacts seem to be significant for North America. (Klaus Radunsky, Umweltbundesamt GmbH) | |
| 14-23 | A | 0 | | | | This chapter is broad in coverage and as expected exceeds by far the recommended number of pages of 25 pages - indeed it is 63-pages long excluding the list of references. It is not an easy job to meet this page requirement given the recommended content. Speaking of references, this chapter relies on a large number of grey literature references, but in this kind of assessment it is hard to avoid this issue. I have found the text redundant regarding « adaptation » but afterwards I have had difficulties highlighting specific sentences. In any event, I suggest that references to adaptation be postponed to section 14.5. Having said that, I think the authors did a very good job of covering the state of knowledge and issues pertaining to North America. Nevertheless, there is need to downsize this chapter and I think that this can only be achieved by the authors themselves. (Alain N. Rousseau, Institut national de la recherche scientifique) | Reduced by more than 40%. Reorganized. |
| 14-24 | A | 0 | | | | A general comment- the chapter needs to be better linked to other chapters in WGII, as well as relevant information in WGI. A second general comment- the chapter is quitelacking in marine fisheries information. Complete sections is needed. (Franklin Schwing, NOAA Fisheries Service) | Addressed in the SOD. Added to the SOD. |
| 14-25 | A | 0 | | | | This chapter is well structured and has done a good job in balancing the various demands for content. The CLA's should be commended on producing a solid FOD. The CAs and CLAs should also be commended on providing a much improved discussion of the various potential opportunities as well as threats. (Daniel Scott, University of Waterloo) | Ok |
| 14-26 | A | 0 | | | | Although I was asked to review the whole chapter, my expertise is somewhat narrow for this task, so I will only provide a few comments in the areas of high latitude coasts. Will the chapter be modifies at all to include impacts of Katrina on the Gulf coast? The severity of impacts on the poor, the looting and social breakdown, the release of hazardous materials and the effects on our hydrocarbon based economy were all somewhat shocking. They provide valuable lessons regarding resilience of "developed nations". (Steven Solomon, Geological Survey of Canada) | Ok Increased emphasis on hurricanes. |
| 14-27 | A | 0 | | | | This chapter is already in pretty good shape and seems to be well on its way. I don't have a lot of comments to give since I was mainly interested in the drought aspect. Section 14.3.1 gets into this quite a bit and seems to address the issue but then there | Emphasis on drought increased in SOD. We may still want more. |

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| | | | | | | seems to be a bit of a disconnect as far as any substantial findings with regards to drought in the expected key future sensitivities, vulnerabilities, impacts and adaptation options. It left me wanting more in Section 14.5.1 with respect to the drought hazard. (Mark Svoboda, National Drought Mitigation Center) | |
| 14-28 | A | 0 | | | | My overall impression is that examples are disproportionately drawn from the US. I think the split should be more or less equal and not based on relative size, population, economic or political conditions in the two countries. I do not think it is a case of the research not being there for Canada in most cases. It is a matter of balance and to enforce the notion that this is a chapter about the region of North America. (Robin Sydneysmith, University of British Columbia) | Examples balanced in the SOD. |
| 14-29 | A | 0 | | | | General thoughts - very ambitious and well written chapter (obviously too long if only 25 pgs limit) with lots of detailed examples in some subjects -gaps in others but the ending was very weak -no clear value added statements we do not seem to be any farther ahead than after TAR except we have more examples to give confidence that climate change is affecting us. The case studies were well done brief and to the point. There is difficulty in writing about the coastal areas because many other aspects covered in the chapter are in the coastal zone ie cities duplication of thoughts -need to differentiate what coastal issues are discussed in each section -put the human and infrastructure impacts in with cities , energy, tourism etc and keep the processes and impacts on the natural coasts in the coastal environments this was done for the most part but there is not a balanced treatment of coastal areas in North America but it may reflect the status of current literature . (Robert Taylor, Bedford Institute of Oceanography) | Shortened by > 40%. Ending now very punchy. Reorganized for SOD |
| 14-30 | A | 0 | | | | a last word of caution: some of the ideas in this chapter are more suggesting than really giving facts and I believe that some aspects are not only related to climate change but a confounded effect with other human activities such as long range pollution, acid deposition, etc. I imagine that this aspect is explained in another chapter. (Liette Vasseur, Laurentian University) | We tried to discuss climate change in the context of multiple stressors. |
| 14-31 | A | 0 | | | | My general comments on the chapter are 1) the literature review is heavy on the natural sciences and light on the social sciences; 2) the conceptual framework within which ecosystem impacts are categorized and described could be improved by adopting the distinction between stock-flow resources and fund-service resources (see H. Daly and J. Farley, Ecological Economics, Island Press 2005, for | Addressed in SOD. This framework seems somewhat restrictive. |

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| | | | | | | a clear exposition), 3) the discussion of extreme weather events and flooding should be updated based on recent experiences in 2005, and 4) the description of the social and economic context and government and culture is inadequate as a basis for addressing adaptation. (Peter Victor, York University) | Increased emphasis on extreme events and adaptation in the SOD. |
| 14-32 | A | 0 | | | | I have read the document that was sent and believe that it is a good piece of work that fairly reflects the state of knowledge. I particularly like the inclusion of more materials on human dimensions and adjustments compared to previous IPCC documents. I did find some repetition between sections 14.3 and 14.5 but suspect that this is a reflecting of the structure suggested to authors and I do not consider this to be a major problem. I noted there is some inconsistency in the use of terminology e.g. both climate change and climatic change are used; also US, U.S., USA, United States may be found in various places in the document; behaviour or behaviours, centre or centers?. In read the document, I did detect a number of errors of expression and list these below by page and line number in the hope that this will be usefu (Geoffrey Wall, University of Waterloo) | Ok Repetitions eliminated (or at least dramatically reduced). |
| 14-33 | A | 0 | | | | Although I did not read the entire chapter in great detail, I am struck by the lack of reference to First Nations' issues regarding both current and future impacts and adaptation. (Ellen Wall, University of Guelph) | Increased emphasis in SOD |
| 14-34 | A | 0 | | | | The North America chapter overall has a tone of "climate damages will not be so bad, and we will be able to adapt to it". This differs strikingly from the tone in the Latin America chapter, for example, even though the two chapters draw from a similar fundamental understanding. I respect that each region should be able to make their own assessment of impacts. But many of the statements where the potential damages are underemphasized could be qualified - for example by stating that the conclusion that impacts are not severe or are manageable are really considering only expected climate changes (not the extreme end of the uncertainties) and over the time scale of 50 or 100 years. Beyond 100 years, or for rapid climate change with surprises, we may not be so confident in our ability to adapt. (J. Jason West, Princeton University) | Rebalanced the tone in the SOD. |
| 14-35 | A | 0 | | | | Watch for the several other opportunities to specify the weather/climate linkage of impacts as done for line 47. (Elaine Wheaton, Saskatchewan Research Council) | ok |
| 14-36 | A | 0 | | | | More information, including examples, for Canada could be included. Some | Rebalanced examples for the SOD. |

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| | | | | | | specific examples are given here. (Elaine Wheaton, Saskatchewan Research Council) | |
| 14-37 | A | 0 | | | | <p>Is there a particular reason that the regional contributions to the U.S. National Assessment were almost completely ignored, despite the contributions of dozens (hundreds?) of climate and other scientists to it? True, NAST (2000a, 2000b, and 2001) were extensively cited, but that report was essentially speculation on what that expert panel expected the 18 regions to find; at best, the NAST reports presented preliminary findings that were not yet peer reviewed. The actual regional reports were intensively and extensively peer reviewed and public reviewed in a process somewhat akin to the IPCC process. Some of the reports made it into the standard peer reviewed literature (e.g., the Mid-Atlantic Regional Assessment was published in a special issue of Climate Research). Essentially, the only work from the National Assessment that made it into this chapter besides NAST was the work of the Pacific Northwest and New York Metro teams, and that was because two of the contributing authors worked on those excellent regional reports. Ignoring the remainder of this wealth of work suggests one of two things: (1) the IPCC is backing down from presenting peer-reviewed science because of the intense smear campaign aimed at the National Assessment by the Bush Administration; (2) the IPCC finds the National Assessment and its peer-review process flawed and, therefore, its findings not credible. If the latter is true, the chapter should address this point directly. If the former is true, then shame on the IPCC. In either case, ignoring the single major national effort by one of two countries represented in this chapter that was published during the period covered by the chapter is disgraceful and can only be a calculated decision. Claiming that thi body of work was not included for length considerations is not credible.</p> <p>Similar to the previous comment, two special issues of the Journal of the American Water Resources Association on the hydrologic and water resources impacts of climate change on the U.S. are nearly completely ignored by this assessment. Approximately three of the dozens of papers that appeared in those issues were cited here; the rest were not (and, again, the ones that were cited were attributable to the excellent Northwest Regional Assessment because of one of the contributing authors). Once again, is it the association of these papers with the National Assessment that caused them to be ignored? I know that this chapter cannot be inclusive because of length considerations, but I find it hard to believe that such extensive literature didn't make it into this chapter. (Brent Yarnal, The Pennsylvania State University)</p> | <p>Increased emphasis on National Assessments.</p> <p>Cited as much literature as we could discuss. Will check to see if there is still a problem with these papers.</p> |
| 14-38 | A | 0 | | | | These chapters provide a useful summary of previous studies. Their contents, | 2 -Ok, edit looking for repeated sections and |

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| | | | | | | figures and tables are appropriate and I found no major points that need to be rewritten. However, these chapters do contain many repeating sentences and phrases. I think it needs to be carefully edited so that there are no longer word for word repeating sentences, and that it is also grammatically correct and succinct. (Kenji Yoshikawa, University of Alaska) | SOD represents more than 40% reduction from SOD |
| 14-39 | A | 0 | | | | Many interesting facts and trends are cited throughout the report, in particular, with respect to factors that influence global climate change. They are usually just listed, and it would be useful for readers to know which are more important than others, that is, have more of a contribution than others. The report needs to be updated with the 2005 Hurricane events, especially on pp. 14-15. For example, releases of oil from Hurricane Katrina should be added in the paragraph that extends from p. 15 l. 25-32 and on p. 21, l. 25-30. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | Extensive discussion of hurricanes in the SOD. |
| 14-40 | A | 1 | 1 | | | This is a very weak opening sentence. (Thomas Graedel, Yale University) | deleted |
| 14-41 | A | 1 | 1 | 63 | 8 | Well written and focused on the appropriate work subsequent to the TAR (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | thanks |
| 14-42 | A | 1 | 18 | | | It's MacCracken, not MaCracken (Susanne Moser, National Center for Atmospheric Research) | oops |
| 14-43 | A | 1 | 29 | 1 | 31 | Rewrite to "... will significantly increase the use of electricity due to increased need for air conditioning during warm periods." (Hank Margolis, Université Laval) | considered |
| 14-44 | A | 1 | 31 | 1 | 31 | In the section on current sensitivity/vulnerability, there should be a section devoted to indigenous peoples (Aynsle Ogden, Government of Yukon) | More emphasis on all classes of vulnerable people in the SOD. |
| 14-45 | A | 1 | 47 | 1 | 47 | In the section on summary of key future sensitivities, vulnerabilities, impacts and adaptation options, there should be a section devoted to indigenous peoples. Also, in general, I find the discussion on adaptation options to be quite limited in this section. MORE attention should be given to summarizing literature on adaptation. (Aynsle Ogden, Government of Yukon) | More on indigenous peoples. Strengthened text on adaptation. |
| 14-46 | A | 3 | 0 | 4 | | It would be nice to see some consistency between chapters in the format and bullets within the executive summaries. Bolding or italicizing the key points highlights and summarizes the findings quite nicely. For example, I like the format of the Exec. Summary in Chapter 3 as a model. Conveying the message clearly and easily is important. (Mark Svoboda, National Drought Mitigation Center) | Followed instructions from TSU |
| 14-47 | A | 3 | 0 | | | the executive summary put forth ideas that were never addressed or answered what | Fixed in the SOD. |

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| | | | | | | are the critical thresholds that will cause sudden change, role of multi-factor interacting impacts were not addressed so is that a gap? how do we assess the impacts of negative change in one area on adjacent regions -the city examples in box 4 had some good thoughts --the details in this chapter reflect our variable knowledge in some sciences and some geographic areas of the region - where are the gaps -nothing about impacts of increased supply of material from all the erosion that is happening ?? nothing about communications industry and the global linkages and how climate changes could negatively or positively impact our global village CNN coverage (Robert Taylor, Bedford Institute of Oceanography) | Improved discussion of interacting effects in the SOD. |
| 14-48 | A | 3 | 1 | | | In the Executive Summary there is little on adaptation and nothing on indigenous knowledge for adaptation. (Encinas Carla , IPCC WG2 TSU) | Fixed in the SOD. |
| 14-49 | A | 3 | 1 | 4 | 32 | The Executive Summary reads very choppy. (Jaime Dawson, The University of Western Ontario) | Fixed in the SOD |
| 14-50 | A | 3 | 1 | | | The Executive Summary could have more 'punch', again because the readership we are seeking to reach in non-specialist decision- and policy-makers. It would be better as bulleted points of 2-3 lines. This audience wants to know what are the impacts, when, under what scenarios. What/where are the regional hotspots? What is the potential for adaptation? Anything on costs? At the moment the Executive Summary does not address these needs and should be re-cast to do so. (Jean Palutikof, Hadley Centre) | Fixed in the SOD. |
| 14-51 | A | 3 | 1 | 4 | 32 | Expect that in future version that the key statements in the Executive Summary will have confidence phrases associated with them. (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | Now they do. |
| 14-52 | A | 3 | 1 | | | The only places in North America mentioned in the Executive Summary are Florida and, "California and the Rocky Mountains". Discuss North America as a whole only or include more balanced regional or national examples. (Robin Sydneysmith, University of British Columbia) | Rebalanced regional emphasis throughout draft. |
| 14-53 | A | 3 | 3 | 3 | 3 | The statement: "Climate change does not introduce fundamentally new types of challenges." is correct, but this truth is often lost in the hype that accompanies the political debate on climate change. I hope the sentence will be retained in future drafts, and will find its way into higher level summaries, i.e the WG II SPM and AR4 Synthesis Report. (Lenny Bernstein, IPIECA) | Deleted. |
| 14-54 | A | 3 | 3 | | | First sentence arguable, Start second sentence with "Climate change" instead of "It" (James Bruce, Canadian Policy Representative, Soil and Water Conservation) | First sentence deleted |

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| | | | | | | Society) | |
| 14-55 | A | 3 | 3 | 3 | 14 | In the first paragraph you introduce challenges for North American communities, businesses, governments and individuals. In the introductory paragraph of the Executive Summary this statement should include ecosystems as well. It is my opinion that the first two paragraphs should be combined. (Jaime Dawson, The University of Western Ontario) | New introduction. |
| 14-56 | A | 3 | 3 | | | Is it true that there will be no new climate-related challenges? What about an alteration in the THC? Further melting of the permafrost? Etc. (Kristie Ebi, Exponent) | First sentence deleted. |
| 14-57 | A | 3 | 3 | | 5 | Although ecosystem impacts are mentioned in the following paragraph, they should also be mentioned here. (Brent Lofgren, NOAA/Great Lakes Environmental Research Laboratory) | Executive summary rewritten |
| 14-58 | A | 3 | 3 | | 3 | The first sentence I find the most challenging maybe of the whole chapter. The question is: what are "fundamentally new types of challenges"? - do they have to be so completely different in nature from previous ones that they would qualify as such? And if so, where is that threshold (e.g., a new invasive, a new infectious disease -- while similar to previous such occurrences and spreads, could still be a rather new type of challenge)? And what if the challenge has been there in principle before, but it occurs at such an unprecedented level, or the context of management is so fundamentally different from anything current generations would know about (e.g., collapse of the health care system, complete freeze of federal disaster assistance), that these all can be described as regime shifts of sorts that present fundamentally new challenges. Moreover, from a messaging and philosophical perspective, one could ask whether this, as the opening sentence, does not send a really unhelpful message: "Ah, climate change is just more of the same, we don't have to really worry about it!" Beware how you say things!!! (Susanne Moser, National Center for Atmospheric Research) | Executive summary rewritten |
| 14-59 | A | 3 | 3 | 3 | 3 | I fundamentally disagree with the very first statement in the executive summary that "climate change does not introduce fundamentally new types of challenges". This is clearly a position of one of the authors, one that I do not believe is shared by the broader climate change research community. One only needs to look at northern Canada to look at how climate change is fundamentally posing new types of challenges to indigenous residents whose traditional lifestyles are fundamentally challenged by the impacts of climate change on traditional food supplies. Climate change is not merely a complication. Please familiarize yourself with the work Shiela Watt Cloutier has been doing to profile climate change as fundamentally a human rights issue. Please, remove this sentence. It does this results of this entire | First sentence deleted |

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| | | | | | | assessment an injustice and does an injustice to the Indigenous residents of northern North America. (Aynslye Ogden, Government of Yukon) | |
| 14-60 | A | 3 | 3 | 3 | 3 | According to other chapters of this report some new types of challenges have been identified also for North America (see chapter 15 impacts on arctic ecosystems and arctic people). See also chapter 17 page 2 lines 3 and 4. (Klaus Radunsky, Umweltbundesamt GmbH) | Executive summary rewritten |
| 14-61 | A | 3 | 3 | 3 | 8 | very general statement - omit? (Antje Schwalb, Institut für Umweltgeologie) | Executive summary rewritten |
| 14-62 | A | 3 | 3 | 3 | 3 | "Climate change does not introduce fundamentally new type of challenges." I suggest the authors drop this sentence and start directly with the second. Namely: "climate change adds new dimensions ...etc". Although I understand and share the views of these authors in terms of the multidimensionality of the climate problem within the larger context of socio-economic pressures, an opening statement like this one is wide open to misinterpretation and ambiguity. I admit i was first taken aback when reading it. For one, it could be argued that although challenges to single sectors from climate change may not be fundamentally different from current ones--except importantly for thresholds--, the simultaneous action on all sectors, including direct and indirect impacts, does indeed represent a fundamentally new challenge for the coming decades. (Francesco Nicola Tubiello, Columbia University) | Executive summary rewritten. Increased emphasis on interacting stresses. |
| 14-63 | A | 3 | 3 | 3 | 3 | The opening sentence is problematic. Climate change does introduce fundamentally new types of challenges if only in terms of the range of issues and uncertainties that it entails. It is an extreme case of an 'open access' problem, inviting 'free-riders' (individuals, communities, businesses, governments) to sit back and let others take action and incur the costs of doing so. It involves intra and inter-generational equity as well inter-species considerations requiring ethical judgements that we are poorly equipped to make. It is a problem in which 'ignorance' is paramount in the sense that we don't know all the possible outcomes, let alone the probabilities that can reasonably be attached to them. Many of the effects are likely irreversible which raises yet further difficulties for decision making. And on and on. (Peter Victor, York University) | Executive summary rewritten |
| 14-64 | A | 3 | 3 | | | Opening line is a poor way to start. Suggest deleting from "does not ... through "It" in line 3. (Robert Wilkinson, University of California, Santa Barbara) | Executive summary rewritten |
| 14-65 | A | 3 | 5 | | | ... especially if (add) 'key / critical' thresholds' ... what types of thresholds are | Executive summary rewritten . |

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| | | | | | | meant, be a bit more specific here because some thresholds in climate change could be passed without meaningful impacts (Daniel Scott, University of Waterloo) | Difficult to be more specific about tipping points. |
| 14-66 | A | 3 | 5 | | | define thresholds are these climatic thresholds or are you referring to things affected by climate like population thresholds-great aspect to investigate and solve - see comments in conclusions (Robert Taylor, Bedford Institute of Oceanography) | Executive summary rewritten |
| 14-67 | A | 3 | 6 | | 7 | among the changes, transboundary pollution should be mentioned (e.g. acid deposition in northeastern Canada) (Liette Vasseur, Laurentian University) | Executive summary rewritten |
| 14-68 | A | 3 | 7 | | | 'Impacts of climate change interact strongly with all of these and with extreme events.' What precisely interacts with what? What is the nature, size and direction of interaction (one-way? two-way?)? What is the cause of such strong interaction, given the stability of temperature measurements in de US over a long period of time? (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael') | Executive summary rewritten |
| 14-69 | A | 3 | 10 | 3 | 14 | The list includes items where much of recent change can be attributed to climate change (such as phenology) and items where climate change probably has contributed little (such as growth in property damage). Given that the first sentence says clear impacts, this is somewhat misleading. (Kristie Ebi, Exponent) | Executive summary rewritten |
| 14-70 | A | 3 | 10 | 3 | 14 | It is not clear that recent climate trends have had clear impacts on the rapid growth in property damage. It is more likely that the rapid growth in population and infrastructure in vulnerable locations (e.g., coastal zones) is the more likely explanation for growth in property damage [see work by Roger Pielke, Jr. and others]. (Robert Harriss, NCAR/ESIG) | Extensively revised in SOD. |
| 14-71 | A | 3 | 10 | | | define recent - put 30, 50, 100 years in brackets (Daniel Scott, University of Waterloo) | Executive summary rewritten |
| 14-72 | A | 3 | 11 | 3 | 14 | You provide examples of impacts on ecosystems and economies. The example of "rapid growth in property damage" is the only obvious economies example. It stands out in the ecosystem examples. (Jaime Dawson, The University of Western Ontario) | Executive summary rewritten |
| 14-73 | A | 3 | 11 | 3 | 14 | In the list of impacts, it is important for North America to add "permafrost degradation" (Yves Michaud, Geological Survey of Canada - Québec Division) | Executive summary rewritten |
| 14-74 | A | 3 | 11 | 3 | 14 | Although possibly subsumed under "changes in the timing of plant and animal | Executive summary rewritten |

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| | | | | | | activities and range," could add to list of impacts, "pest outbreaks in agriculture and forestry". In BC Mountain Pine Beetle (MPB) is a far more important impact than increased wildfires. (Robin Sydneysmith, University of British Columbia) | |
| 14-75 | A | 3 | 12 | | | In my opinion, the chapter does not establish that climate trends cause the rapid growth in property damage. They may, but the case remains unproven. (Thomas Graedel, Yale University) | Executive summary rewritten |
| 14-76 | A | 3 | 12 | 3 | 13 | Large increase in area burned: compared to what period; in which regions? (Francesco Nicola Tubiello, Columbia University) | Executive summary rewritten |
| 14-77 | A | 3 | 12 | | | ranges (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-78 | A | 3 | 13 | | | Insert "Modification in the water cycle" to the list (to add to the mention of drought) (Alain Bourque, Ouranos Consortium) | Executive summary rewritten |
| 14-79 | A | 3 | 14 | | | Add after "snow pack" "in Spring". (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | Executive summary rewritten |
| 14-80 | A | 3 | 16 | 3 | 20 | very general statement, not only true for North America - omit? (Antje Schwalb, Institut für Umweltgeologie) | Executive summary rewritten |
| 14-81 | A | 3 | 17 | | | have grown (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-82 | A | 3 | 17 | | | "has" should read "have" (Ellen Wall, University of Guelph) | Executive summary rewritten |
| 14-83 | A | 3 | 18 | | | continue (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-84 | A | 3 | 22 | 3 | 37 | In reading the Executive Summary these three paragraphs are lacking in content compared to the other paragraphs. (Jaime Dawson, The University of Western Ontario) | Executive summary rewritten |
| 14-85 | A | 3 | 22 | | | no mention of falling water levels which impact Great lakes, -adaption to changing water levels inadequate (Robert Taylor, Bedford Institute of Oceanography) | Executive summary rewritten |
| 14-86 | A | 3 | 23 | 3 | 23 | "effective mitigation". The term "mitigation", though possibly appropriate here, is confusing with respect to its use in IPCC. (Francesco Nicola Tubiello, Columbia University) | Executive summary rewritten |
| 14-87 | A | 3 | 27 | 3 | 31 | Impacts of global change in North American cities include immigration and impermeable surfaces? Does the statement regarding reduced overall energy use include increase in use of air conditioning? | Executive summary rewritten |

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| | | | | | | (Kristie Ebi, Exponent) | |
| 14-88 | A | 3 | 27 | | | Awkward sentence (lines 27-29) (Robert Wilkinson, University of California, Santa Barbara) | Executive summary rewritten |
| 14-89 | A | 3 | 27 | | 27 | add "and regions" after cities There is an emphasis upon cities being the origin of climate change - this is not entirely the case. Agriculture, deforestation and other suburban and rural phenomenon are large contributors also (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | Executive summary rewritten |
| 14-90 | A | 3 | 28 | | | How is "immigrations" related to climate change? (Thomas Moore, Stanford University) | Now mentioned briefly in 14.4.9, as a potential indirect effect. |
| 14-91 | A | 3 | 29 | 3 | 31 | The example of energy use in buildings is a very specific example in a broad summary and does not fit well with the preceding sentence. (Jaime Dawson, The University of Western Ontario) | Ok, rewritten |
| 14-92 | A | 3 | 29 | 3 | 31 | Insert "in winter" after "energy in buildings" and add "overall" before use of electricity (Katharine Jacobs, University of Arizona) | No. It's overall including winter and summer. |
| 14-93 | A | 3 | 31 | | | add after "electricity" "for cooling" (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | Done |
| 14-94 | A | 3 | 33 | 3 | 40 | The aging of North American society is an important trends for the next 30 years or so, but what about after the baby-boomer generation is gone? Climate change is a much longer term issue and the demographic characteristics post-2050 may be different. This needs to be confirmed with longer term projections (if they are available). (Daniel Scott, University of Waterloo) | Projections past about 2050 are not really available. |
| 14-95 | A | 3 | 34 | | | Explain "decrease aggregate vulnerability" (Robert Wilkinson, University of California, Santa Barbara) | Executive summary rewritten |
| 14-96 | A | 3 | 36 | 3 | 37 | Older populations is mentioned both in paragraph 6 and 7. The statement in paragraph 6 fits better with the following paragraph and is somewhat redundant with the information provided in paragraph 7. (Jaime Dawson, The University of Western Ontario) | Executive summary rewritten |
| 14-97 | A | 3 | 36 | 3 | 37 | I don't like the last sentence of the paragraph, because it increases the myth that climate change will do good things to some people with very little to support that. (Yves Michaud, Geological Survey of Canada - Québec Division) | Executive summary rewritten |
| 14-98 | A | 3 | 36 | | 37 | That older people will benefit from a warmer climate that produces less cold-related illness and injury as well as deaths should be emphasized more. (Thomas Moore, Stanford University) | Executive summary rewritten |
| 14-99 | A | 3 | 36 | 3 | 37 | "an older population...likely to benefit ...decreased cold-related illnesses". What | Executive summary rewritten |

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| | | | | | | about increased risks from more heat waves in the summer? Later sections of this chapter do talk about heat stress and aging populations. (Francesco Nicola Tubiello, Columbia University) | |
| 14-100 | A | 3 | 41 | | | delete or (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-101 | A | 3 | 41 | | | "changes in heat-related..." should read "in rates of heat-related..." (Ellen Wall, University of Guelph) | Executive summary rewritten |
| 14-102 | A | 3 | 43 | 3 | 43 | Warm-climate diseases? (Kristie Ebi, Exponent) | Executive summary rewritten |
| 14-103 | A | 3 | 45 | | | Add a comment on extreme events and health impacts (Robert Wilkinson, University of California, Santa Barbara) | Executive summary rewritten |
| 14-104 | A | 3 | 48 | 3 | 48 | What is described as the Rocky Mountains is really the Cordilleran. The Rockies are particular mountain ranges within the Cordilleran and by using that term you miss the mountains such s the St. Elias, the Coast Mountains, The Sierra Nevada,the Columbias, the Cascades, the Olympics etc. (Ian Church, Yukon Government) | Executive summary rewritten |
| 14-105 | A | 3 | 50 | 4 | 1 | Clarify sentence: There will be additional stress on ground water supplies in areas where dependence on ground water resources increases because of reduced availability of surface water supplies and in areas where recharge to aquifers is diminished. (Katharine Jacobs, University of Arizona) | Executive summary rewritten |
| 14-106 | A | 3 | | 4 | | The executive summary includes no quantitative descriptors of potential effects. It lists a few issues and discusses them without bringing a sense of how much is already known given trends in current climate and what certainty is associated with future projections. The order of the paragraphs is a bit surprising to me. I would have grouped Natural systems, Water Resources and Agriculture together. Then health. Then coastlines, cities, overall population, tourism and adaptation. Note: wildfire and insect outbreaks will increase due to longer growing seasons and drought conditions rather than just dry soils. (Dominique Bachelet, Oregon State University) | Executive summary rewritten |
| 14-107 | A | 3 | | 4 | | The Executive Summary is vague throughout, and does not send crisp messages. The text tends to phrases such as "increased vulnerability", "increased risk", "will have diverse impacts"; it is hard for the reader to know whether any of these are important or not. The paragraph on agriculture (page 4, lines 5-11) is particularly frustrating in this regard. (Thomas Graedel, Yale University) | Executive summary rewritten |
| 14-108 | A | 3 | | 4 | | no comments on Fisheries, Forestry, transporation or communications in summary | Executive summary rewritten |

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| | | | | | | (Robert Taylor, Bedford Institute of Oceanography) | |
| 14-109 | A | 3 | | | | GENERAL COMMENT ON EX SUM, this seems like a placeholder. Suggest reworking it to better reflect the work in chapter 14 (Robert Wilkinson, University of California, Santa Barbara) | Executive summary rewritten |
| 14-110 | A | 4 | 0 | | | Why isn't sealevel rise and storm surge mentioned in the summary? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Executive summary rewritten |
| 14-111 | A | 4 | 0 | | | Why aren't massive pest outbreaks such as have occurred in spruce in Kenai Peninsula in Alaska and now in NM mentioned? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Executive summary rewritten |
| 14-112 | A | 4 | 2 | 4 | 3 | This sentence is repeated. (Kristie Ebi, Exponent) | Executive summary rewritten |
| 14-113 | A | 4 | 5 | 4 | 11 | Like the previous paragraphs, I would lists some impacts especially those with higher probabilities (yields, pests, diseases, winter damage). Also, I propose you use the agriculture paragraph to illustrate the potentially much more significant indirect impact of fluctuation in prices of commodities induced by climate (which may be more significant than direct impacts) (Alain Bourque, Ouranos Consortium) | Executive summary rewritten |
| 14-114 | A | 4 | 5 | 4 | 11 | There seems little recognition to inter- relatedness between IPCC regions of crop production though line 40 on page does make mention. The emphasis in this report is on agriculture in one area versus overall provision of human sustenance and the recognitoin through adaptation that this will need to move as wll as adapt in place (Ian Church, Yukon Government) | Executive summary rewritten |
| 14-115 | A | 4 | 5 | 4 | 32 | these paragraphs contain very general statements - especially in the executive summary I would rather like to see information about the specific evolution in and characteristica of North America (Antje Schwalb, Institut für Umweltgeologie) | Executive summary rewritten |
| 14-116 | A | 4 | 5 | 4 | 17 | suggest being more conditional when describing impact statements, ie. "may" or "are likely" to have impacts rather than "will" have impacts. (Ellen Wall, University of Guelph) | Executive summary rewritten |
| 14-117 | A | 4 | 7 | | | Could a Canadian example be given as well as the California and Florida example? (Elaine Wheaton, Saskatchewan Research Council) | Executive summary rewritten |
| 14-118 | A | 4 | 9 | | | impacts (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-119 | A | 4 | 10 | | | Add Niagara and upper New York and British Columbia in bracket | Executive summary rewritten |

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| | | | | | | (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | |
| 14-120 | A | 4 | 10 | 4 | 10 | "...hightened in areas with cultural and/or tourism value". Please insert reference. (Francesco Nicola Tubiello, Columbia University) | Executive summary rewritten |
| 14-121 | A | 4 | 10 | | | values (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-122 | A | 4 | 13 | | 15 | But complex interactions between climate-ecology-and human health may lead to negative impacts on outdoor recreation and tourism such that people may not want to or cannot take advantage of the longer seasons. (Susanne Moser, National Center for Atmospheric Research) | Executive summary rewritten |
| 14-123 | A | 4 | 13 | 4 | 17 | I would suggest rewording parts of this section, perhaps as: "... Some opportunities for warm-season recreation (e.g., park visitation, golf, boating) will occur in northern regions, but pose some management challenges (e.g., visitor pressures in parks, irrigation needs, pest management). Climate change will degrade winter-recreation activities in som regions, especially for activities (e.g., snowmobiling) and specific locations that do not have snowmaking capabilities. Nature-based tourism will be adversely affected in some regions by changes in landscape or biodiversity. Tourism development will be altered by changes in competitive relationships due to climate change and other anthropogenic impacts." (Daniel Scott, University of Waterloo) | Executive summary rewritten |
| 14-124 | A | 4 | 14 | 4 | 14 | The text in brackets is not necessary. Its negativity detracts from the statement. Places people want to escape is a whole other issue separate from tourism - it is more related to issues of migration within and between countries. (Jaime Dawson, The University of Western Ontario) | Executive summary rewritten |
| 14-125 | A | 4 | 14 | 4 | 14 | suggested EDIT. "...places people want to escape FROM." (Francesco Nicola Tubiello, Columbia University) | Executive summary rewritten |
| 14-126 | A | 4 | 17 | | | What does this line mean? The term "tourism values" is ambiguous in this context. (Brent Yarnal, The Pennsylvania State University) | Executive summary rewritten |
| 14-127 | A | 4 | 19 | 4 | 25 | species shifts are occurring already. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Executive summary rewritten |
| 14-128 | A | 4 | 19 | 4 | 25 | This paragraph summarizes but focuses on extreme or catastrophic events leading to wholesale change> In my opinion, reference should be made to the inherent adaptive capacity (to varying degrees) within natural species such as forest trees; over the medium term impacts will likely cascade through genotype and species levels resulting in changes to forest structure and function, without leading to "ecosystems shifting north". As in Chapter 1, the worst case scenraios seem to be | Executive summary rewritten |

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| | | | | | | presented in summary sections without qualification. (Kevin Percy, Canadian Forest Service) | |
| 14-129 | A | 4 | 19 | 4 | 25 | the change in disturbance regime may also slow down the tendency for ecosystem to shift north and higher... this doesn't seem to be addressed. (see the work of overpeck et al. 1990. Nature 343-51-53) (Kevin Percy, Canadian Forest Service) | Executive summary rewritten |
| 14-130 | A | 4 | 24 | | | Delete "and ecosystems." Only species and ecoclimatic zones are/will be migrating (Elaine Wheaton, Saskatchewan Research Council) | Executive summary rewritten |
| 14-131 | A | 4 | 27 | 4 | 32 | I propose you briefly lists types of adaptation options (technical, policies, incentives, support systems, efficient outreach...) and identify the fact that there is still many reasearch gaps w.r.t. adaptation options and their assessment to specific impact issues (Ex: transportation in St-Lawrence Seaway with decreasing water levels towards uncertain levels). 14.9 could be more present here. (Alain Bourque, Ouranos Consortium) | Executive summary rewritten |
| 14-132 | A | 4 | 27 | 4 | 27 | And using adaptive capacity does not guarantee 100% success. (Kristie Ebi, Exponent) | Executive summary rewritten |
| 14-133 | A | 4 | 27 | 4 | 27 | Although adaptive capacity within North America is considerable it should be mentioned within the Executive Summary that that capacity is not homogeneous. There is a mosaic of levels of adaptive capacity that is reflective of the mosaic of economic and social conditions across the country, as well as the differences in institutional and social infrastructures that exist. Although the overall capacity is considerable, this mosaic is important and should be reflected in the exec summary as well as explored in detail within the appropriate place in the chapter (page 5, lines 5-7 and within Section 14.6) (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | Executive summary rewritten |
| 14-134 | A | 4 | 28 | 4 | 28 | ..EDIT. ... "Climate experienced historically. "Climate experience" is more technical. Text should be understandable to non-specialists as well. (Francesco Nicola Tubiello, Columbia University) | Executive summary rewritten |
| 14-135 | A | 4 | 28 | | | largely responded to climate experience – what does this mean? (Geoffrey Wall, University of Waterloo) | Executive summary rewritten |
| 14-136 | A | 4 | 29 | 4 | 29 | I suggest replacing exceeds with is projected to. (Kristie Ebi, Exponent) | Executive summary rewritten |
| 14-137 | A | 4 | 29 | 4 | 31 | The statement on climate change and energy demand in building is very generalized, especially given the expertise in this area on the writing team. This is an area where more specific detail is needed in the executive summary and in appropriate sections of the following text. It would be useful to discuss scenarios that have been produced for regional analyses and to deal with issues like | executive summary rewritten |

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| | | | | | | adaptation to changes in peak demand versus overall demand for electricity, natural gas, and transportation fuels. I would hypothesize that this is the most vulnerable aspect of North American infrastructure to climate change and deserves more discussion and a more complete review of the literature. (Robert Harriss, NCAR/ESIG) | |
| 14-138 | A | 4 | 31 | 4 | 32 | I do not understand the last sentence in the paragraph -- traditions and institutions are consistent with actions? (Kristie Ebi, Exponent) | 1 executive summary rewritten |
| 14-139 | A | 4 | 31 | | 32 | What does it mean to say that cultural traditions and institutions in NA are consistent with a range of ...actions? In many ways one could argue just the opposite: institutions, as things that provide stability, are or can be rather unhelpful in providing the kind of flexibility needed to deal with a more extreme, more variable, or simply different climate. (Susanne Moser, National Center for Atmospheric Research) | 2 executive summary rewritten |
| 14-140 | A | 4 | 31 | | | replace & by and for consistency (Geoffrey Wall, University of Waterloo) | ok |
| 14-141 | A | 4 | 31 | 4 | 32 | Not sure what these sentence means or adds – delete? (Geoffrey Wall, University of Waterloo) | executive summary rewritten |
| 14-142 | A | 4 | 33 | | | There is lots of evidence that most but not all people prefer warmer weather to cold. Climate change will actually therefore please a good portion of the public. For evidence on this subject and on over all health effects see: Thomas Gale Moore "Health and Amenity Effects of Global Warming," Economic Inquiry, July 1998, pp 471-488. (Thomas Moore, Stanford University) | executive summary rewritten |
| 14-143 | A | 4 | 35 | | | The Introduction doesn't provide much information and can helps to cut the exceeding text. (Encinas Carla , IPCC WG2 TSU) | Dramatically shortened |
| 14-144 | A | 4 | 37 | 4 | 48 | This discussion is very appropriate and needs to be retained in future drafts. Any division of a complex topic like climate change introduces artificialities. While this is unavoidable, it needs to be recognized and its implications understood. (Lenny Bernstein, IPIECA) | ok |
| 14-145 | A | 4 | 37 | 4 | 48 | There is an issue of scale throughout this chapter. Region is used in the Introduction to refer to North America. It is later used in the text to refer to a region within Canada or North America bound by a common feature. There needs to be consistency in the use of this term. As well the term 'local' is used in the introduction and later in the chapter in reference to different scales. There needs to be consistency. | Revised use of scale in the SOD |

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| | | | | | | (Jaime Dawson, The University of Western Ontario) | |
| 14-146 | A | 4 | 37 | 4 | 41 | These are good questions, and we already have answers to some. (Kristie Ebi, Exponent) | Ok – revised in the SOD |
| 14-147 | A | 4 | 37 | 4 | 37 | Better to phrase this as "In our increasingly interconnected world, does it make sense" (Hank Margolis, Université Laval) | Fixed in SOD |
| 14-148 | A | 4 | 37 | 4 | 42 | While I understand the need to make distinctions between direct and indirect impacts of climate change, I do not see the logic behind questioning whether or not it makes sense to consider the impacts of climate change on a region. I do not believe this assertion is well grounded in literature. A more appropriate question to ask is whether or not we are addressing the right impact at the right scale and if we are doing a good job at addressing impacts that cross scales -- be they temporal, spatial or political. My best advice is for this chapter to reflect what is in the literature -- I believe such uncited statemments are more of a reflection of author opinion. The IPCC assessment should be a synthesis of the best available knowledge and information, not an opinion piece. Opinions that the authors may have should be publishing in peer-reviewed journals and not under the auspices of the IPCC assesment report. (Aynslie Ogden, Government of Yukon) | Rewritten in SOD |
| 14-149 | A | 4 | 37 | 4 | 38 | Regarding "Does it make sense to consider impacts of climate change on a single regions?"; apparently it does make sense, otherwise there would not be a regional focus to chapters 9-16 of the IPCC WG2 FAR. However, the authors should acknowledge the tremendous natural diversity in a region as large as North America (U.S. and Canada) from the high arctic to the subtropics and the large range of exposure to climate change and variability. (Dave Sauchyn, University of Regina) | Not a bad point. Increased emphasis on diversity in the SOD. |
| 14-150 | A | 4 | 37 | 4 | 38 | I can't make up my mind if this question seems redundant or simply too rhetorical. (Robin Sydneysmith, University of British Columbia) | ok |
| 14-151 | A | 4 | 45 | 4 | 47 | This sentence is repeated. (Kristie Ebi, Exponent) | ok |
| 14-152 | A | 4 | 47 | 4 | 48 | There is the possibility of ambiguity here because 'direct' and 'indirect' are used in the climate change literature to refer to the direct impacts of climate versus climate impacts on human population and activities that arise from the influence of climate on ecosystems and natural resources. In this chapter, direct and indirect refer to the geographic scope of the impact. (Dave Sauchyn, University of Regina) | De-emphasized this theme. |
| 14-153 | A | 5 | 1 | 5 | 7 | The scope of the chapter is defined in the Introduction. However, there is no | Clarified in the newintro. |

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| | | | | | | mention to Mexico and the Arctic, and that these countries/regions are dealt with in other chapters. In the TAR both Mexico, the Arctic, and the Caribbean were considered in the North America chapter. Following from this, there are various terms used to refer to the US (conterminous, contiguous, Lower 48...), there needs to be consistency between the use of these terms when they are referring to the same area. (Jaime Dawson, The University of Western Ontario) | |
| 14-154 | A | 5 | 1 | 5 | 7 | These capabilities do not extend to all regions of North America. Try to indicate that there is significant variation within North America. While "developed" and "advanced" on an aggregate or general level there are many geographic places and social spaces in both Canada and the US which are decidedly "underdeveloped", remote, poor or both. New Orleans and hurricane Katrina is the obvious and most recent example. (Robin Sydneysmith, University of British Columbia) | Extensive focus on diversity in the SOD. |
| 14-155 | A | 5 | 1 | | 1 | The definition of which countries comprise North America is problematic. The standard definition is U.S., Canada and Mexico. The source cited as defining it (WMO) only as U.S. and Canada should be spelled out and put in the reference list. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | Good point. We should still do this. |
| 14-156 | A | 5 | 9 | 5 | 13 | These two sentences seem to be a justification for focusing on certain locales, that is, where there impacts and adaptation influence "large numbers of people", "important ecosystem services" or "culturally significant parts of the built environment". A general criticism that underlies many of my comments is the uneven geographic coverage. I recognize that there is a large body of literature and that the authors discuss "every study of every local". Does the geographic distribution of the material summarized reflect the 1) the criteria stated in these two sentences, 2) the more intense study of more populous locales, or 3) the geographic bias (knowledge) of the authors? (Dave Sauchyn, University of Regina) | Difficult to explain the selection of the literature, especially since some studies are discussed in the sectoral chapters. |
| 14-157 | A | 5 | 10 | 5 | 11 | Why don't you use the term "details" instead of "locale" (Yves Michaud, Geological Survey of Canada - Québec Division) | consider |
| 14-158 | A | 5 | 12 | | | replace "expensive" with "economically" (Ellen Wall, University of Guelph) | consider |
| 14-159 | A | 5 | 19 | 5 | 28 | This paragraph can be deleted as the outline of the chapter is already presented in the table of contents pages 1 and 2. (Dominique Bachelet, Oregon State University) | Extensive rewriting |
| 14-160 | A | 5 | 28 | 5 | 28 | Add social to the following the list, as in, "...ecological, economic, social and cultural wellbeing." | Extensive rewriting |

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| | | | | | | (Robin Sydneysmith, University of British Columbia) | |
| 14-161 | A | 5 | 31 | 7 | 32 | S 14.2 is pretty concise. Perhaps S 14.2.2 would need an introductory sentence. (Encinas Carla , IPCC WG2 TSU) | ok |
| 14-162 | A | 5 | 31 | 7 | | Section 14.2: In the North America chapter in the TAR, an uneven geographic coverage of material was mitigated by more of a sub-regional framework. (Dave Sauchyn, University of Regina) | Coverage improved for SOD |
| 14-163 | A | 5 | 35 | 5 | 37 | Are these two sentences meant as an introduction to the TAR key findings or are they a summary from TAR? I think this introductory paragraph to this section could be made stronger by clearly stating that the following presents key findings from TAR and the reader can refer to TAR for more information and specific examples. As well, it is not clear how and why you choose the key findings as presented in this section. Perhaps this is not important. (Jaime Dawson, The University of Western Ontario) | fixed |
| 14-164 | A | 5 | 39 | 7 | 17 | If you are trying to conserve space, you could present the key findings only without any specific examples, which the reader can easily find by referring to the TAR. Removing specific examples would also maintain consistency between each subsection, as they do not all present examples equally. For example under water resources there is a list of specific adaptive responses, conversely under marine fisheries there are no specific examples. (Jaime Dawson, The University of Western Ontario) | ok |
| 14-165 | A | 5 | 42 | | | what is conjunctive management? (Geoffrey Wall, University of Waterloo) | removed |
| 14-166 | A | 5 | 48 | 6 | 24 | I think there needs to be a clear link between impacts on Forests, Ag & Natural Ecosystems. The second bullet under Forests, Disturbance is as, perhaps more relevant for Natural Ecosystems. The third comment that managed forests may be less susceptible than "unmanaged" forests may or may not be true. A monoculture plantation will be less sustainable than the adjoining wilderness where natural processes are unhindered. There really is no "unmanaged" forest in North America, it is all subject to management even if that management is to let it attempt to return to natural processes (i.e. wilderness.) Comment about outdoor tourism should not be under ag. (Douglas Fox, Colorado State University) | Fixed in SOD |
| 14-167 | A | 5 | 49 | 5 | 50 | Our latest modeling results show a huge decline in the eastern deciduous forest in the US and some decrease in forest NPP in eastern Canada by 2100. The TAR statement of forest productivity and extent increasing in the future is not supported under the new future climate change scenarios. Results of direct impacts on forest of the eastern US are being generated by several dynamic vegetation models using the | Fixed in SOD |

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| | | | | | | latest IPCC scenarios (see special session at ESA last summer- VINCERA project lead by David Price, Canada). (Dominique Bachelet, Oregon State University) | |
| 14-168 | A | 5 | 49 | 5 | 50 | those prediction are based on what climatic parameter (temperature increase)? any consideration of interaction with disturbances, atmospheric pollutant, or soil limitation? (Sylvie Gauthier, Laurentian Forestry Center, Canadian Forestry Service) | Explain better |
| 14-169 | A | 6 | 1 | 6 | 5 | As is pointed out correctly later in the chapter, tropospheric ozone has and will rise in concert with temperature, demographics and economic growth in North America. Non-natural disturbances like ozone which will also increase in extent with climate change (also positive feedback through biogenic VOC emissions) and should be listed under both agriculture and forestry; two recent post TAR state of science chapters from global assessments are relevant here : Percy et al. (2003) Tropospheric ozone: A continuing threat to global forests? pp 85-118 IN Karnosky et al (Eds.) Air Pollution, Global Change and Forests in the New Millennium . Elsevier, Oxford 468 pp. and Percy (2003) Air Pollution impacts in North America pp. 35-58 In Emberson et al (Eds.) Air Pollution Impacts on Crops and Forests: A Global Assessment. Imperial College Press, London. 372 pp (Kevin Percy, Canadian Forest Service) | may consider inclusion in appropriate section further on in the report; here is just a summary of TAR MB and SR – air pollution limits on NA forests are largely ignored because on a CONTINENTAL basis we expect little impact, only local impacts |
| 14-170 | A | 6 | 4 | 6 | 5 | This is where we should really highlight the difference with current assessment: Managed forests have even-aged monospecific stands are extremely susceptible to insect and pathogen outbreaks, and fire. The greater diversity in age and structure of natural forests renders them more resilient to future climate change impacts than managed forests. (Dominique Bachelet, Oregon State University) | summary of TAR only |
| 14-171 | A | 6 | 4 | 6 | 5 | adaptation of species or through management? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Changed sentence |
| 14-172 | A | 6 | 4 | 6 | 5 | The point "adaptation may make lands managed for timber production less susceptible than unmanaged forests to climate change needs to be qualified. This may be true for some values that forests are managed for (timber products), but the converse may be true for other values, such as biodiversity. I think a qualified statement would better represent the intent of what was in the TAR (Aynslie Ogden, Government of Yukon) | removed |
| 14-173 | A | 6 | 6 | | | add at the end of the sentence, "within and among recreational sectors" (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | Not linked to appropriate page and line |
| 14-174 | A | 6 | 10 | 6 | 11 | I think this statement refers to negative effects on agriculture. If so add 'on | done |

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| | | | | | | agriculture' the end of the sentence (Peter Victor, York University) | |
| 14-175 | A | 6 | 11 | 6 | 13 | Why is this in the Agriculture sub-section? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | formatting error corrected- |
| 14-176 | A | 6 | 11 | 6 | 13 | Comments on tourism maynot be appropriate for this section (agriculture). If the content remains, perhaps rename section "land-use" (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | formatting error corrected |
| 14-177 | A | 6 | 11 | | | Why is outdoor recreation and tourism located under agriculture? Is it supposed to be a new sub-heading? ... Add 'events' to the list of items that could be affected. (Daniel Scott, University of Waterloo) | formatting error corrected |
| 14-178 | A | 6 | 11 | | | why is there a tourism comment in with agriculture? (Ellen Wall, University of Guelph) | formatting error corrected |
| 14-179 | A | 6 | 11 | | | Outdoor tourism is listed under Ag??? It needs its own heading (Robert Wilkinson, University of California, Santa Barbara) | formatting error corrected |
| 14-180 | A | 6 | 11 | 6 | 13 | This bullet point on tourism should have a separate heading; in no way does it fit under "agriculture." (Brent Yarnal, The Pennsylvania State University) | formatting error corrected |
| 14-181 | A | 6 | 15 | | | should edit to read The abundance, growth, health, productivity and spatial distribution (Franklin Schwing, NOAA Fisheries Service) | verify that these factors were addressed in TAR |
| 14-182 | A | 6 | 17 | 6 | 18 | "accurate scientific information" will always be available a posteriori. There will always be uncertainty associated with future projections so I find this statement peculiar. (Dominique Bachelet, Oregon State University) | removed |
| 14-183 | A | 6 | 23 | 6 | 23 | the term "mitigation" here seems inappropriate with respect to its IPCC meaning (Francesco Nicola Tubiello, Columbia University) | lremoved |
| 14-184 | A | 6 | 29 | 6 | 30 | These two lines should have their own bullet. (Brent Yarnal, The Pennsylvania State University) | ok |
| 14-185 | A | 6 | 30 | 6 | 30 | How about "First Nation communities" instead of "indigenous communities" (Yves Michaud, Geological Survey of Canada - Québec Division) | bullet reworkded - TSU guidance on terms for indigenous peoples? |
| 14-186 | A | 6 | 30 | | | the necessary (Geoffrey Wall, University of Waterloo) | ok |
| 14-187 | A | 6 | 31 | | | There is no evidence of "More Frequent extreme events" (Thomas Moore, Stanford University) | using may |
| 14-188 | A | 6 | 37 | | | "Vector-borne ... diseases" are unlikely to "expand their ranges in North America. Public health will prevent that. | noted in subsequent sentence |

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| | | | | | | (Thomas Moore, Stanford University) | |
| 14-189 | A | 6 | 37 | 6 | 38 | Is there a possibility that these diseases might intensify, that is become more dense, within their existing ranges as well as extending their ranges? If so, that should be added. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | this is a summary of TAR |
| 14-190 | A | 6 | 42 | 6 | 50 | I am not sure if this section should include references outside the latest IPCC document but Mills gives new numbers for the insurance losses strictly due to climate. (Dominique Bachelet, Oregon State University) | use of Mills appropriate in subsequent sections |
| 14-191 | A | 6 | 43 | 6 | 45 | I agree with this summary but we should recognized that some areas previously identified as "not-too-risky" areas are becoming more at risk because of climate change (Ex: houses and infrastructures further away from coast line becoming identified as "at risk" due to modification of coastal erosion regimes) (Alain Bourque, Ouranos Consortium) | ok |
| 14-192 | A | 6 | 43 | 6 | 43 | "Over the past three decades" - is this three decades preceding the release of TAR, or the release of this assessment. (Jaime Dawson, The University of Western Ontario) | clarified |
| 14-193 | A | 6 | 46 | 7 | 3 | I would rather say: "Governments PRESENTLY play a key role...". They did not as much before the 1950's. Some crop insurance programs were created as temporary programs following climate extremes (Ex: droughts of the early to mid 60s) and became permanent. For the future, some new laws now make municipal governments (and eventually citizens?) more liable for known vulnerabilities. Although governments will likely continue to play a role, it is unclear if this role will remain the same or as key (and costly) as it is now, possibly increasing vulnerabilities for those at risk. (Alain Bourque, Ouranos Consortium) | edited |
| 14-194 | A | 6 | 47 | 6 | 47 | "Over the last two decades" - is this reference to the two decades preceding the release of TAR, or the release of this assessment. (Jaime Dawson, The University of Western Ontario) | clarified |
| 14-195 | A | 6 | 48 | | | Is the value of gov't flood losses in the US also known (for comparative purposes)? (Daniel Scott, University of Waterloo) | summary of TAR |
| 14-196 | A | 6 | 48 | | | question the use of word "unprofitable"; sentence reads better with the phrase "have been unprofitable" removed (Ellen Wall, University of Guelph) | edited |
| 14-197 | A | 7 | 4 | 7 | 17 | Only US examples. See comment #1 (Robin Sydneysmith, University of British Columbia) | removed examples |
| 14-198 | A | 7 | 7 | 7 | 8 | Ins it necessary to give examples? If so, I would suggest to refer to chapter 14.7 | This is a summary of TAR and needs to reflect |

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| | | | | | | (Antje Schwalb, Institut für Umweltgeologie) | its content |
| 14-199 | A | 7 | 10 | 7 | 13 | The example of water markets is exactly that, an example not a key finding. (Jaime Dawson, The University of Western Ontario) | removed examples |
| 14-200 | A | 7 | 14 | 7 | 15 | I would add it also requires the dialogue BETWEEN researchers (Alain Bourque, Ouranos Consortium) | check if this was said in TAR |
| 14-201 | A | 7 | 16 | 7 | 16 | I propose to follow this affirmation with a one-liner summarizing the current knowledge on the following question: "Do stakeholders understand the links between variability and change?" (Alain Bourque, Ouranos Consortium) | noted – but summary of TAR |
| 14-202 | A | 7 | 20 | 7 | 32 | "Key differences from TAR" - compared to what? There is no opening statement to indicate if the key differences are between TAR and this assessment. It would be appropriate for this section to be a combination of bullets and full sentences. (Jaime Dawson, The University of Western Ontario) | added intro sentence |
| 14-203 | A | 7 | 20 | | 32 | This needs more explanation, too terse (Douglas Fox, Colorado State University) | added intro sentence |
| 14-204 | A | 7 | 20 | | | I suggest renaming the header to something like: "Significant new developments since the TAR" (the current title begs the questions differences BETWEEN WHAT and the TAR?) (Susanne Moser, National Center for Atmospheric Research) | Title fixed but added intro sentence |
| 14-205 | A | 7 | 20 | 7 | 32 | Key differences -- there should be a discussion here on how indigenous peoples in north America (particularly northern Canada) have been working since the TAR to raise awareness of the impacts of climate change on their traditional lifestyles. (Aynsle Ogden, Government of Yukon) | dependent on treatment in Polar chapter agreed chapter would treat northern indigenous people |
| 14-206 | A | 7 | 20 | | | Key differences from TAR list is well done (Elaine Wheaton, Saskatchewan Research Council) | thanks |
| 14-207 | A | 7 | 20 | | | Perhaps note that pattern changes, especially with regard to precip, remain a serious issue and are difficult to model. Thus, the tendency for models to project little or no increase in precip may mask key pattern shifts. (Robert Wilkinson, University of California, Santa Barbara) | Highlighted in several places, including 14.8 |
| 14-208 | A | 7 | 22 | 7 | 23 | The tendency described here is inconsistent with my understanding of the current state of the models. I had the impression that the models do not give a clear indication regarding change in precipitation. Make sure this is internally consistent with the findings in other chapters. (Katharine Jacobs, University of Arizona) | ok |
| 14-209 | A | 7 | 22 | | 23 | the models predict increases in precipitation as you indicate elsewhere in this chapter. For example on page 8, lines 35 to 37 the chapter shows that precipitation | Clarified observed trends versus model outputs |

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| | | | | | | has already increased. (Thomas Moore, Stanford University) | |
| 14-210 | A | 7 | 22 | 7 | 23 | This first bullet would be better served with inclusion of the word "drought", which is more comprehensive and captures water resource shortages as an impact of drought due to warming and drying. (Mark Svoboda, National Drought Mitigation Center) | ok |
| 14-211 | A | 7 | 26 | | | recognition that interacting factors may lead to tipping points (such as recent David Breshears paper on New Mexico pinyon pine from droughts similar to the 1950s, but with higher temps.. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Ok -added |
| 14-212 | A | 7 | 26 | | | *Comment #5 should read: recognition that interacting factors may lead to tipping points (such as recent David Breshears paper on New Mexico pinyon pine from droughts similar to the 1950s, but with higher temps.. or, increased Lyme breakout given habitat fragmentation. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Ok -added |
| 14-213 | A | 7 | 26 | 7 | 26 | Insert a bullet item "Expanding recognition of the critical role of ecological disturbance (fire, insects, land management) at regional and continental scales as both a climate impact and a climate feedback." Also insert another bullet item, "Expanding recognition of the impacts of climate warming at high latitudes." (Hank Margolis, Université Laval) | Important theme in 14.2.2 |
| 14-214 | A | 7 | 29 | 7 | 32 | I would be helpful to include specific references within this section, particularly with respect to the contributions to modulating impacts and the continuum between current vulnerabilities, adaptive capacity, and long-term adaptation, as to where these topics are addressed within this chapter (e.g., reference to particular sections/sub-sections of the chapter) (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | Addressed in later sections |
| 14-215 | A | 7 | 35 | 9 | 6 | I take for granted that the climatic analyses presented here and elsewhere in the document (ex: trend in tropical cyclone) will be consistent with FAR WG1 work (Alain Bourque, Ouranos Consortium) | will check relevant chapters to ensure consistency with WG1 |
| 14-216 | A | 7 | 35 | | | S 14.3 has enough references and maps, some space of the chapter is used by these. The assessment sector by sector is pretty descriptive but needs to assess the most relevant and important information. There is enough information to build up a table and summarize, (Encinas Carla, IPCC WG2 TSU) | Our efforts at using tables to decrease the length had the opposite effect. |
| 14-217 | A | 7 | 35 | | | Reading through Section 14.3 and 14.5 there is an apparent lack of consistency | Extensively edited in SOD |

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| | | | | | | <p>between sub-sections in terms of format and content. In this assessment it is important that a reader will get a similar level of information from each sub-section and can flip easily between sub-sections and sections. In terms of format there should be consistency between headings and sub-headings. Currently some sub-sections in section 14.3 (ecosystems; agriculture, forestry, and fisheries; human settlements) have sub-headings while the others do not. The same for section 14.5. Similarly, some sub-sections have introductory statements while others start immediately with a presentation of trends. Will there be diagrams for each sub-section? Currently in Section 14.3 there are diagrams for water resources and human settlements, but no where else. In terms of content, there are a few different issues to note. Some sections (human settlements in particular) refers to the TAR, where some sections make no reference to the preceding assessment. There is not a similar level of information provided in each sub-section particularly when considering the attention given adaptation options and adaptive capacity. Some sub-sections do not address this important and central issue at all or not to the level as other sections. There needs to be consistency. In some sections there is an overreliance on data from either Canada or the US. This may not be easily fixed if there is a lack of data on a particular subject, however I doubt this is the reason in all cases.</p> <p>(Jaime Dawson, The University of Western Ontario)</p> | <p>Fixed in SOD</p> <p>ok</p> |
| 14-218 | A | 7 | 35 | 8 | | <p>Section 14.3. A dizzying number of dates and intervals are used for the various trends cited. Is there any way to standardize this, recognizing of course that this information is drawn from many different studies that use different time frames?</p> <p>(Rae Zimmerman, Robert F. Wagner Graduate School of Public Service)</p> | 2 – LM and SR |
| 14-219 | A | 7 | 36 | | | <p>Should there be a heading for this sub-section? Or at least an introductory statement to the information provided on temperature, precipitation and sea-level rise.</p> <p>(Jaime Dawson, The University of Western Ontario)</p> | 2 see 14-220 |
| 14-220 | A | 7 | 37 | 9 | | <p>Section 14.3: The first 3 paragraphs of section 14.3, should have the sub-section heading “Exposure and Climate Trends” because this is the topic of these paragraphs. Sensitivity and vulnerability are not discussed until the next sub-section on Freshwater Resources. The discussion of exposure to climate and climate trends is important but the reader should be made aware with a subheading that this is presented before the sensitivities and vulnerabilities are discussed.</p> <p>(Dave Sauchyn, University of Regina)</p> | 2 – LM & SR agree changed |
| 14-221 | A | 7 | 37 | 9 | 6 | <p>Seems to me that these paragraphs present mostly lists of impacts that could be more clearly summarised in a table preceded by a short explanatory sentence.</p> | 2 – will consider Table |

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| | | | | | | Possible space saver? (Robin Sydneysmith, University of British Columbia) | |
| 14-222 | A | 7 | 37 | | | Annual mean air temperature is cited, but typically global mean surface temperature has been used also. Alert reader to all of these different measurements even if only one is used. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | 2 ok |
| 14-223 | A | 7 | 38 | | | should be 0.6 because 2 digit precision is not called for. (Douglas Fox, Colorado State University) | 2 ok |
| 14-224 | A | 7 | 39 | 7 | 41 | There is also strong temporal variation and, for example, most stations over northeastern Canada have shown impressive warming trends in the last 10 years (Alain Bourque, Ouranos Consortium) | 2 noted |
| 14-225 | A | 7 | 39 | 7 | 41 | I don't quite agree with that statement mentioning "cooling in Atlantic and north-eastern Canada..." I agree with the regional variation, but I don't think that the continental mass in north-eastern Canada and Atlantic Provinces were under a cooling trends. See; RIVARD, C., MARION, J., MICHAUD, Y., BENHAMMANE, S., MORIN, A., LEFEBVRE, R. et RIVERA, A., 2003, Étude de l'impact potentiel des changements climatiques sur les ressources en eau souterraine dans l'Est du Canada. Commission géologique du Canada, Dossier public 1577, 39 p. et annexes. (Yves Michaud, Geological Survey of Canada - Québec Division) | 2 check and revise if necessary |
| 14-226 | A | 7 | 42 | | | effects (Geoffrey Wall, University of Waterloo) | oops |
| 14-227 | A | 7 | 43 | 8 | | to end of paragraph. Natural subsidence is not mentioned as influencing sea level change. Cite studies and figures that try and separate subsidence from increased temperature effects or at least mention subsidence as a factor. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | 2 - DF |
| 14-228 | A | 7 | 44 | | 45 | Warmer winters and springs mean longer growing seasons and less harsh winter producing fewer deaths, easier transportation and longer building seasons. (Thomas Moore, Stanford University) | Text is balanced now |
| 14-229 | A | 7 | 45 | | | replace "warmed" with "risen" (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | ok |
| 14-230 | A | 7 | 48 | | | coterminous (Geoffrey Wall, University of Waterloo) | We are using conterminus throughout |
| 14-231 | A | 8 | 14 | 18 | 32 | With respect to current adaptive capacity, building material and design is also one adaptation to heat wave but it is not widely available for various reasons (White material, green roof, urban design...) | Good point but not applicable here |

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| | | | | | | (Alain Bourque, Ouranos Consortium) | |
| 14-232 | A | 8 | 31 | | | figure needs expansion as suggested (Robert Taylor, Bedford Institute of Oceanography) | 2 – need to incorporate Canadian data |
| 14-233 | A | 8 | 31 | | | Why do we have only the USA map and not the Canadian one? I believe that at least in some regions, the data exist (e.g. EMAN - Environment Canada)? Probaly not the same scl of time but still. (Liette Vasseur, Laurentian University) | Figure dropped |
| 14-234 | A | 8 | 38 | | | Seems that some information missing from the more interior part of the region where conditions have been drier? (Liette Vasseur, Laurentian University) | Figure dropped |
| 14-235 | A | 8 | 41 | | | add at end "and in southeastern Canada (Stone, Weaver and Zwiers, 2000) Reference Stone, DA, Weaver and F.W. Zwiers, 2000. Trends in Canadian Precipitation Intensity, Atmosphere-Ocean 38.2:321-47. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | done |
| 14-236 | A | 8 | 43 | 9 | 6 | Might be reformulated under the view of extreme events. (Encinas Carla , IPCC WG2 TSU) | yes |
| 14-237 | A | 8 | 43 | 8 | 43 | Add "Rates of postglacial isostatic vertical adjustment of the Earth's crust have a major influence on the regional variations in the changes in sea-level (Douglas and Peltier, 2002)". (Hank Margolis, Université Laval) | Point made in revised text |
| 14-238 | A | 8 | 43 | 9 | 6 | Note whether or not these figures include natural subsidence. If this isn't known, some statement should be made recognizing that subsidence is a factor in sea level changes. It is mentioned in the first paragraph on p. 14, but probably needs to be noted here also. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | 2 - ok |
| 14-239 | A | 8 | 48 | 8 | 49 | Not clear whether Atlantic Canada increases or decreases (Geoffrey Wall, University of Waterloo) | 2- ok |
| 14-240 | A | 8 | 48 | 8 | 49 | Unclear. Are these rates in Atlantic Canada rates of increase or rates of decrease? (Brent Yarnal, The Pennsylvania State University) | 2-ok |
| 14-241 | A | 8 | 49 | 8 | 50 | Delete "These patterns primarily reflect regional variations in the rates of postglacial isostatic vertical adjustment of the crust (Douglas and Peltier, 2002)." (Hank Margolis, Université Laval) | 2 - noted |
| 14-242 | A | 9 | 1 | 9 | 6 | Could add examples or illustrative map or at least cross reference to Box 5 on page 60-61 (Robin Sydneysmith, University of British Columbia) | 2 – Map included in figure 1 |
| 14-243 | A | 9 | 2 | 9 | 2 | "...fluid extraction" seems too coy. Either end at "...induced subsidence." or | 1 ok |

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| | | | | | | simply state "...suscidence from oil and/or water extraction" (whichever is correct) (Robin Sydneysmith, University of British Columbia) | |
| 14-244 | A | 9 | 3 | | | replace variance by variation? (Geoffrey Wall, University of Waterloo) | 1 noted |
| 14-245 | A | 9 | 4 | | | Is it possible to define recent? A time frame would be useful. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 noted |
| 14-246 | A | 9 | 5 | 9 | 6 | Some detail regarding the sensitivity to sea-level rise should be given. (Brian Amiro, University of Manitoba) | 2 noted |
| 14-247 | A | 9 | 6 | | | nothing about changing water levels in Great lakes -one of highest populated areas in North america-see pg 18 Line 38 (Robert Taylor, Bedford Institute of Oceanography) | 2 extensively discussed in the SOD |
| 14-248 | A | 9 | 9 | 11 | 21 | This sub-section presents recent and current trends. There is not much in the way of 'comprehensive and insightful assessment' of these trends and what they mean for both people and ecosystems, businesses and the environment. There is a great deal of awareness and concern surrounding water resources and future changes. The content provided in this sub-section does not reflect this. (Jaime Dawson, The University of Western Ontario) | 2 SR – section is being distilled |
| 14-249 | A | 9 | 9 | 23 | 33 | Reduce the number of examples and select only the most pertinent ones. (Antje Schwalb, Institut für Umweltgeologie) | 2 SR - agreed |
| 14-250 | A | 9 | 11 | 9 | 16 | You start locally, focusing on the NA region, then go to a global statistic. Would it make more sense to start with the global statistic and then go to the regional scale? (Jaime Dawson, The University of Western Ontario) | 2 SR - yes |
| 14-251 | A | 9 | 11 | 9 | 21 | Is there corresponding ET and streamflow data for Canada? The focus of this paragraph is the US with only one Canadian trend. (Jaime Dawson, The University of Western Ontario) | 2 SR – not that I have found. There is a new paper on the Great Lakes region |
| 14-252 | A | 9 | 11 | | 12 | Even if the blank were filled in, it seems very imprecise to compare the 'last few decades of the 20th century' and say that more places were in moisture extremes than any time since _____. Especially given that the instrumental record is maybe only about 3 times as long as the time that I would consider 'the last few decades.' (Brent Lofgren, NOAA/Great Lakes Environmental Research Laboratory) | 2 SR – agreed, this text is improved |
| 14-253 | A | 9 | 11 | 9 | 21 | This is a good example of listing a number of facts without tying it together in a coherent way. (Hank Margolis, Université Laval) | 2 SR - OK |
| 14-254 | A | 9 | 12 | | | Missing years. I have read Dai's paper but cannot find what year this refers to. (Dominique Bachelet, Oregon State University) | 2 SR - fixed |
| 14-255 | A | 9 | 12 | | | Complete the missing information (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 SR - fixed |

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| 14-256 | A | 9 | 12 | 9 | 12 | Since ____? (Kristie Ebi, Exponent) | 2 SR fixed |
| 14-257 | A | 9 | 12 | | | year? (Douglas Fox, Colorado State University) | 2 SR - fixed |
| 14-258 | A | 9 | 12 | | | fill in gap since.... (Robert Taylor, Bedford Institute of Oceanography) | SR fixed |
| 14-259 | A | 9 | 13 | 9 | 14 | This sentence is about changes between the 1st and 2nd half of the 20th century but the figure is about a change between 1970 and 2002. The Figure should be referenced in the next sentence (lines 15-16). (Dominique Bachelet, Oregon State University) | 2 SR – OK |
| 14-260 | A | 9 | 14 | | | "(Figure 14.2)" does not fit with this reference and should go into the next sentence? (Elaine Wheaton, Saskatchewan Research Council) | 2 SR - OK |
| 14-261 | A | 9 | 16 | 9 | 21 | The work described here is new and important, but are there other observations that should be noted here regarding decadal changes rather than averages over the last 60 years? Is there an explanation for the difference in the streamflow in the west vs east (eg snowpack/snowmelt/sublimation effects?) Are the data referred to in the Colorado and Columbia naturalized flows and are the trends consistent on an annual and decadal basis. (Katharine Jacobs, University of Arizona) | Good point – need to clarify and balance timescale. |
| 14-262 | A | 9 | 16 | | 18 | When stating the increase in streamflow in the eastern U.S. and decrease in the western U.S., I wonder whether there is any estimate of how much is due to non-climate factors, such as increased withdrawal because of increased urban population or expanded agricultural irrigation, particularly in the western U.S. (Brent Lofgren, NOAA/Great Lakes Environmental Research Laboratory) | 2 SR – good comment, no way to make that judgement |
| 14-263 | A | 9 | 17 | 9 | 18 | Most of the streams analyzed in Rood et al. are in western Canada not the western U.S.. Ironically, this one of few studies discussed in chapter 14 from Canada's western interior and it has been described as a study of the U.S.. (Dave Sauchyn, University of Regina) | SR – could only report on the papers I found |
| 14-264 | A | 9 | 18 | 9 | 21 | Wouldn't one expect reduction of streamflow if ET increased? (Donald Boesch, University of Maryland Center for Environmental Science) | 2 SR – depends on changes in precipitation |
| 14-265 | A | 9 | 18 | | | Insert new sentence after "2005)". Zhang et al., 2001 have documented mainly declining annual flows in southern Canada from 1967-1996. Reference: Zhang, X., K.D.Harvey, W.D.Hogg and T.R. Yuzyk, 2001. Trends in Canadian Streamflow: Water Resources Research 37.4:987-98. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 SR – good, this is new material |

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| 14-266 | A | 9 | 18 | 9 | 21 | Walter et al.'s data showed a reduced stream discharge in the Colorado and Columbia river basins. The way this sentence is worded, it appears that the main reason for this reduced discharge is increased ET. Are there other more important factors, such as increased uptake of water from these rivers for irrigation, growing consumption, etc? (Jaime Dawson, The University of Western Ontario) | 2 SR – point acknowledged, there is no way of knowing changes in irrigation or urban consumption from the papers cited |
| 14-267 | A | 9 | 18 | | 21 | why has ET increased, there could be lots of reasons, more forest biomass, higher humidity, forest tree & other species conversion, etc. And why "however" higher ET leads to lower stream flow, not however? (Douglas Fox, Colorado State University) | 2 SR – see above |
| 14-268 | A | 9 | 19 | 9 | 21 | It does not make any sense an increase of ET of 55 mm/yr in the last 50 years....that makes up for a total increase of 2750 mm ! I hope that Walers et al. (2004) meant 0,55 mm/yr or at the most 5,5 mm !! (Alain N. Rousseau, Institut national de la recherche scientifique) | 2 SR - corrected |
| 14-269 | A | 9 | 19 | 9 | 20 | Replace “however” with “therefore” - a decrease in streamflow would be expected from an increase in ET. (Dave Sauchyn, University of Regina) | 1 SR - ok |
| 14-270 | A | 9 | 21 | | | you could add the following:Robinson (2000) identified that, for the 1961-90 period, average summer dew point values in the United States increased approximately 1°-2°C per 100 years and in areas west of the Great Lakes by as much as 6°C per 100 years. (David Changnon, Northern Illinois University) | 2 SR – agreed, however humidity data mostly a WG 1 issue, too much detail for this chapter |
| 14-271 | A | 9 | 24 | 9 | 47 | Figure 14.2 - This is not clear at all. What is PDSI trend? What are the precipitation patterns that are the basis for this? (Hank Margolis, Université Laval) | 2 SR - removed |
| 14-272 | A | 9 | 46 | 9 | 46 | PDSI needs to be defined. (Kristie Ebi, Exponent) | 2 SR - removed |
| 14-273 | A | 9 | 47 | | | Figure 14.2 Not obvious what PDSI means if you don't already know, I don't see it mentioned in the text above. (Robin Sydneysmith, University of British Columbia) | 2 SR - removed |
| 14-274 | A | 9 | 47 | 9 | 49 | Figure 14.2, legend. Please indicate for the unspecialized reader which values indicate dry; which wet. (Francesco Nicola Tubiello, Columbia University) | 2 SR - removed |
| 14-275 | A | 10 | 2 | 10 | 3 | Over what period of time is a greater fraction of annual precipitation falling as rain rather than snow? (Jaime Dawson, The University of Western Ontario) | 2 check |
| 14-276 | A | 10 | 6 | 10 | 6 | « April 1st snow (not soil !!) water equivalent ...» | 1 SR - corrected |

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| | | | | | | (Alain N. Rousseau, Institut national de la recherche scientifique) | |
| 14-277 | A | 10 | 6 | | | SWE is snow water equivalent, says soil water equ in text (David Schimel, NCAR) | 1 SR - corrected |
| 14-278 | A | 10 | 10 | 9 | 10 | should say "significant positive trend" (Brian Amiro, University of Manitoba) | 1 SR - ok |
| 14-279 | A | 10 | 11 | 10 | 11 | When was the change compared since 1948? Was it in 2004? (Brian Amiro, University of Manitoba) | 2 SR - corrected |
| 14-280 | A | 10 | 11 | 10 | 11 | edit: snowmelt-dominated (Francesco Nicola Tubiello, Columbia University) | 1 SR - ok |
| 14-281 | A | 10 | 12 | 10 | 13 | "Advanced" is ambiguous to non-specialists. Use "were earlier" or "were later." (Brent Yarnal, The Pennsylvania State University) | 1 SR - ok |
| 14-282 | A | 10 | 14 | | | Reference: Nearing, M.A., F.F. Pruski and M. R. O'Neal, 2004. Expected climate change impact on soil erosion rates: a review. J. of Soil and Water Conservation 59.1:43-50. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – add to 14.5 water section |
| 14-283 | A | 10 | 14 | | | New sentence. The observed trends towards more intense rain events are increasing erosion of some agricultural lands and transport of pollutants to water bodies, Nearing et al., 2004. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – check if current trends or projection |
| 14-284 | A | 10 | 16 | 11 | 21 | Water section is relatively too short. Suggest adding: "Freshwater discharge into Hudson, James and Ungava Bays declined 13% from 1964 to 2000. Dery et al. 2005. J. of Climate 8.14:2540-2557. Also reference to retreat of Rocky Mountain glaciers. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – SR – good new reference |
| 14-285 | A | 10 | 17 | 10 | | Figure 14.3 Look forward to seeing the entire western U.S. and Canada (Mark Svoboda, National Drought Mitigation Center) | 2 – SR - ok |
| 14-286 | A | 10 | 20 | | | Within Figure 14.3 the word 'Increase' should be in a blue font to match the figure caption and symbols. (Paul J. Hanson, Oak Ridge National Laboratory) | 1 SR – we did not originate this figure |
| 14-287 | A | 10 | 47 | 10 | 48 | Its not clear what "figure to be expanded to include all of Western US and Canada". (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 SR - ok |
| 14-288 | A | 10 | 47 | | | Figure 14.3. "Increase" should be blue--the same color as the symbols. "Decrease" and "Increase" should line up over the symbols. (Brent Yarnal, The Pennsylvania State University) | 1 SR – needs redraft |

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| 14-289 | A | 10 | 48 | | | figure to include more area (Robert Taylor, Bedford Institute of Oceanography) | 2 SR - yes |
| 14-290 | A | 11 | 0 | 13 | | “Ecosystems” should include idea in p. 30 lines 32-35--fertilization effect shows signs of being canceled out (also work of Don Zak and folks at Rhinelander) (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 SR – CO2 responses not yet definitive |
| 14-291 | A | 11 | 1 | 11 | 2 | Meaning of this sentence is unclear. (Donald Boesch, University of Maryland Center for Environmental Science) | 2 rewritten |
| 14-292 | A | 11 | 1 | 11 | 21 | This portions make links between fresh water resources (page 9 and 10) and its use (page 11). The list of usage is incomplete and should, for example, include Hydropower production which is not identified at all in section 14.3! See http://www.hydroquebec.com/publications/en/strategic_plan/2004-2008/index.html for sensitivity analysis and also adaptive decisions taken by industry (300M\$ financial reserve to account for unfavorable recent climate/hydrology trends). More formal references can be found. (Alain Bourque, Ouranos Consortium) | 2 Hydropower treated in section on industry |
| 14-293 | A | 11 | 1 | 11 | 21 | The presentation of vulnerability and conservation focusses on economics without any information provided on the impacts for people and ecosystems, and these impacts considering other stresses. (Jaime Dawson, The University of Western Ontario) | 2 This comes later, but could be mentioned here. |
| 14-294 | A | 11 | 1 | 11 | 12 | Is the emphasis on the US statistics because of a lack of Canadian statistics? There is not a balance between the two countries. (Jaime Dawson, The University of Western Ontario) | 2 Balance adjusted in revisions |
| 14-295 | A | 11 | 1 | 11 | 2 | "...water demands are positive" - this is a somewhat confusing statement given the presentation of positive and negative trends in the preceding paragraphs. Is this statement referring to an actual trend line or a positive change in water water demands? (Jaime Dawson, The University of Western Ontario) | 2 Sentence eliminated |
| 14-296 | A | 11 | 1 | 11 | 12 | This paragraph seems to be missing a discussion of water used for irrigation. (Paul J. Hanson, Oak Ridge National Laboratory) | 2 Mention irrigation |
| 14-297 | A | 11 | 1 | | 12 | is this section not more adaptation than vulnerability (Robert Taylor, Bedford Institute of Oceanography) | 2 adjusted in rewrite |
| 14-298 | A | 11 | 1 | 11 | 1 | Suggested EDIT: "Some RECENT trends seem to positively reconcile urban water demands and ecosystem water needs." (Francesco Nicola Tubiello, Columbia University) | 1 Sentence dropped |
| 14-299 | A | 11 | 2 | | | How about the deregulation in the last 5 years? (Dominique Bachelet, Oregon State University) | 2 Good point – sentence dropped |

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| 14-300 | A | 11 | 2 | | 3 | this needs a reference to back up this claim (Susanne Moser, National Center for Atmospheric Research) | 2 |
| 14-301 | A | 11 | 8 | 11 | 9 | after (North Carolina Dept. of Env and Nat Res), 1998, insert "and regulations (Arizona Departement of Water Resources Active Management Area Plans, 1998). See www.azwater.gov, water management in active management areas (Katharine Jacobs, University of Arizona) | 2 consider |
| 14-302 | A | 11 | 10 | | | Canada requires all new houses to use low flush toilets. California has a certain % of new houses with mandatory passive solar. I don't have published references though. (Dominique Bachelet, Oregon State University) | 2 ok, consider including |
| 14-303 | A | 11 | 10 | | 12 | this needs a reference to back up this claim (Susanne Moser, National Center for Atmospheric Research) | 2 sentence dropped |
| 14-304 | A | 11 | 11 | | | I do not agree with this sentence and it seems that the references are lacking. I have seen too many cities going the other way and too many currently having no conservation measures or not enforcing them. (Liette Vasseur, Laurentian University) | 2 sentence dropped |
| 14-305 | A | 11 | 13 | | | add the following: A study of recent (1981-1997) droughts at six major U.S. cities revealed major adjustments for handling future droughts, including new approaches to conserve water, new facilities for water storage, development of drought contingency plans, and better ways of managing waters (Changnon, 2000). (David Changnon, Northern Illinois University) | 2 consider including in settlements section |
| 14-306 | A | 11 | 14 | 11 | 21 | same text as page 15 (Dominique Bachelet, Oregon State University) | 2 fixed |
| 14-307 | A | 11 | 14 | 11 | 21 | Pumping of groundwater and evaporation have also resulted in drying of wells, especially during dry periods (Alain Bourque, Ouranos Consortium) | 2 relevant as an interacting factor |
| 14-308 | A | 11 | 14 | 11 | 19 | I don't agree that saltwater intrusion being a threat in Canadian Maritimes. In fact, many artesian wells are found in the Carboniferous Basin along the New Brunswick shoreline. Please refer to a regional hydrogeological assessment performed in south-eastern New Brunswick. 1) RIVARD, C., DEBLONDE, C., MICHAUD, Y., BOISVERT, V., CARRIER, C., CASTONGUAY, S., LEFEBVRE, R., 2005, Hydrogeological atlas of the south-central area of the Maritimes Carboniferous basin. Geological Survey of Canada, Open file report 4884, 1 CD-Rom and 2) RIVARD, C; MICHAUD, Y; BOISVERT, V; CALVERT, T; MORIN, R H; DEBLONDE, C; LEFEBVRE, R; PUPEK, D A., 2005, Hydrogeological data from the South-Central Area of the Maritimes Carboniferous Basin (MGWI project). Geological Survey of Canada, Open file report 4942, 143 | 2 – DF sentence dropped |

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| | | | | | | pages. (Yves Michaud, Geological Survey of Canada - Québec Division) | |
| 14-309 | A | 11 | 14 | | 15 | the demand for ground water not clear of link to climate change -could be just increased population demand? clarify or are you just saying we are vulnerable because we are already causing saltwater intrusion (Robert Taylor, Bedford Institute of Oceanography) | 2 the latter, but sentence dropped |
| 14-310 | A | 11 | 14 | | | replace has by have (Geoffrey Wall, University of Waterloo) | 1 sentence dropped in SOD |
| 14-311 | A | 11 | 15 | 11 | 15 | And elsewhere. Although a Westcoaster, I believe that "Atlantic provinces" would be a more appropriate and more accurate regional term because it includes Newfoundland. Newfoundland is NOT part of the "Maritimes". (Robin Sydneysmith, University of British Columbia) | 2 – DF Maritimes replaced throughout |
| 14-312 | A | 11 | 26 | | | storm damage is also a direct effect. (Douglas Fox, Colorado State University) | 2 but link to climate change is unclear |
| 14-313 | A | 11 | 28 | 11 | 30 | What are the consequences of direct impacts interacting with indirect impacts? (Kristie Ebi, Exponent) | 2 clarified in SOD |
| 14-314 | A | 11 | 32 | 13 | 5 | NPP section does not include references to the increased drought/decreased productivity study from Europe (Ciais et al. Nature, 2005). Also, lower carbon storage potential due to climate change and land use change studies have been neglected everywhere except for pg 30 lines 31-34. Other sources for these findings are: Schulze and Freibauer. Nature, 2005., Bellamy et al. Nature, 2005., and Heath et al. Science, 2005. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 C storage treated in chapter 5 and WG1 |
| 14-315 | A | 11 | 32 | 11 | 50 | Page 11, lines 32-50 NPP It is important to caveat the NPP, these estimates are all modeled and depend on assumptions about how temperature and moisture control fluxes. This becomes important when contrasted with later text on page 16 that questions some of the assumptions underlying the models. I also think that the Angert et al PNAS result should be mentioned that suggests the simple extrapolation via production efficiency models may be wrong. (David Schimel, NCAR) | 2 SR – this is North America chapter condensation required cutting NPP discussion |
| 14-316 | A | 11 | 32 | | | I do not completely agree with this. Many variations depending on species. Currently too superficial. See Vasseur L., R. Guscott and P. Mudie. (2001). Monitoring of spring flower phenology in Nova Scotia: Trends for the last century. Northeastern Naturalist 8: 393-402. (Liette Vasseur, Laurentian University) | 2 SR - agree |
| 14-317 | A | 11 | 33 | | | data is plural , therefore has should be have | 2 SR – no room for more detail |

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| | | | | | | (Geoffrey Wall, University of Waterloo) | |
| 14-318 | A | 11 | 35 | 11 | 40 | Correction/clarification is needed. Schwartz and Reiter (2000) reported a 1.8 d/dec advance in simulated (based on lilac and honeysuckle) first leaf dates and 1.4 d/dec advance in simulated (based on lilac and honeysuckle) first bloom dates over the 1959-1993 period at approx. 800 sites across North America (these were validated with actual lilac first leaf and first bloom data at a smaller set of sites). Wolfe et al. (2005) reported trends of 3.4 days/decade for cloned lilac first leaf (15/72 sites) and 2.6 days/decade for cloned lilac first bloom (20/72 sites) over the 1965-2001 period in the Northeast USA (the site subsets were those showing a significant trend, while the rest of the 72 did not). Also reported were a 2.0 d/dec advance in simulated first leaf dates and 1.2 d/dec advance in simulated first bloom dates (comparable to Schwartz and Reiter, 2000) over the 1961-2001 period. The same study reported apple mid-bloom dates getting earlier at rate of 2.0 d/dec (3 sites in NY State) and grape mid-bloom dates getting earlier at a rate of 1.5 d/dec (1 site in NY State) over the 1965-2001 period. (Mark Schwartz, University of Wisconsin-Milwaukee) | 1 chcek for clarification |
| 14-319 | A | 11 | 36 | | | brackets need attention (Geoffrey Wall, University of Waterloo) | 2 SR – no room for more detail |
| 14-320 | A | 11 | 40 | 11 | 41 | This finding as written implies that global climate change is the driver of early blooming. In my view, the role of artifical photoperiod extension/intensity and urban heating must be clarified. (Kevin Percy, Canadian Forest Service) | 1 check for clarification |
| 14-321 | A | 11 | 40 | | | Edmonton, Alberta - most readers, even Americans, won't know the relative location of Edmonton (Dave Sauchyn, University of Regina) | 2 SR – these are no urban observations |
| 14-322 | A | 11 | 40 | | | Re aspen trees: are any updates available for aspen or other species in Canada? (Elaine Wheaton, Saskatchewan Research Council) | 1 SR – get a map |
| 14-323 | A | 11 | 42 | 11 | 43 | note: also a lot of spring blooming is jointly controlled by T, photoperiod and water deficits. Are the authors saying that senescence is MORE controlled by a combination of these factors compared to blooming, hence the weaker trends? Or is it because senescence is also affected by integrated impacts over the life cycle? I think it is safer to say simply that autumn leaf senescence shows weaker trends. (Francesco Nicola Tubiello, Columbia University) | 2 SR – not that I found |
| 14-324 | A | 11 | 43 | | | what does "weaker" mean? (Dominique Bachelet, Oregon State University) | 2 SR - yes |
| 14-325 | A | 11 | 45 | 11 | 46 | Global reference inappropriate in region chapter (Dominique Bachelet, Oregon State University) | 2 SR – less causal connection |

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|-----------------|-------|-----------|-----------|---------|---------|---|---------------------------|
| 14-326 | A | 11 | 45 | 11 | 50 | I was confused. NPP increases were concentrated in central plains, followed by a statement of NPP increases in the Rocky Mountains. (Kristie Ebi, Exponent) | 2 SR - removed |
| 14-327 | A | 11 | 45 | | | The increase in new primary production should be listed as a significant benefit from climate change (Thomas Moore, Stanford University) | 2 SR - yes |
| 14-328 | A | 11 | 45 | 11 | 47 | « Global terrestrial net primary production ... » « NPP » should have been written in parentheses after production so it can be used afterwards as an acronym as it was in this paragraph. (Alain N. Rousseau, Institut national de la recherche scientifique) | 2 SR – it is |
| 14-329 | A | 11 | 45 | | | need to add (NPP) after net primary production -took a long time to figure out what the NPPis in the next pages (Robert Taylor, Bedford Institute of Oceanography) | 1 SR – global npp removed |
| 14-330 | A | 11 | 47 | | | replace "North America" with "U.S." - none of these studies refer to Canada (Dave Sauchyn, University of Regina) | 1 SR - ok |
| 14-331 | A | 11 | 47 | | | NPP in full – Net Primary Productivity? - unless there is a glossary in the document (Geoffrey Wall, University of Waterloo) | 1 SR - true |
| 14-332 | A | 12 | 1 | 12 | 3 | This small paragraph should include sources of uncertainty associated with remote sensing and the a posteriori calculations/simulations of NPP. (Dominique Bachelet, Oregon State University) | 1 SR - ok |
| 14-333 | A | 12 | 1 | 12 | 3 | given the dependence on a "simple" model, is there a way to indicate to the reader what is the uncertainty of these estimates? (Francesco Nicola Tubiello, Columbia University) | 2 SR - added |
| 14-334 | A | 12 | 2 | | | The specifics of research techniques are not explained elsewhere, so is it critical here or can it be removed? (Daniel Scott, University of Waterloo) | 2 SR - agree |
| 14-335 | A | 12 | 6 | 12 | 34 | Is there a colour legend for this map? If so, it should be imposed onto the map. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 SR - removed |
| 14-336 | A | 12 | 6 | 12 | 34 | Figure 14.4 requires a legend for interpreting the colors. (Hank Margolis, Université Laval) | 1 SR – ok |
| 14-337 | A | 12 | 30 | | | Figure 14.4 needs a scale for the color scheme. (Paul J. Hanson, Oak Ridge National Laboratory) | 1 SR - ok |
| 14-338 | A | 12 | 33 | | | Need to include color scale code with this figure. (Donald Boesch, University of Maryland Center for Environmental Science) | 1 SR - ok |
| 14-339 | A | 12 | 33 | 12 | | Fig 14.4 no legend (Ian Church, Yukon Government) | 1 SR – ok |
| 14-340 | A | 12 | 33 | | | Figure 14.4 - need key or legend. Colour would make it easier to interpret. Write | 1 SR - ok |

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| | | | | | | out NPP for clarity. (Robin Sydneysmith, University of British Columbia) | |
| 14-341 | A | 12 | 33 | | | Figure 14.4. Needs legend. (Brent Yarnal, The Pennsylvania State University) | 1 SR - ok |
| 14-342 | A | 12 | 37 | 12 | 39 | This is true but is disconnected from the rest of the paragraph that includes inventory and remote sensing. (Dominique Bachelet, Oregon State University) | 1 SR - ok |
| 14-343 | A | 12 | 37 | 12 | 48 | Is it WG1 or WG2 who review carbon cycle? If WG2 does (because of links with Impacts), should peatland, permafrost, agriculture and even oceans also be discussed in this context? (Ex: Payette work, Roulet work, etc...) (Alain Bourque, Ouranos Consortium) | 2 SR - |
| 14-344 | A | 12 | 37 | 12 | 39 | This was the first (and only?) time details on research methods were provided. (Jaime Dawson, The University of Western Ontario) | 2 SR – see Ch 4. |
| 14-345 | A | 12 | 44 | 12 | 48 | Add the following: " ... 0.28 Pg/yr for the coterminus US in 1990-1991, but a source of 0.04 Pg/yr in Canada for 1990-1994. Kurz and Apps (1999) used an inventory-based method to estimate that the Canadian forest sector was a weak source of around 0.08 Pg/yr during the 1980s (Kurz and Apps 1999), while a bottom-up ecosystem modeling approach estimated that it was a sink of around 0.05 Pg C/yr (Chen et al., 2000, 2003). Using atmospheric inversions, Gurney et al. (2002) have estimated a net source for boreal North America of 0.26 Pg C/yr for 1992-1996, although Yuen et al. (2005) subsequently demonstrated that the addition of tower data from Ontario showed that the North American boreal forest was carbon neutral. The apparent absence of a strong C sink in boreal North America in recent years is attributed to high frequency and size of wildfires, e.g., direct carbon emissions from fires of 3 to 115 Tg C/yr from 1959 to 1999 (Amiro et al. 2001) with 2 to 3 million ha/yr burned annually (Stocks et al. 2002) (see Box 2). (text continues in next cell) (Hank Margolis, Université Laval) | 2 SR - removed |
| 14-346 | A | 12 | 44 | 12 | 48 | (continued addition, start new paragraph) Non-disturbance factors such as climate, atmospheric CO2 and nitrogen deposition may also play a very important role in large-scale C sink-source relationships in North America (Chen et al., 2003). ENSO, AO and SO climate indices have all shown some correlation with temporal North American carbon fluxes (Potter et al., 2003; Hashimoto et al. 2004). A coastal Douglas fir forest was a weaker carbon sink during the 1998 ENSO event because soil respiration increased in response to increased temperature (Morgenstern et al. 2004). Woody encroachment, recent agricultural practices, riverine transport, and grain export may account for additional carbon sinks in | 2 SR – no space for these details |

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| | | | | | | North America (Pacala et al. 2001). Using satellite vegetation indices, Goetz et al. (2005) have shown that temperature-related increases in growing season length and photosynthetic activity from 1981 to 2003 were strongest in the tundra regions of North America (I suggest that you add Goetz's Figure 4 to the chapter if you have space). (text continues) (Hank Margolis, Université Laval) | |
| 14-347 | A | 12 | 44 | 12 | 48 | (continued addition) Northern peatlands are carbon sinks because net production generally exceeds decomposition. Four years of CO ₂ flux measurements in an ombrotrophic bog showed that the site was a carbon sink in all years but that it became carbon neutral during the one year when an intense summer drought occurred (Lafleur et al. 2003). Similarly, a ten-year record of CO ₂ fluxes for a black spruce - bog complex in northern Manitoba showed that the multiple year climate factors that decreased water table depth was associated with the site changing from a source to a sink due to decreased respiration (Dunn et al., in press). (Hank Margolis, Université Laval) | 2 – A CA contribution? Need to condense eliminated option for including this material |
| 14-348 | A | 12 | 44 | 12 | 48 | (continuation). Thus, time since disturbance and its effects on the age-class structure of North American forests is critical to the carbon balance at the biome (Bond-Lamberty et al. 2004; Amiro et al., 2003; Thorton et al. 2002) and along an east-west continental transect (Coursolle et al., in press). Intermediate-age forest stands tend to be greater carbon sinks than other age-class forests (Coursolle et al., in press; Barford et al., 2001). Following harvest, northern forest sites can become strong sources, e.g., 5.2 to 6.2 Mg/yr for a coastal Douglas fir site (Humphreys et al., 2005) and 1.1 to 1.7 Mg/yr for an eastern Canadian boreal black spruce - jack pine site (Giasson et al., in press). The time it takes different ecosystems to recover to the point they become carbon sinks following forest harvest continues to be an area of active research. (text continues in next cell) (Hank Margolis, Université Laval) | 2 |
| 14-349 | A | 12 | 46 | 12 | 46 | AO and SO should be defined. (Kristie Ebi, Exponent) | ok |
| 14-350 | A | 12 | 48 | 12 | 48 | Add reference: Morgenstern K, Black TA, Humphreys ER, Griffis TJ, Drewitt GB, Cai T, Nescic Z, Spittlehouse DL, Livingston NJ(2004) Sensitivity and uncertainty of the carbon balance of a Pacific Northwest Douglas-fir forest during an El Nino/La Nina cycle. Agric. For. Meteorol. 123: 201-219 (Brian Amiro, University of Manitoba) | 1 Need to condense C balance material. |
| 14-351 | A | 13 | 1 | 13 | 5 | Very short paragraph on an important issue. Even the case study Box does not | 2 SR – no more space |

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| | | | | | | cover it all. No reference to the importance of suppression on the carbon sequestration potential in the western US. No discussion of suppression/prescription. For the last 20 years of the 20th century there has been a very close correlation between PDSI/climate signal and area burned in the US. The climate signal overwhelms suppression efforts. The system is above a fire sensitivity threshold. Fuels have accumulated so much that the climate signal is what the system responds to, above and before all. Kitzberger's work (and mostly Swetnam's) is cited but not discussed. The interesting PNW vs SW response to El Nino/La Nina in terms of area burned is an important climate-driven feature of the western US. For Canada a new reference needs citing: Flannigan et al. 2005 Future area burned in Canada. Climatic Change 72:1-16. For the US, at least one DGVM has now simulated the impacts of suppression. Suppression impacts were presented at a special session at ESA last summer 2005. Publication in preparation by the author: Lenihan et al. The issue of invasives, introduced elsewhere in the chapter, should be discussed here. Cheatgrass and its impact on shrublands: the increased fire return interval due to the early-season blanket of standing dead means the disappearance of native patchy bunchgrasses and shrubs. Also the impact of the ice plant (invasive with succulent leaves) reducing fire extent in the chaparral of California. Reference: Brooks, M.L. C.M. D'Antonio, D.M. Richardson, and six others. Effects of Invasive Alien Plants on Fire Regimes. 2004. BioScience. 54(7), pp 677-688. (Dominique Bachelet, Oregon State University) | As muc as possible, this is discussed in the fire box. |
| 14-352 | A | 13 | 1 | 13 | 5 | Linked to box 2, work by Flannigan and Bergeron should/could be identified (Ex: Bergeron, Y., M. Flannigan, et al. (2004). "Past, current and future fire frequency in the Canadian boreal forest: implications for sustainable forest management." Ambio 33(6): 356-360).Also note that a special issue of Forestry Chronicle (early 2006) on climate change impacts and adaptation will include about 10 articles on impacts, sensitivities and adaptation options. (Alain Bourque, Ouranos Consortium) | 2 SR – no more space |
| 14-353 | A | 13 | 1 | 13 | 5 | This material better in Forestry pg 16-17. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 SR – no more space |
| 14-354 | A | 13 | 1 | 13 | 5 | Perhaps these comments are better placed in the forestry section...section 14.3.4 (page 16) (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 SR - agree |
| 14-355 | A | 13 | 1 | 13 | 5 | the weather observed years between 1940 and 1970 in NA was not conducive to large area burned, contrary to what was observed prior and probably after 1970 (see | 2 SR - agree |

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| | | | | | | Lefort et al., and Bergeron et al. 2004 Ambio) so an increase is always seen relative to a baseline period. if that baseline is a period with a hollow in the burned area, as compared to what was preceding, may be it is not such an increase. Moreover fire is a highly variable phenomenum on a year to year basis. (Sylvie Gauthier, Laurentian Forestry Center, Canadian Forestry Service) | |
| 14-356 | A | 13 | 1 | 13 | 4 | Define 'recent decades'. Is increasing area burned a function of a changing climate or the pay off from decades of fire suppression? If its both (i.e., California, many national parks), this needs to be explained more clearly. (Daniel Scott, University of Waterloo) | 2 SR – more in wildfire box |
| 14-357 | A | 13 | 1 | 13 | 5 | Is there any evidence that changes in wildfire management practices may have contributed to this increase in certain regions? I am thinking here about the debate in fire and forest management around the idea of "letting nature take its course" in some situations. In other words, allowing fires to burn in certain circumstances where fire is part of ecological processes has certainly been debated, but I am unsure if it has been put into practice anywhere on a consistent basis. (Robin Sydneysmith, University of British Columbia) | 2 SR – more in wildfire box |
| 14-358 | A | 13 | 2 | | | Box 2 uses km squares while text uses Ha as measures of area, be consistent. (Douglas Fox, Colorado State University) | 2 SR - yes |
| 14-359 | A | 13 | 3 | 13 | 5 | The sentence that begins on line 3 describes the decrease in area of forest burned in North America in the middle of the twentieth century. Is part of this decrease attributed to increased fire suppression activities by humans? If so, it would be good to mention that fact. (Sarah Shafer, U.S. Geological Survey) | 1 consider |
| 14-360 | A | 13 | 6 | 13 | 6 | A discussion is needed somewhere about the potential changes of surface energy balance characteristics caused by a changing climate. This may not be the best place, but it is an ecosystem effect. Perhaps it will be covered under WGIII? But I think that we need a few sentences, such as: "Ecosystem changes caused by species migration or changes to the disturbance regime will also have an impact on climate. For example, Bonan (1992) and Betts (2000) have demonstrated that removal of the boreal forest would increase surface albedo sufficiently to change global temperatures. This effect could be realised by increases in forest harvesting, insect infestations or wildfire, especially because replacement successional forests have different energy balance characteristics (Chapin et al. 2000), with the most likely effect to be a surface cooling." References: Bonan G, Pollard D, Thompson SL(1992) Effects of boreal forest vegetation on global climate. Nature 359 716-718. Chapin III FS, et al.(2000) Arctic and boreal ecosystems of western North America as components of the climate system. Global Change Biol. 6 (Suppl. 1) | 2 SR – see wildfire box |

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| | | | | | | 211-223. Betts RA(2000) Offset of the potential carbon sink from boreal forestation by decreases in surface albedo. Nature 408 187-190. (Brian Amiro, University of Manitoba) | |
| 14-361 | A | 13 | 8 | 13 | 8 | possible EDIT. Wildlife IS responding? Not sure. (Francesco Nicola Tubiello, Columbia University) | 2 SR – good, if we have space |
| 14-362 | A | 13 | 19 | 13 | 34 | Impressive case of mass mortality of fishes (50,000) linked to rapid warming of water during a heat wave. Linking to Page 29/Line 17. See Mingelbier, M., Trencia, G., Dumas, R., Dumas, B., Mailhot, Y., Bouchard, C., Manolesco, D.C., Brodeur, C., Hudon, C. et Ouellette, G. (2001). Avis scientifique concernant la mortalité massive des carpes dans le Saint-Laurent durant l'été 2001. Société de la faune et des parcs du Québec, Ministère de l'Environnement, Biodôme de Montréal, Environnement Canada. http://www.fapaq.gouv.qc.ca/fr/faune/carpe/index.htm (Alain Bourque, Ouranos Consortium) | Added many fish references but not this one. |
| 14-363 | A | 13 | 22 | 13 | 22 | small edit. Insert a comma : "...photoperiod, not temperature." (Francesco Nicola Tubiello, Columbia University) | 2 condensed out of text |
| 14-364 | A | 13 | 23 | | | A reference is needed for the warbler migration statement. (Thomas Graedel, Yale University) | 1 condensed out of text |
| 14-365 | A | 13 | 37 | | | indicates (Geoffrey Wall, University of Waterloo) | 2 lost in condensation |
| 14-366 | A | 13 | 37 | 13 | 39 | Missing number? Is it 6.1 meters upward? If so, say so by repeating the number. (Brent Yarnal, The Pennsylvania State University) | 1 lost in condensation |
| 14-367 | A | 13 | 38 | 13 | 39 | "on average 6.1 kilometres northward or meters upward" - is this meant to mean 6.1 km northward and 6.1 m upward, or is there a value missing for the upward change in altitude per decade? (Jaime Dawson, The University of Western Ontario) | 1 SR - fixed |
| 14-368 | A | 13 | 38 | | 39 | and how many meters upward? (Susanne Moser, National Center for Atmospheric Research) | 1 SR - fixed |
| 14-369 | A | 13 | 39 | | | 'meters'--can you say roughly how many? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 1 SR - fixed |
| 14-370 | A | 13 | 42 | | | see also? (Geoffrey Wall, University of Waterloo) | 1 SR - fixed |
| 14-371 | A | 13 | 43 | 13 | 44 | Reference from 1992 - too old? Omit? (Antje Schwalb, Institut für Umweltgeologie) | 1 SR - removed |
| 14-372 | A | 13 | 45 | 13 | 48 | Is the spread of fire ants due to warming or merely the dispersion of an invasive species? | 2 no mechanism implied |

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| | | | | | | (Donald Boesch, University of Maryland Center for Environmental Science) | |
| 14-373 | A | 13 | 45 | | | Re the spread of fire ants: Specify the climate related mechanism. These examples are more powerful if this is done. (Elaine Wheaton, Saskatchewan Research Council) | 2 role of climate unclear |
| 14-374 | A | 13 | 45 | 13 | 48 | Does the literature demonstrate that the expansion of fire ants is related to climate? If so, say so explicitly. However, my understanding was that some experts think this spread is not related to climate. If that is the case, then the sentence should express the uncertainty over this increase in range. (Brent Yarnal, The Pennsylvania State University) | 2 role of climate unclear |
| 14-375 | A | 14 | 0 | | | This section needs a paragraph to discuss the 2005 hurricane season and New Orleans flooding. (Dominique Bachelet, Oregon State University) | 3 – New text on this in 14.2.6 and references to Katrina herein |
| 14-376 | A | 14 | 0 | | | no reference to changing water levels in Great lakes - yet it is discussed on page 22 ,27 (Robert Taylor, Bedford Institute of Oceanography) | 2 – Reference to Great Lakes water levels added. |
| 14-377 | A | 14 | 1 | 15 | 41 | A vast scientific vulnerability assessment is about to be made public and maps risks for 1642km of coastline in Quebec. It is unlikely that peer reviewed publications will be generated in the coming months but it is already gray literature. See http://www.cotenord.gouv.qc.ca/grandsdossiers/erosiondesberges/CRE_ErosionBerges_faitssaillants_061004VF.pdf (Alain Bourque, Ouranos Consortium) | 2 – Noted, but we are not making reference to specific regional studies on coastal vulnerability in this section (perhaps under adaptation). |
| 14-378 | A | 14 | 1 | 15 | 41 | S 14.3.3 this information can be tighter. Almost half of the text is on population context. (Encinas Carla , IPCC WG2 TSU) | 2 – Some text on population deleted. |
| 14-379 | A | 14 | 10 | | | is secular the correct word? (Geoffrey Wall, University of Waterloo) | 1 – Yes, it is appropriate in this context. |
| 14-380 | A | 14 | 14 | 14 | 39 | There is more recent demographic work on coastal populations by David Plane (Univ of Arizona) and Chris Henrie (Pittsburg State, Kansas) Coastal population is also mentioned on p. 18, p 31 (Katharine Jacobs, University of Arizona) | 2 – Noted, but discussion on coastal population reduced. |
| 14-381 | A | 14 | 16 | 14 | 18 | Following the continuing storm events of 2005 along the southern US Atalntic coast and the Gulf of Mexico mention needs to be made in this document somewhere or it will suffer credibility even though juried papers and documentation may not yet be available. Maybe deal with this recognizing further documentation will be available in the Fifth Assessment Report. Obviously the damage costs when calculated after the storm related effects on low lying coastal | 3 – New material added here and in 14.2.6. |

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| | | | | | | areas will significantly raise this cumulative total. This could also occur on page 49, lines 15-16. The vulnerability to count on the use of road networks to coastal cities such as Galveston etc.also became evident. (Ian Church, Yukon Government) | |
| 14-382 | A | 14 | 18 | 14 | 20 | somewhat below mean sea level today" - is this as of 2005, will this be the same when the assessment is made public in 2007? (Jaime Dawson, The University of Western Ontario) | 2 – Sentence rewritten to remove this, so comment no longer applicable. |
| 14-383 | A | 14 | 18 | 14 | 23 | These maps do not reflect the ability of coastal wetlands to respond to rising sea-level through biological processes (Glenn Guntenspergen, U.S. Geological Survey) | 2 – Reference to vertical marsh accretion has been added. |
| 14-384 | A | 14 | 18 | | 21 | These sentences are weird and rather incomplete. (Liette Vasseur, Laurentian University) | 1 – Rewritten. |
| 14-385 | A | 14 | 26 | | 29 | sentence doesn't make sense, effectively drawing the shoreline How? (Douglas Fox, Colorado State University) | 1 – Reworded to improve clarity. |
| 14-386 | A | 14 | 27 | 14 | 28 | Linear concentrations is not clear. (Kristie Ebi, Exponent) | 1 – Reworded to improve clarity. |
| 14-387 | A | 14 | 32 | 14 | 39 | Changes in outflow of rivers (caused by climate change effects on hydrology or caused by other factors) also change the sensitivity of deltas. Deltas sometime serve as building grounds (Ex: New Orleans) or natural protection (small communities in eastern Canada) (Alain Bourque, Ouranos Consortium) | 2 – Added reference to development on deltas and added hazards in that setting, with reference to New Orleans and Delta BC. |
| 14-388 | A | 14 | 35 | 14 | 39 | This sentence about coastal squeeze is not clear. (Hank Margolis, Université Laval) | 1 – Reworded to improve clarity. |
| 14-389 | A | 14 | 36 | | | hardening of shoreline also reduces sediment supply to shores and can cause sudden adjustments in adjoining shores (Robert Taylor, Bedford Institute of Oceanography) | 2 – Added text to reflect this. |
| 14-390 | A | 14 | 37 | | | have ?resulted (Geoffrey Wall, University of Waterloo) | 1 – Corrected |
| 14-391 | A | 14 | 45 | | | suggest (Geoffrey Wall, University of Waterloo) | 1 – Corrected |
| 14-392 | A | 14 | 46 | | | stop at end of sentence (Geoffrey Wall, University of Waterloo) | 1 – Corrected |
| 14-393 | A | 15 | 0 | 14 | 15 | well written but nothing about linkages between changes on outer coasts and inner bays and estuaries or eutrophication of lagoons and ponds, little new info about marshes (Robert Taylor, Bedford Institute of Oceanography) | 2 – New text on marshes added, including reference to eutrophication. |
| 14-394 | A | 15 | 1 | 15 | 14 | Obviously, hurricane Katrina examples are extremely relevant here and other places throughout the document (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 3 – New material added here and in 14.2.6. |
| 14-395 | A | 15 | 1 | 15 | 6 | Should probably mention the severe 2005 hurricanes, particularly Katrina and its unindation of the northern Gulf Coast and flooding of New Orleans. | 3 – New material added here and in 14.2.6. |

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| | | | | | | (Donald Boesch, University of Maryland Center for Environmental Science) | |
| 14-396 | A | 15 | 1 | 15 | 3 | Is it that these population centres are well prepared or that they have the capacity to be well-prepared? The concluding sentence to this paragraph (line 13-14) says that few coastal communities are well-prepared, which is somewhat of a contradiction. (Jaime Dawson, The University of Western Ontario) | 2 – Rewritten to say urban centres with high adaptive capacity ... |
| 14-397 | A | 15 | 1 | 32 | | The hurricane discussions need to be updated to discuss Katrina and Rita. (Thomas Graedel, Yale University) | 3 – New material added here and in 14.2.6. |
| 14-398 | A | 15 | 1 | 15 | 2 | Update this section by including the two major hurricanes to affect Louisiana and the controversy regarding the role that wetland loss in this area may have had on diminishing storm surge (Glenn Guntenspergen, U.S. Geological Survey) | 3 – New material added here and in 14.2.6. |
| 14-399 | A | 15 | 1 | | 2 | extend this to the 2005 hurricane season (Susanne Moser, National Center for Atmospheric Research) | 3 – New material added here and in 14.2.6. |
| 14-400 | A | 15 | 1 | 15 | 3 | Hurricanes -- with the unusual hurricane season this year, I would encourage the authors to expand the discussion on the latest science around the relationship between climate change and hurricanes and related impacts. Was 2005 a sign of what is to come? What level of confidence do we have to be able to answer such questions? If we can expect more years like 2005, what are the adaptation issues? I think many will be expecting this chapter to address this topic. (Aynsle Ogden, Government of Yukon) | 3 – New material added here and in 14.2.6. |
| 14-401 | A | 15 | 1 | 15 | 6 | I suggest this paragraph be updated with respect to the ensuing damages done in Mississippi and Louisiana by the landfall of hurricanes Katrina and Rita. (Alain N. Rousseau, Institut national de la recherche scientifique) | 3 – New material added here and in 14.2.6. |
| 14-402 | A | 15 | 1 | 15 | 2 | Update impact of Hurricanes for 2005. (Antje Schwalb, Institut für Umweltgeologie) | 3 – New material added here and in 14.2.6. |
| 14-403 | A | 15 | 1 | 15 | 6 | It seems only natural to include mention of the 2005 hurricane season. The experiences in the Gulf of Mexico, especially New Orleans from hurricanes Katrina, Rita, Wilma and others speak to this chapter on several levels. (Robin Sydneysmith, University of British Columbia) | 3 – New material added here and in 14.2.6. |
| 14-404 | A | 15 | 1 | | 3 | will have to expand thought after what happened in Gulf of Mexico region in 2005 (Robert Taylor, Bedford Institute of Oceanography) | 3 – New material added here and in 14.2.6. |
| 14-405 | A | 15 | 1 | 15 | 2 | perhaps update with most recent Katrina et al., including record hurricanes in 2005 (Francesco Nicola Tubiello, Columbia University) | 3 – New material added here and in 14.2.6. |
| 14-406 | A | 15 | 2 | | | you may want to mention the 3 category 5 hurricanes that hit the U.S. in 2005. (David Changnon, Northern Illinois University) | 3 – New material added here and in 14.2.6. |
| 14-407 | A | 15 | 3 | 15 | 32 | Better add Katrina and Rita and Wilma (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 3 – New material added here and in 14.2.6. |
| 14-408 | A | 15 | 3 | 3 | 6 | The reoccurring storm damage along the Louisiana Gulf Coast from storms "Katrina" and then "Rita" in 2005 demonstrates what is discussed here. (Ian Church, Yukon Government) | 3 – New material added here and in 14.2.6. |
| 14-409 | A | 15 | 3 | 15 | 6 | "As this experience shows" - what experience? The experience in Florida or | 2 – Experience in both places. Rewritten to |

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|--------|---|----|----|----|----|--|---|
| | | | | | | Halifax? (Jaime Dawson, The University of Western Ontario) | omit this clause and place this sentence in a new paragraph. |
| 14-410 | A | 15 | 6 | | 8 | While the Forbes reference is only to eastern Canada - the same can be said for the Alaskan shoreline -- several studies exist on changes in the decline in sea ice protection from winter storms. Also should mention for those northern US and Canadian regions that the melting of permafrost makes those coastlines significantly more sensitive to coastal erosion (the two issues - sea ice loss and permafrost melt - exacerbate each other). The common example mentioned is Shishmaref in Alaska, but Barrows is another good one. (Susanne Moser, National Center for Atmospheric Research) | 2 – Added reference to Alaska chapter in US National Assessment. There is no explicit citation therein for statement about increased coastal exposure with less sea ice. Permafrost issues are largely beyond the scope of this chapter, but implications of permafrost degradation for coastal erosion are treated in both Coastal and Polar Regions chapters. |
| 14-411 | A | 15 | 8 | | | you may want to mention the impact of coastal issues related to Nor'easters (cold season issue). (David Changnon, Northern Illinois University) | 2 – Sentence added on impacts of major extratropical storms. |
| 14-412 | A | 15 | 14 | 15 | 14 | I think you mean events, not adjustments. (Kristie Ebi, Exponent) | 1 – No, this is referring to coastal change adjustments. Rewritten to be more explicit. |
| 14-413 | A | 15 | 14 | | | non-linear adjustments under changing climate -simplify or give example and/or explain what is meant -jargon talk (Robert Taylor, Bedford Institute of Oceanography) | 1 - Rewritten to be more explicit. |
| 14-414 | A | 15 | 16 | 15 | 23 | repeated text from page 11- it needs only to appear once (Dominique Bachelet, Oregon State University) | 1 – This was already recognized by authors and deleted. |
| 14-415 | A | 15 | 16 | 15 | 23 | This paragraph is repetitious of page 11, lines 14-21. (Donald Boesch, University of Maryland Center for Environmental Science) | 1 – This was already recognized by authors and deleted. |
| 14-416 | A | 15 | 16 | 15 | 23 | This paragraph is exactly the same as the one presented in the Freshwater Resources sub-section (page 11, line 14-21). (Jaime Dawson, The University of Western Ontario) | 1 – This was already recognized by authors and deleted. |
| 14-417 | A | 15 | 16 | 15 | 21 | This is repeated from page 11. (Kristie Ebi, Exponent) | 1 – This was already recognized by authors and deleted. |
| 14-418 | A | 15 | 16 | 15 | 25 | Paragraphs 2 and 3 should be exchanged. (Thomas Graedel, Yale University) | 1 – Paragraph 2 deleted. |
| 14-419 | A | 15 | 16 | 15 | 23 | This paragraph also appears on page 11. (Robert Harriss, NCAR/ESIG) | 1 – This was already recognized by authors and deleted. |
| 14-420 | A | 15 | 16 | 15 | 23 | Same as paragraph on p.11 line 14 to 21. (Yves Michaud, Geological Survey of Canada - Québec Division) | 1 – This was already recognized by authors and deleted. |
| 14-421 | A | 15 | 16 | | 23 | better written but duplicates thought on pg 11 line 14-19 (Robert Taylor, Bedford Institute of Oceanography) | 1 – This was already recognized by authors and deleted. |
| 14-422 | A | 15 | 17 | 15 | 17 | Substitute "Atlantic Provinces" again for Maritimes or a phrase such as, "...from Newfoundland and the Maritimes to..." (Robin Sydneysmith, University of British Columbia) | 1 – Paragraph deleted. |
| 14-423 | A | 15 | 23 | | | stop at end of sentence (Geoffrey Wall, University of Waterloo) | 1 – Paragraph deleted. |
| 14-424 | A | 15 | 25 | 15 | 23 | There was a lot of concern about Superfund sites releasing toxics after Katrina as well. | 2 – Reference to Katrina impacts added. |

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|--------|---|----|----|----|----|---|--|
| | | | | | | (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | |
| 14-425 | A | 15 | 25 | 15 | 32 | Better add Katrina and Rita and Wilma (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 3 – Reference to Katrina impacts added. |
| 14-426 | A | 15 | 25 | 15 | 26 | Again well illustrated by the events in New Orleans. Again these are events which were well documented and described to the public and which will relate to the reader. (Ian Church, Yukon Government) | 3 – Reference to Katrina impacts added. |
| 14-427 | A | 15 | 25 | | | Missing the word 'of' (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 1 – This was already noted and added. |
| 14-428 | A | 15 | 25 | 15 | 25 | Release of (Kristie Ebi, Exponent) | 1 – This was already noted and added. |
| 14-429 | A | 15 | 25 | 15 | 32 | Here and multiple other areas there are references to flooding and impacts, need to at least mention hurricane Katrina even though there are no citations yet. Also, p. 21, lines 25-30, p. 32 lines 29-44 (Katharine Jacobs, University of Arizona) | 3 – Reference to Katrina impacts added. |
| 14-430 | A | 15 | 25 | | 32 | Seems this paragraph could easily make reference to the environmental impacts of hurricanes Katrina and Rita. It's an unbelievable mess, and it's becoming documented, at least in the grey literature now. Studies are underway with funding from NSF and the Natural Hazards Center in Boulder, CO. (Susanne Moser, National Center for Atmospheric Research) | 3 – Reference to Katrina impacts added. |
| 14-431 | A | 15 | 25 | | 26 | Has not Brunner and Lynch also written about the threat of not just flooding, but also coastal erosion to toxic waste sites and regular landfills - check their work in Alaska... (Susanne Moser, National Center for Atmospheric Research) | 2 – Brunner et al. (2004) already cited elsewhere in chapter. Sentence and reference added here. |
| 14-432 | A | 15 | 25 | | | I assume the CAs (in this section and elsewhere) will given the opportunity update their sections with information from the impact of Katrina, as it occurred after FOD were due. (Daniel Scott, University of Waterloo) | 3 – Reference to Katrina impacts added. |
| 14-433 | A | 15 | 25 | | | good thought especially after new orleans 2005 (Robert Taylor, Bedford Institute of Oceanography) | 2 – Reference to Katrina impacts added. |
| 14-434 | A | 15 | 25 | 15 | 25 | edit. ...release OF hazardous (Francesco Nicola Tubiello, Columbia University) | 1 – This was already noted and added. |
| 14-435 | A | 15 | 27 | | | release of (Geoffrey Wall, University of Waterloo) | 1 – This was already noted and added. |
| 14-436 | A | 15 | 37 | | | delete Heonz Center (Geoffrey Wall, University of Waterloo) | 1 – Not clear why this is suggested. |
| 14-437 | A | 15 | 42 | | | I'd be tempted to mention the hurricanes of 2005, the collapse of the levee in New Orleans & devastation of the city; the effect on hydrocarbon production, processing & distribution which don't require scholarly studies to quantify. (Douglas Fox, Colorado State University) | 2 – Reference to Katrina impacts added. |

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|--------|---|----|----|----|----|--|---|
| 14-438 | A | 15 | 44 | 16 | 34 | Winter survival of perennial forage crops and trees is not discussed in this section (Ex: Bélanger, G., Rochette, P., Castonguay, Y. et Bootsma, A., Mongrain, D. et Ryand, A.J. (2002). «Climate change and winter survival of perennial forage crops in Eastern Canada». Agronomy Journal, 94: 1120-1130.) (Alain Bourque, Ouranos Consortium) | These refs refer to climatic change & therefore this comment is addressed in Sec 14.5.4 See response to comment 14-869. |
| 14-439 | A | 15 | 44 | 16 | | Section 14.3.4: Are crop yeild changes from California representatioev of North American agriculture? (Dave Sauchyn, University of Regina) | Ref to a paper which has broader coverage added to illustrate section refers to a broader are. Troyer, A. 2004 Background to U.S. hybrod corn II: Breeding, climate and food. Crop Science 44; 370-380 |
| 14-440 | A | 15 | 47 | 15 | 48 | Please add reference. (Antje Schwalb, Institut für Umweltgeologie) | See 14-439. |
| 14-441 | A | 15 | 48 | | | replace include by are the result of (Geoffrey Wall, University of Waterloo) | Done |
| 14-442 | A | 15 | 50 | | | In the last 20 years corn yields increased because of a cooling trend in the Midwest? I read Hicke and Lobell and did not find that conclusion. (Dominique Bachelet, Oregon State University) | Reference to cooling removed & only crop trend reported. |
| 14-443 | A | 15 | 50 | 15 | 50 | I am not familiar with this region but is it a "cooling" or "warming" trend that has made a positive contribution? (Alain Bourque, Ouranos Consortium) | See 14-442 |
| 14-444 | A | 15 | 50 | | | Specify the mechanism for this cooling trend to make a positive contribution to yields. Where in the mid west did this occur? Ditto for the next sentence re wheat. (Elaine Wheaton, Saskatchewan Research Council) | See 14-442 |
| 14-445 | A | 15 | 55 | | | One of the latest EOS (September?) has an article about oil slicks in the Gulf after the hurricane (Louisiana and pollution of water due to off-shore drilling) (Dominique Bachelet, Oregon State University) | No action, comment seems misplaced (ie not relevant to NA Ag section) |
| 14-446 | A | 16 | 0 | | | On page 16 and following we find that warming increases production, as does cooling, depending... I think this shows the likely dependance of NPP on water balance rather more strongly on temperature, and that the actual NPP effect (if we know it see my hesitation about semi-modeled NPP) depends strongly on water. The apparent effects of temperature may be more correlations with water balance than actual temperature effects. (David Schimel, NCAR) | See 14-442 and 14-447 |
| 14-447 | A | 16 | 1 | | | I believe that you want to state that there is great temporal and spatial variability in Midwestern corn and soybean yields due to weather differences during the growing season (Changnon and Winstanley, 2000). (David Changnon, Northern Illinois University) | Done |
| 14-448 | A | 16 | 1 | 16 | 3 | Mexico is not included in the scope of this chapter. (Jaime Dawson, The University of Western Ontario) | Ref to N. Mexico removed. |
| 14-449 | A | 16 | 2 | 16 | 3 | Are wheat yields higher or lower in response to recent coolings? (Jaime Dawson, The University of Western Ontario) | See 14-142 |
| 14-450 | A | 16 | 3 | | 4 | Warmer nights have increased the production of high-quality wine grapes, a benefit | No change, benefits of warmer nights already |

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|--------|---|----|----|----|----|---|---|
| | | | | | | from warming (Thomas Moore, Stanford University) | clear |
| 14-451 | A | 16 | 4 | 16 | 7 | What climate changes in California have not had a large effect on yields? Does this include precipitation, temperature? (Jaime Dawson, The University of Western Ontario) | Not possible to answer "which climatic changes have NOT had an effect" |
| 14-452 | A | 16 | 5 | | | Replace the word "changes" with "fluctuations." Also, should something be said relating to the influence of climate variations on the occurrence and/or magnitude of crop pests and/or diseases (e.g., soybean aphid or rust issues). (David Changnon, Northern Illinois University) | Done |
| 14-453 | A | 16 | 5 | | | Specify the type of climate change that did not have large effects on these 12 major crops. What are the likely reasons for the effect or lack of effect? (Elaine Wheaton, Saskatchewan Research Council) | Not possible to answer "which climatic changes have NOT had an effect" |
| 14-454 | A | 16 | 6 | | | delete a in a negative (Geoffrey Wall, University of Waterloo) | Done |
| 14-455 | A | 16 | 9 | 16 | 34 | These paragraphs, while interesting, contain no hard facts. Rather they include a discussion of the vulnerability and adaptation potential of US agriculture and should be thus moved to the Adaptation section. (Dominique Bachelet, Oregon State University) | The purpose of these few sentences is to establish NA ag is already under considerable stress & this, in conjunction with cc, will impact the sector's future. Ref to Reilly 2002 added to further support these points |
| 14-456 | A | 16 | 9 | 16 | 20 | How much of ag productivity can extreme events affect? Seems like some crops experience 20% losses--especially specialty crops such as tomatoes in FLA, cherries in the NW, and there were 3 major events that took corn yields down substantially in the last 10 years. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Refer to Rosenzweig et al 2002 added to illustrate effects of severe weather on NA ag. |
| 14-457 | A | 16 | 9 | 16 | 20 | Two recent articles dealing with changing wheat production through time and implications of elevated CO2 that might also be discussed in this paragraph include: Amthor JS 1998 Perspective on the relative insignificance of increasing atmospheric CO2 concentration to crop yield. FIELD CROPS RESEARCH 58 (2): 109-127 Amthor JS 2001 Effects of atmospheric CO2 concentration on wheat yield: review of results from experiments using various approaches to control CO2 concentration. FIELD CROPS RESEARCH 73 (1): 1-34 (Paul J. Hanson, Oak Ridge National Laboratory) | Not added here as refers to climatic change |
| 14-458 | A | 16 | 9 | 15 | 11 | Only recurring droughts? What about flooding? Perhaps "recurring droughts" should be changed to "increased climate variability". (Francesco Nicola Tubiello, Columbia University) | Done |
| 14-459 | A | 16 | 12 | | | Word order..."with more a variable climate" (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | Done |
| 14-460 | A | 16 | 14 | 16 | 17 | This is also likely true for other sectors as well and not only to agriculture. (Alain Bourque, Ouranos Consortium) | Agree but no change require |

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|--------|---|----|----|----|----|---|---|
| 14-461 | A | 16 | 14 | | 17 | It is not clear what the authors have in mind with "prevailing economic and social constraints". (Thomas Graedel, Yale University) | Ref to Reilly 2002 added, this ref provides more info on factors currently imposing stress on the sector but space restrictions imposed by IPCC TSU prohibit presentation of details. |
| 14-462 | A | 16 | 14 | 16 | 17 | This statement is correct in terms of current vulnerability from current variability. Yet, increased variability under climate change may not be like OTHER stresses, as implied here, but may generate its own specific pressures. One important limitation to adaptation under climate change, even when all the right economic, social and political infrastructures are in place, may be one of speed: possible rate of adaptation versus rate of change. (Francesco Nicola Tubiello, Columbia University) | Revisions now incorporate rate of change as well as coping capacity concerns Ref to Boland et al 2004 added (see comment 14-869) |
| 14-463 | A | 16 | 17 | | | add the following; Two recent growing seasons in the Midwest had large frequencies of clear skies allowing enhanced photosynthesis, and this led to record high crop yields (Changnon and Hollinger, 2004; Changnon and Changnon, 2005a). This positive weather reaction reflects multi-year improvements in plant/seed development since past sunny seasons of the 1930s and 1950s did not result in high yields. (David Changnon, Northern Illinois University) | Not sure of the point here? If it is about the effects of yr-to-yr weather on crop yields, then this is covered given revisions stemming from 14-452. |
| 14-464 | A | 16 | 17 | | | additional reference for this point: Bradshaw, B., H. Dolan and B. Smit. 2004. Farm-Level adaptation to climatic variability and change: Crop diversification in the Canadian Prairies. Climatic Change, 67:119–141. This article provides an excellent analysis of the current trajectory of cdn ag sector and how it must be taken into account when considering adaptation options. (Ellen Wall, University of Guelph) | Done |
| 14-465 | A | 16 | 18 | | | replace has with have (Geoffrey Wall, University of Waterloo) | Done |
| 14-466 | A | 16 | 22 | 16 | 34 | Some examples of agricultural adaptations would help clarify the thoughts expressed in this paragraph. (Hank Margolis, Université Laval) | Done, Wall & Smit 2005 ref added as well |
| 14-467 | A | 16 | 23 | | | poorly expressed (Geoffrey Wall, University of Waterloo) | Rewritten |
| 14-468 | A | 16 | 28 | | | replace if by is (Geoffrey Wall, University of Waterloo) | Done |
| 14-469 | A | 16 | 29 | | | should read "but it is rather" (Douglas Fox, Colorado State University) | Done |
| 14-470 | A | 16 | 29 | | | delete first a (Geoffrey Wall, University of Waterloo) | Done |
| 14-471 | A | 16 | 30 | | | instead of Smit and Skinner reference, consider: Bryant, C.R., and P. André. 2003. Adaptation and sustainable development of the rural community, in Laurens, L. and C.R. Bryant (eds.), Proceedings of the Annual Colloquium of the IGU | Done |

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| | | | | | | <p>Commission on the Sustainability of Rural Systems. Montpellier: Université de Montpellier, and Montreal: IGU Commission on the Sustainability of Rural Systems. 449-460.</p> <p>Bryant, C.R., P. André, J.-P. Thouez, B. Siingh, S. Frej., D. Granjon, J.P. Brassard, and G. Beaulac. 2004. Agricultural adaptation to climatic change: the incidental consequences of managing risk, in Ramsey, D. and C.R. Bryant (eds.), The Structure and Dynamics of Rural Territories: Geographical Perspectives. Brandon: Rural Development Institute, Brandon University, 260-271.</p> <p>Wall, E. and B. Smit. 2005. Climate change adaptation in light of sustainable agriculture. Journal of Sustainable Agriculture, 27(1):113-123. (Ellen Wall, University of Guelph)</p> | |
| 14-472 | A | 16 | 31 | | | <p>should read "there have been" (Douglas Fox, Colorado State University)</p> | Done |
| 14-473 | A | 16 | 31 | | | <p>replace has by have (Geoffrey Wall, University of Waterloo)</p> | See 14-472 |
| 14-474 | A | 16 | 32 | | | <p>as above (Ellen Wall, University of Guelph)</p> | Done |
| 14-475 | A | 16 | 36 | 17 | 5 | <p>No mention of impacts of forest fires or invasive species on forests. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network)</p> | SR – see box |
| 14-476 | A | 16 | 36 | 17 | 5 | <p>The authors have chosen to cite a very limited selection of literature relative to what is available on observed changes in forested ecosystems and in the forest sector - and have also addressed only a limited area of current sensitivities. I would suggest a more encompassing review here would be appropriate. (Aynslie Ogden, Government of Yukon)</p> | 2 SR – no room for big review |
| 14-477 | A | 16 | 36 | 17 | 5 | <p>This section is titled 'forestry' which should include implications for the forestry industry not just implications for biophysical systems (i.e., forest growth change), which is all that is discussed here. There is a literature on various implications for the forestry industry that is not reviewed (for example, a recent special issue on climate change was published in the journal Forestry Chronicle). (Daniel Scott, University of Waterloo)</p> | 3? Expand scope of forestry section? |
| 14-478 | A | 16 | 36 | 17 | 5 | <p>This subsection on forestry seems to be all about effects of CC on forest growth (NPP?) and potential changes to range and distribution of species. There is no discussion of impacts of pests such as MPB in interior of BC - arguably one of the most profound and far reaching environmental impacts or changes in North America that can be traced at least in part to climate change and variation. There also does not seem to be discussion of the potential disconnect between changes in the range of species and where they actually can grow. Richard Hebda for example (pers. com. 2005) has shown that while the actual range of Western Red Cedar may expand (primarily northward and into higher elevations) under several climate change scenarios, the actual range will decline as the species dies off in current areas and is unable to "migrate" sufficiently quickly to take advantage of favourable conditions elsewhere.</p> | 3 |

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| | | | | | | (Robin Sydneysmith, University of British Columbia) | |
| 14-479 | A | 16 | 37 | 17 | 5 | <p>There is a lack of reference to a significant body of literature from Canadian scientists on the boreal forest. For example, the eastern boreal forest has experienced a decrease in fire frequency over the past 150 years. Recent work shows a lack of relationship to the linear change in climate, but suggest a link to a drop in the frequency of extreme fire-conducive events. See for example Girardin et al, 2004 (CJFR 34:103-109); LeSieur et al, 2002 (CJFR. 32: 1996-2009); Bergeron et al 2001 (CJFR 31: 381-384).</p> <p>For fires, it may be interesting to add the estimations of direct C emissions from boreal forest fires over the past few decades (Amiro et al, 2001 CJFR 31: 512-525).</p> <p>The recent Mountain Pine Beetle infestation of the lodgepole pine stands of BC is apparently the result of a lack of cold winters in recent years in that area (Carroll, A. L. S. W. Taylor J. Régnière & L. Safranyik. 2004. Effects of climate change on range expansion by the mountain pine beetle in British Columbia. pp. 223-232 in T.L. Shore, J.E. Brooks & J.E. Stone (Eds). Natural Resources Canada, Canadian Forest Service, Pacific Forestry Centre Information Report BC-X-399, Victoria BC 298 p.).</p> <p>Also notable are the recent drought events in central Canada that severely limited the growth of aspen (Hogg et al, 2005 CJFR 610-622)</p> <p>For increased growth at the Eastern Canada tundra tree line as a result of recent climate change, see Vallée and Payette (Arctic, Antarctic, and Alpine Research. 2004. 36: 400-406) and see Gamache and Payette (Journal of Biogeography. 2005. 32: 849-862) for lack of progression of tree line.</p> <p>(Pierre Bernier, Natural Resources Canada)</p> | <p>3 – linkage with Polar chapter which proposed to address boreal forest issues</p> <p>SR - See fire/bugs box</p> |
| 14-480 | A | 16 | 37 | 16 | 50 | black spruce bark beetle kills in Alaska should be mentioned in Forestry section (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 SR – see fire/bugs box |
| 14-481 | A | 16 | 37 | 17 | 5 | The section describes links on forest extent and forest productivity and not about insects, pests, fires and associated vulnerabilities (although this last one is more linked with communities). Links to previous comment #14. (Alain Bourque, Ouranos Consortium) | 3 SR – see fire bugs box |
| 14-482 | A | 16 | 37 | 17 | 5 | Vulnerability of forests? Adaptation? There is not a similar discussion of these issues as there is for agriculture. (Jaime Dawson, The University of Western Ontario) | 3 decreased discussion of adaptation in ag |
| 14-483 | A | 16 | 37 | | 38 | Another benefit from warming: forest growth is accelerating (Thomas Moore, Stanford University) | 2 SR - yep |
| 14-484 | A | 16 | 37 | | | Replace "accelerating" with "increasing". Accelerating implies that it's increasing exponentially, i.e. at an increasing rate. (Dave Sauchyn, University of Regina) | 1 SR - agreed |
| 14-485 | A | 16 | 37 | | | lines 37 onwards Forestry. This section is weak. Should refer to the Mountain beetle epidemic in BC and it's climate change link (Carroll et al 2003), plus impact on current and future timber supply. Mentioned elsewhere but seems relevant here. | 2 SR – see fire/bugs box |

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| | | | | | | also increases in fire (Gillett et al 2004). Previous subsection on agriculture discuss current adaptation capabilities. Why nothing on it in the on forests piece? (David Spittlehouse, BC Ministry of Forests) | |
| 14-486 | A | 16 | 42 | | | years (Geoffrey Wall, University of Waterloo) | 1 caught in editing |
| 14-487 | A | 16 | 43 | | | The word 'also' might be removed. (Paul J. Hanson, Oak Ridge National Laboratory) | 1 caught in editing |
| 14-488 | A | 17 | 1 | | | a space between 100 and years (Liette Vasseur, Laurentian University) | 1 caught in editing |
| 14-489 | A | 17 | 3 | | | remove W.L. before Baker (Liette Vasseur, Laurentian University) | 1 ref mis entered in End Note. Still needs to be fixed. |
| 14-490 | A | 17 | 4 | | | Include more Canadian examples and references. The Forestry Chronicle vol.8, (Sep-Oct 2005) for example, has several articles on climate change impacts and adaptation. (Elaine Wheaton, Saskatchewan Research Council) | 2 condensation makes this difficult |
| 14-491 | A | 17 | 5 | 17 | 5 | Insert: "However, the net biome effect needs to include the effects of disturbance, and these effects could easily overcome modest gains in growth by undisturbed forest stands" (Brian Amiro, University of Manitoba) | 1 space constraints |
| 14-492 | A | 17 | 6 | | | I think the Forestry section is quite weak. There is no mention of industrial forestry or of disturbance.changes. (Douglas Fox, Colorado State University) | 2 can be further improved. |
| 14-493 | A | 17 | 7 | | | Fisheries is missing. The strong link between salmon fisheries in PNW and Alaska with climate indices such as PDO should be cited here. (Dominique Bachelet, Oregon State University) | 3 – added in SOD |
| 14-494 | A | 17 | 7 | | | When Fisheries section is done, be sure to include work of King and Beamish on shifting ranges of West coast fisheries, and Welch on Alaskan ranges for sockeye salmon (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Still to do |
| 14-495 | A | 17 | 11 | 18 | 32 | Health specialists informed me that U.V. issues will likely go up further because of climate change. Only literature vaguely on this though is Diffey, B. (2004). "Climate change, ozone depletion and the impact on ultraviolet exposure of human skin." Physics in Medicine and Biology 49(1): R1-R11. (Alain Bourque, Ouranos Consortium) | 2 We understand the theoretical risk of climate change extending the recovery of strat ozone hole, but this is too speculative to include |
| 14-496 | A | 17 | 11 | 18 | 32 | Does impacts of climate change on aboriginal health need to be considered in this section? (links to Inuit in the Arctic chapter?) (Alain Bourque, Ouranos Consortium) | 3 – link to polar/arctic chapter |
| 14-497 | A | 17 | 11 | 17 | 11 | A section on human health in North America should include a discussion on climate change and health issues in indigenous communities. See work by Chris Furgal, Laurie Chan, the ACIA Chapter on human health (note that scope of the ACIA is geographical broader than the discussion in the Polar Regions chapter and | 3 – link to polar/arctic chapter |

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| | | | | | | includes northern boreal/taiga regions). (Aynsle Ogden, Government of Yukon) | |
| 14-498 | A | 17 | 11 | 17 | 11 | It is hard to link climate change to human health so I find that this section does not demonstrate any historical trend. Nevertheless, it reports current sensitivity with one exception...no mention of « bird flu » or « sras », this omission should be rectified. (Alain N. Rousseau, Institut national de la recherche scientifique) | 2 Determining such a trend as attributed to climate is very difficult in this region. Also bird flu and SARS are likely unrelated to global warming |
| 14-499 | A | 17 | 13 | 18 | | I thought this section was not fully developed. I found it too fragmented and lacking in sufficient aggregate detail. What are the regional trends in climate-related morbidity and mortality? Where are the highest sensitivities/vulnerabilities located? And what adaptive responses are evident? Later on I found more of the information I was seeking in Section 14.5.5, so I was puzzled at the division which needlessly raises questions. (Miles Edward, School of Marine Affairs) | 2 This organization follows chapter format: current sensitivities followed by future projected risks or benefits |
| 14-500 | A | 17 | 14 | | | This section (adaptive capacity) should include a few words about passive solar buildings, use of swamp coolers in the SW where humidity is low. (Dominique Bachelet, Oregon State University) | 2 good point but space is limited |
| 14-501 | A | 17 | 21 | 17 | 22 | Only one example is provided for controls on the patterns of infectious disease incidence. (Jaime Dawson, The University of Western Ontario) | 2 very limited space |
| 14-502 | A | 17 | 21 | 17 | 22 | Trends in incidence are controlled by transmission pathways? This is not clear and not entirely correct. (Kristie Ebi, Exponent) | 2 edited |
| 14-503 | A | 17 | 21 | 17 | 21 | EDIT. Eliminate colon at the end of the line. (Francesco Nicola Tubiello, Columbia University) | 1 edited |
| 14-504 | A | 17 | 24 | | | Can the author briefly explain what they mean by precipitation variability and how it is linked to the fever? (Dominique Bachelet, Oregon State University) | 2 limited space to address |
| 14-505 | A | 17 | 30 | | 35 | There are annual reports that track beach closures around the US. Not sure whether they also track climate variability or discuss that influence, but it's worth checking out, or to see whether anyone else has tried a correlation study on this. Obviously there are other influences on beach closures, associated contamination, bacterial outbreaks, etc., so the correlation may not be super high, but anecdotally, there are many cases. I recall cases after the heavy winter storms in California in 2005, that the papers were full with that. you may want to discuss the causal connections a bit more, e.g., include the fact that many out-dated, but also more modern stormwater runoff systems (combined sewer and runoff) are simply overwhelmed. This is a very common problem still in both the US and Canada. (Susanne Moser, National Center for Atmospheric Research) | 2 added more references re water contamination, e.g. Walkerton |
| 14-506 | A | 17 | 30 | | | perhaps mention the incident at Walkerton, Ontario as a recent example where people died (Daniel Scott, University of Waterloo) | 2 – LM can provide Walkerton report |

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| 14-507 | A | 17 | 32 | 17 | 32 | Does heavy run-off always lead to bacterial contamination? (Kristie Ebi, Exponent) | 2 no |
| 14-508 | A | 17 | 34 | | | also linked to agricultural practises and fertilzers adjacent estuaries and coasts (Robert Taylor, Bedford Institute of Oceanography) | 2 agreed |
| 14-509 | A | 17 | 37 | 17 | 40 | There are a number of additional references; see Chapter 8. (Kristie Ebi, Exponent) | 2 linnk to Health |
| 14-510 | A | 17 | 42 | 17 | 47 | I think you can use an analogy with Saint Louis Encephalitis; the viruses are nearly identical and similar mosquito species carry both. Therefore, what is known about SLE can be reasonably applied to WNV. (Kristie Ebi, Exponent) | 2 brand new refs have been published on WNV temperature dependence (Reisen et al) |
| 14-511 | A | 17 | 42 | 18 | 33 | these sections are of a different style, attempting to make a case for the conclusions rather than just reporting the literature. It makes this section too wordy & I believe diminishes scientific credibility. (Douglas Fox, Colorado State University) | Have edited down |
| 14-512 | A | 17 | 42 | | | The meaning of "natural life cycle being in animals" is unclear. (Thomas Graedel, Yale University) | 1 fixed |
| 14-513 | A | 17 | 43 | 18 | 5 | Most of this text is repeated in Box 3 for the West Nile case study. (Dominique Bachelet, Oregon State University) | 2 Box now deleted |
| 14-514 | A | 17 | 43 | | 47 | sentence is speculation, not a published result. (Douglas Fox, Colorado State University) | 2 new cites |
| 14-515 | A | 17 | 43 | | | delete the (Geoffrey Wall, University of Waterloo) | 1 fixed |
| 14-516 | A | 17 | 46 | | | replace & by and (Geoffrey Wall, University of Waterloo) | 1 fixed |
| 14-517 | A | 17 | 47 | | | Re: virus and heat. This is a good example of a process description. (Elaine Wheaton, Saskatchewan Research Council) | 2 |
| 14-518 | A | 17 | 47 | | | Culex pipiens may not be the only major mosquito vector. Culex tarsalis is an important vector in W. Canada. Double check and correct (Elaine Wheaton, Saskatchewan Research Council) | 2 OK but doesn't change context of statement |
| 14-519 | A | 17 | 48 | | | titers? (Geoffrey Wall, University of Waterloo) | 1 ok |
| 14-520 | A | 17 | 49 | | | in horses (Geoffrey Wall, University of Waterloo) | 1 ok |
| 14-521 | A | 18 | 4 | | | line up (Geoffrey Wall, University of Waterloo) | 1 ok |
| 14-522 | A | 18 | 5 | | | Where is box three? (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 in location specified by TSU |
| 14-523 | A | 18 | 8 | 18 | 8 | EDIT eliminate article before N. America. (Francesco Nicola Tubiello, Columbia University) | 1 ok |
| 14-524 | A | 18 | 8 | | | delete the (Geoffrey Wall, University of Waterloo) | 1 ok |

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|--------|---|----|----|----|----|--|---|
| 14-525 | A | 18 | 14 | 18 | 32 | Current adaptative capacity would be better in S 14.6 (Encinas Carla , IPCC WG2 TSU) | 3 – where does information on current adaptive capacity belong – should sections have this? |
| 14-526 | A | 18 | 14 | | | No other sub-section has a heading of current adaptive capacity. There needs to be consistency. Currently not all sub-section discuss current adaptive capacity. (Jaime Dawson, The University of Western Ontario) | 3 fixed |
| 14-527 | A | 18 | 14 | 18 | 32 | Would be helpful to include discussions on how the status and capacity of public health and safety organizations defines adaptive capacity. The recent collection of works (publication) by Kris Ebi and Joel Smith should provide some material on this subject. (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | 2 addressed in SOD |
| 14-528 | A | 18 | 15 | 15 | 19 | Should discuss California's 1 million Solar Roof program as an adaptation that uses solar generated energy during the warmest seasons to offset energy needs during the season when air conditioning stresses the capacity of grids. Information available on several web sites if you "google" California 1 Million Solar Roof (Ian Church, Yukon Government) | 2 no scientific literature (yet) |
| 14-529 | A | 18 | 15 | 18 | 19 | This section has not referred to current trends in heat waves. The current adaptive capacity to infectious and zoonotic diseases is only briefly referred to, despite this being the focus of the sub-section on human health. (Jaime Dawson, The University of Western Ontario) | 2 Fixed in SOD |
| 14-530 | A | 18 | 15 | 18 | 19 | Maybe. There are publications indicating that elderly adults may not use air conditioning because they don't perceive a need to turn it on during hot weather. Also, delete ", and" on line 16. (Kristie Ebi, Exponent) | 2 fixed in SOD |
| 14-531 | A | 18 | 15 | | 17 | First sentence is linguistically so awkward that it's hard to understand the point. (Susanne Moser, National Center for Atmospheric Research) | 1 thanks |
| 14-532 | A | 18 | 15 | | 18 | comment increased use of air conditioning buildings without windows -is there an impact on health like increased occurrence of legionnaires disease eg Toronto (Robert Taylor, Bedford Institute of Oceanography) | 2 check but unlikely |
| 14-533 | A | 18 | 15 | 18 | 16 | please check for language. Perhaps eliminate "and" after saturation? (Francesco Nicola Tubiello, Columbia University) | 1 fixed in SOD |
| 14-534 | A | 18 | 15 | | | check wording (Geoffrey Wall, University of Waterloo) | 1 ok |
| 14-535 | A | 18 | 18 | | 18 | replace the word "potentially" with "to the extent electricity continues to be produced from fossil fuels" (and what about that is "uncertain"???? (Susanne Moser, National Center for Atmospheric Research) | 1 fixed |
| 14-536 | A | 18 | 18 | 18 | 19 | Increased 'production of pollution and greenhouse gases' is a 'potentially unsustainable adaptation'. I don't understand why this statement is followed by '(uncertain)' and I suggest this qualification be removed. (Peter Victor, York University) | 1 fixed |
| 14-537 | A | 18 | 21 | 18 | 21 | Can cite Ebi. et al. 2004; Palecki et al. 2001 (Kristie Ebi, Exponent) | 2 ok |

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|--------|---|----|----|----|----|---|--|
| 14-538 | A | 18 | 21 | 18 | 28 | The issue of heat waves is one area where this assessment can speak to mitigation and adaptation in some detail with authority. The most recent modeling data supports the hypothesis of more intense and more frequent urban heat waves (Meehl and Tebaldi, 2004). Urban populations are growing rapidly around the world. This brief paragraph does not do justice to the topic of human health and heat waves. A enormously important study of the social impacts of the 1995 Chicago heat wave should be included in this report [see: E Klienenberg, Heat Wave: A Social Autopsy...]. The analysis of heat wave impacts is an excellent opportunity to address the role of organizational failures in preparedness and response for and to climate change impacts. Hurricane Katrina is another early warning signal. (Robert Harriss, NCAR/ESIG) | 3 –idea of organizational failure added to SOD |
| 14-539 | A | 18 | 21 | 18 | 28 | See comment #1; Toronto has well developed heat warning system. Inclusion would improve balance of Canadian/US examples (Robin Sydneysmith, University of British Columbia) | 2 ok |
| 14-540 | A | 18 | 21 | | | I would look at other references... I believe there are more on heat wave. Some in Vasseur, L., D. Rapport and J. Hounsell. 2002. Chapter 9. Linking ecosystem health to human health: a challenge for this new century. In B. Costanza and S. Jorgensen (Eds.). Integrating Science to Policy – Ecosummit 2000. Elsevier, Cambridge: 167-190. (Liette Vasseur, Laurentian University) | 2 expanded in SOD |
| 14-541 | A | 18 | 23 | | | you could add the following. Chicago instituted cooling centers after the 1995 heat waves and during the 1999 heat waves use of centers helped to reduce the number of deaths (Palecki et al., 2001). (David Changnon, Northern Illinois University) | 2 still to add |
| 14-542 | A | 18 | 25 | | | Insert material on relation of smog episodes and heat waves and include some Canadian admissions and mortality data. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 tighten link between heat and air pollution |
| 14-543 | A | 18 | 25 | | | add the following: Midwestern cities, after a major heat wave in 1995 that killed 740 persons (Changnon, et al., 1996), developed new procedures for dealing with heat waves and the number of deaths from an equally severe 1999 heat wave in the Midwest was less than 200 (Palecki, et al., 2001). (David Changnon, Northern Illinois University) | 2 still to add |
| 14-544 | A | 18 | 28 | 18 | 28 | It is not correct that heat event early warning systems are a "considerable cost." (Kristie Ebi, Exponent) | 2 fixed in SOD |
| 14-545 | A | 18 | 30 | | | How have the EWS not demstrated their utility? A reference would help here. (Elaine Wheaton, Saskatchewan Research Council) | 2 now states that they do save lives |
| 14-546 | A | 18 | 33 | 18 | 33 | This section does not include a discussion of air pollution, although it is mentioned on page 20, line 39. (Kristie Ebi, Exponent) | 2 discussed in box |
| 14-547 | A | 18 | 35 | 22 | 12 | S 14.3.6 have to be summarized and more be concise. Some of this is based on the | Condensed in SOD |

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|--------|---|----|----|----|----|---|--|
| | | | | | | TAR so can be covered in that section. (Encinas Carla , IPCC WG2 TSU) | |
| 14-548 | A | 18 | 35 | | | The sub-section on Human Settlements is significantly longer than any other section. While the length of each sub-section will not be the same, there should be some degree of consistency. (Jaime Dawson, The University of Western Ontario) | Condensed in SDOD |
| 14-549 | A | 18 | 35 | | | It is not clear why this sub-section on human settlements was divided as such. Why does the economic base focus on indigenous and rural communities only? In both Canada and the US, indigenous people live in both rural and urban communities, with large numbers in both. In terms of economic base, the contribution of indigenous and rural communities are not the largest contributor in NA. If economic base was meant to refer to primary production, I feel there is information missing and the emphasis on indigenous populations is too great. This sub-section follows with information on urban infrastructure and extreme events. Much of the infrastructure in rural areas (e.g. coastal communities, northern communities) are at risk to extreme events at enormous costs to the communities and federal governments. (Jaime Dawson, The University of Western Ontario) | 2 Introductory sentence added to clarify organization. Sentences dropped and replaced with introductory material under “economic base. Refer to ACIA Chapter 12: “Hunting, Herding, Fishing, and Gathering: Indigenous Peoples and Renewable Resource Use in the Arctic” |
| 14-550 | A | 18 | 37 | 22 | 12 | I think some evaluation of the constraints on adaptive capacity of local governments in coastal counties is required because institutional failures are also a source of vulnerability. (Miles Edward, School of Marine Affairs) | 2 Include additional information, perhaps from Alaska foundation study of U.S. Assessment. Moser (2005), Shishmaref case. |
| 14-551 | A | 18 | 37 | | 46 | not much info in this paragraph, could be reduced to 1 or 2 sentences (Douglas Fox, Colorado State University) | 1 Shorten and refer to cities box. |
| 14-552 | A | 18 | 37 | 23 | 33 | These sections seem very weak, few citations, many generalizations. It is very strange that the whole section titled "economic base" under "human settlements" is about indigenous communities. Perhaps that should have its own heading? (Katharine Jacobs, University of Arizona) | 2 Introductory sentence |
| 14-553 | A | 18 | 39 | 18 | 46 | Delete (David Changnon, Northern Illinois University) | 1 Deleted 40-44 |
| 14-554 | A | 18 | 40 | 18 | 42 | This sentence implies that British Columbia is in the United States. (Dave Sauchyn, University of Regina) | 1 Sentence deleted |
| 14-555 | A | 18 | 44 | 18 | 46 | This is mostly true except maybe for the impacts of permafrost melting on northern communities, where slow accumulation of energy leads to permafrost degradation in communities where the economic base is rather a social base. (Alain Bourque, Ouranos Consortium) | 2 Wording changed to clarify |
| 14-556 | A | 18 | 44 | 18 | 46 | "Research published since the TAR" - what research? There are no sources provided with this statement. (Jaime Dawson, The University of Western Ontario) | 2 Introductory statement. Add words “as discussed in the following paragraphs. |
| 14-557 | A | 18 | 44 | 18 | 46 | This broad conclusion that “human settlements in NA are sensitive to climate variability and trends...” is far too general to be useful. Let’s try in this instance and other such conclusive statements to provide specific references and cases to | 2 Add references |

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| | | | | | | support such conclusions. It is also important to note that all human settlements are not equally vulnerable and a systematic method for vulnerability assessments in regions and/or locations (e.g., coastal communities) is needed to establish priorities for risk-informed actions on enhancing disaster resistance and resilience. (Robert Harriss, NCAR/ESIG) | |
| 14-558 | A | 19 | 1 | 19 | 26 | F. 14.5 don't add much information to the Human Settlements section. (Encinas Carla , IPCC WG2 TSU) | 3 Delete |
| 14-559 | A | 19 | 26 | | | figure 14.5 - since space is always a major issue, is this figure really necessary. While it illustrates the distribution of settlements, it does not have any specific climate or climate change content and has appeared elsewhere. (Daniel Scott, University of Waterloo) | 3 Delete |
| 14-560 | A | 19 | 26 | | | misleading map for canada since this appears restricted to areas of populations over a certain size -could use the map of north america from space at night that shows the distribution of light to get a similar but better coverage of canada (Robert Taylor, Bedford Institute of Oceanography) | 3 Delete |
| 14-561 | A | 19 | 29 | 19 | 50 | I would check the use of the word 'settlements'. I do not think this is an appropriate word in the Canadian context, especially when speaking about Canada's Inuit who have signed land claim agreements with the federal government giving them rights over large tracts of land and its resources. In terms of Alaska and indigenous peoples of the Canadian Arctic, will this not be dealt with in the Arctic/Antarctic chapter? Removing details from this paragraph that will be dealt with in the Arctic/Antarctic chapter will reduce the overall length of this sub-section on human settlements. (Jaime Dawson, The University of Western Ontario) | 3 – link with polar/arctic chapter. Polar chapter did not deal with human settlements, after stating categorically that they would do so. |
| 14-562 | A | 19 | 29 | 19 | 50 | This section is undercited. Also, as I have already mentioned, the impacts on indigenous peoples extends beyond economics into cultural and health impacts (which have not been addressed in the chapter). A good example of impacts on the economy of indigenous communities of climate change is the spruce bark beetle infestation which has affected much of the forested area in the Champagne and Aishihik Traditional Territory of the southwest Yukon. CAFN is a self governing first nation with a settled land claim and the infestation is having a significant impact on the ability of the community to achieve benefits from their forest resource. (Aynslie Ogden, Government of Yukon) | 3 Add citations being added from ACIA and Consider adding a CA. However, note that we are already accused of over-emphasizing the north. |
| 14-563 | A | 19 | 30 | 19 | 50 | Delete (David Changnon, Northern Illinois University) | 2 Deleted and replaced with introductory words |
| 14-564 | A | 19 | 30 | 19 | 50 | If you are trying to shorten this document, I would delete this section. Otherwise, I would focus on studies that have examined economic winners and losers from recent weather/climate fluctuations such as Changnon and Changnon (2005). (David Changnon, Northern Illinois University) | 2 Obtain Changnon and Changnon |
| 14-565 | A | 19 | 30 | 20 | 9 | same comment as above I find this not very scientific & written to a different standard as the rest of the Chapter. | 2 Add references |

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|--------|---|----|----|----|----|---|--|
| | | | | | | (Douglas Fox, Colorado State University) | |
| 14-566 | A | 19 | 30 | 19 | 50 | This section on vulnerabilities of the economic base is very narrowly biased towards high latitude indigenous communities. This section does not do justice to the stresses that exist in many Native American, rural, and poor communities throughout North America. The IPCC WGII lacks expertise in the areas of community development, underrepresented populations, and the role of poverty in vulnerability. I am not an expert but certainly think this is the issue most poorly treated of any in this entire draft document. Where is any mention of the vulnerabilities on the Navajo nation, Pine Ridge and Rosebud reservations, rural colonias along the US-Mexico? (Robert Harriss, NCAR/ESIG) | 3 Recast as an example. Consider adding a CA. |
| 14-567 | A | 19 | 30 | | | There seems to be a problem of continuity in the chapter. Why does the discussion switch to indigenous communities at this point under the sub-heading of 'Economic Base'? (Peter Victor, York University) | 2 Introduction added |
| 14-568 | A | 19 | 31 | 19 | 31 | "remainder" instead of "reminder". (Hank Margolis, Université Laval) | 1 Removed sentence |
| 14-569 | A | 19 | 31 | | | remainder (Geoffrey Wall, University of Waterloo) | 1 Removed sentence |
| 14-570 | A | 19 | 33 | 19 | 35 | This sentence on participation in the wage economy and subsistence hunting could be worded more appropriately. As it is now, it discounts (to some degree) the role of indigenous people in the wage economy, which in some instances is quite high compared to subsistence hunting. In Nunavut, Canada for example there is a policy to ensure that Inuit occupy a high percentage of the government positions and that Inuit-owned businesses are given equal opportunity. (Jaime Dawson, The University of Western Ontario) | 2 Removed sentences |
| 14-571 | A | 19 | 33 | 19 | 33 | "First Nations" is more commonly used and widely accepted in Canada. On a separate note the term "settlement" seems inappropriate for indigenous communities, it implies a degree of transience or at least the notion of recent occupation and/or impermanence that does a disservice to the longevity of indigenous occupation of the land in North America. (Robin Sydneysmith, University of British Columbia) | 2 Will use term, when specific to Canada, but not all northern human settlements are explicitly "First Nation" |
| 14-572 | A | 19 | 38 | | 44 | northern example -could eliminate or put in polar chapter (Robert Taylor, Bedford Institute of Oceanography) | 2 Very little in Polar Chapter |
| 14-573 | A | 19 | 41 | 19 | 46 | This applies to more than just Inuit peoples. Also Inuviluit, Gwitchen, Athabaskan, in the western Arctic and the Cree and others in the eastern arctic (in other words impacts on caribou, impact native peoples and others dependent on these herds on a pan-northern basis.) (Ian Church, Yukon Government) | 2 Changed to First Nations and Alaska Natives? |
| 14-574 | A | 20 | 2 | | | change maritime Canada for Atlantic Canada (Liette Vasseur, Laurentian University) | 1 Change made |
| 14-575 | A | 20 | 6 | | 9 | while other regions do not have that kind of capacity at all. For example, Alaskan | 2 Moser reference was not helpful, but have |

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|--------|---|----|----|----|----|--|--|
| | | | | | | Natives complain that they cannot get sufficient help from federal agencies traditionally in charge of disaster reduction or shoreline protection because of inflexible standards for cost-benefit ratios. They cannot meet those standards ever, so they are really left out to hang dry. I think the contrasting situation to what you describe should also be mentioned. See discussion in: Moser, Susanne. 2005. Enhancing Decision-Making through Integrated Climate Research: Alaska Regional Meeting. Summary workshop report for the NOAA-OGP-RISA Program, NOAA-OGP, Washington, DC. Available at: http://www.ogp.noaa.gov/mpe/csi/events/risa_021804/report.pdf (Susanne Moser, National Center for Atmospheric Research) | identified other references |
| 14-576 | A | 20 | 6 | 20 | 9 | The rural depopulation of the Great Plains is well documented. The number of farms has decreased dramatically as they are abandoned and consolidated in larger holdings and industrial scale farms. Farmers and scholars in this region would object to the statement that this "traditional resource region" has "considerable institutional ability to marshal resources from higher levels of government" and thereby been maintained. (Dave Sauchyn, University of Regina) | 2 Agreed on depopulation, but disagree on relative power in U.S. context. Rerword. |
| 14-577 | A | 20 | 11 | | | This section should be updated based on the experiences of 2005 in the southern U.S. (Peter Victor, York University) | 3 Extensive rewording has been done to add effects of hurricanes Katrina and Rita |
| 14-578 | A | 20 | 12 | 22 | 12 | could be edited & reduced to a paragraph or two. (Douglas Fox, Colorado State University) | 2 Reduce and refer to cities box |
| 14-579 | A | 20 | 16 | 20 | 34 | This paragraph talks about vulnerability of supplying major metroplitan areas as a result of problems caused by a change in water supplies including products such as electricity generated by that water. There are other problems related to "just in time delivery" mechanisms providing little or no cushion- especially for urban centres. As an example to supply a city like Vancouver, British Columbia (natural gas, fuel, food etc.) materials arrive via rail, road and pipelines (also sea & air). Vancouver is connected to the rest of the country via 4 major mountain corridors- all vulnerable to snow and debris slides, floods etc. all process events that if circumstances are right to induce closures or disruptions in one corridor , are likely to occur in others. In the case of Vancouver the supply chain must pass through several mountain ranges of the western Corrdilleran and often weather systems move west to east (and periodically arctic fronts with blizard conditions go east to west) prolonging disruptions. In addition the Vancouver International Airport is located in an active delta, sited on silt, and it is below maximum probable flood level and is protected by dykes. Many of these critical transport elements are also vulnerable to seismic activity (The Hope Slide on the Highway #3 was triggered by an small tremor) emphasizing the vulnerabilities caused by the "domino effect". (Ian Church, Yukon Government) | 2 Cover in cities box and/or transportation. We are shortening this paragraph. |
| 14-580 | A | 20 | 16 | 20 | 34 | Could save some space by putting lists of information into table format to illustrate and/or summarize dependence of urban centres on distant reservoirs. | 2 Consider this solution, but we are shortening the paragraph. |

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|--------|---|----|----|----|----|--|--|
| | | | | | | (Robin Sydneysmith, University of British Columbia) | |
| 14-581 | A | 20 | 17 | 20 | 17 | EDIT ... THEIR natural environment (Francesco Nicola Tubiello, Columbia University) | 1 Done |
| 14-582 | A | 20 | 17 | | | replace its by their (Geoffrey Wall, University of Waterloo) | 1 Done |
| 14-583 | A | 20 | 24 | | | % space of (Geoffrey Wall, University of Waterloo) | 1 Done |
| 14-584 | A | 20 | 30 | 20 | 34 | An obvious place to add something about Hurricane Katrina. (Hank Margolis, Université Laval) | 3 Done |
| 14-585 | A | 20 | 31 | 20 | 31 | The impacts of the 1998 ice storm over southern Quebec is certainly an impressive example of domino effects (See http://www.msp.gouv.qc.ca/secivile/secivile.asp?txtSection=dossiers&txtCategorie=verglas&txtSousCategorie=nicolet&txtNomAutreFichier=section1.htm) (Alain Bourque, Ouranos Consortium) | 2- check treatment of ice storm in TAR. Appeared in Section 15.3.2.6 and 7.3.1 |
| 14-586 | A | 20 | 36 | 20 | 39 | I do not think in this context that there is a need to state North American cities are ethnically diverse. It is wide distributions of income, lack of capacity, and restricted access to infrastructure and aid that causes people to be vulnerable to climate impacts and extreme events. (Jaime Dawson, The University of Western Ontario) | 2 Dropped point about ethnicity. Lack of coping mechanisms for extreme events illustrated by Katrina impacts |
| 14-587 | A | 20 | 38 | 20 | 39 | This sentence might also include storm surges (see Rygel, L., D. O'Sullivan, and B. Yarnal (in press, a). A Method for Constructing a Social Vulnerability Index: An Application to Hurricane Storm Surges in a Developed Country. Mitigation and Adaptation Strategies for Global Change; and Rygel, L., B. Yarnal, and A. Fisher (in press, b). Vulnerability of Hampton Roads, Virginia to Storm-Surge Flooding and Sea-Level Rise. Natural Hazards (in press, b). (Brent Yarnal, The Pennsylvania State University) | 2 References included |
| 14-588 | A | 20 | 39 | | | add the following: Assessment of the 740 who died in Chicago as a result of the 1995 heat wave revealed that 86 percent of those killed were poor and elderly persons (Changnon, et al., 1996). (David Changnon, Northern Illinois University) | 2 Move to health section |
| 14-589 | A | 20 | 40 | | | This would be a good place to illustrate the issues raised by Katrina (Thomas Moore, Stanford University) | 3 – hurricanes impacts included |
| 14-590 | A | 20 | 41 | 20 | 45 | How do you relate this paragraph to the preceding one? Here it is stated that these cities have high adaptive capacity. What cities are these? Is it not that cities have both high and low income populations where low income usually signifies lower adaptive capacity and greater vulnerability? These two paragraphs are contradictory to each other. Is there research/sources to support these statements? (Jaime Dawson, The University of Western Ontario) | 2 Paragraph dropped |
| 14-591 | A | 20 | 41 | | 45 | That these cities have high adaptive capacity is true only IN SOME SENSE. Cities also have lowered adaptive capacity because of the inflexibility built into this form of concentrated/sprawling human settlement and associated activity patterns. This should be more differentially discussed. | 2 Paragraph dropped |

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|--------|---|----|----|----|----|---|--|
| | | | | | | (Susanne Moser, National Center for Atmospheric Research) | |
| 14-592 | A | 20 | 42 | 20 | 43 | The experience of New Orleans and other large urban centres in the southern US in 2005 calls into question the accuracy of the statement that cities have high adaptive capacity. North American cities depend on enormous quantities of material and energy throughputs to maintain styles of living that their residents are very reluctant to see changed. Moreover, many of these cities are projected to grow substantially over the next few decades e.g. around the Great Lakes. The extent to which governments can influence the pattern and level of growth is unclear, as is their desire to do so. Arguably, the adaptive capacity of North American cities is declining as communities become more dependent on resources from far away and social organization continues to weaken following the deliberate reduction in community services that began in the 1990s as more and more functions of government were transferred to the private sector. A more careful assessment of the capacity of cities to adapt to climate change is needed. (Peter Victor, York University) | 2 or 3 Consider rewording. Not sure I agree with the commenter. Need references if we take this view. |
| 14-593 | A | 20 | 48 | 20 | 48 | Please add a reference to the TAR (which chapter is cited here?). It is also unclear whether this increase in storminess is actually mentioned in IPCC TAR chapter on North America. I can't find it in that chapter (e.g. Section 15.2.7). The executive summary of the Chapter 8 in TAR WG2 (Vellinga et al. 2001) mentioned that "... part [of the observed upward trend in historical disaster losses] is linked to climatic factors such as observed changes in precipitation, flooding, and drought events", which is very different from "storminess". (Laurens Bouwer, Institute for Environmental Studies, Vrije Universiteit) | 2 Chapter 15, section 15.2.7.1. |
| 14-594 | A | 20 | 50 | | | Change "They generally" to "Some authors in U.S.A." (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 1 Reworded to balance |
| 14-595 | A | 20 | 50 | | | cite these (or some of) these studies. (Susanne Moser, National Center for Atmospheric Research) | 2 Studies follow |
| 14-596 | A | 21 | 1 | 21 | 23 | This whole paragraph is biased and needs balancing material which documents the evidence for increases in the extreme climate events. Some e.g.'s: 1. Groisman et al, 2005. Trends in intense precipitation, J. of Climate 18.9:1326-50 2. McCabe et al., 2001. Trends in - surface cyclone intensity, J. of Climate 14.12:2765-68. 3. Mills, E., 2005. Insurance in a climate of change, Science 309:1040-1043. 4. Emmanuel, K. 2005. Nature 436:686-8 and Webster, P., Science, 16 Sept., 2005 - both on stronger hurricanes. A+K44nd many more! (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 3 – treatment of extreme events. Paragraph reworded to add new references, and consider the "increased intensity" argument as opposed to number of storms. |
| 14-597 | A | 21 | 1 | 21 | 23 | This paragraph is inconsistent with page 32 lines 29-31 (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 Not inconsistent. This paragraph refers to past trends. The other speaks of future trends. Clarify |
| 14-598 | A | 21 | 5 | 21 | 7 | Is this the same conclusion as WG1? (Alain Bourque, Ouranos Consortium) | 3 – check extremes conclusions with WG1. Question asked of Palutikoff. |

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| 14-599 | A | 21 | 5 | 21 | 5 | Please add Mills, E. (2005). Insurance in a climate of change. Science 309, 1040-1044. http://dx.doi.org/10.1126/science.1112121 ; Pielke Jr., R.A., Agrawala, S., Bouwer, L.M., Burton, I., Changnon, S., Glantz, M.H., Hooke, W.H., Klein, R.J.T., Mileti, D., Sarewitz, D., Tompkins, E.L., Stehr, N., Von Storch, H.(2005). Clarifying the attribution of recent disaster losses: a response to Epstein and McCarthy. Bulletin of the American Meteorological Society 86(10), 1481-1483. http://dx.doi.org/10.1175/BAMS-86-10-1481 (Laurens Bouwer, Institute for Environmental Studies, Vrije Universiteit) | 2 Added |
| 14-600 | A | 21 | 5 | 21 | 7 | The statement that the frequency of hurricanes has not increased is contradicted on page 24, line 28, where it is stated that conditions of higher hurricane activity, such as 1941-1965 and the 1990s, may persist for decades. (Jaime Dawson, The University of Western Ontario) | 3 This paragraph refers to past trends. The other speaks of future trends. Clarify |
| 14-601 | A | 21 | 6 | 21 | 16 | One way to reduce length may be to provide 2 to 3 examples, rather than 6 examples of extreme event trends. (Jaime Dawson, The University of Western Ontario) | 2 Will consider doing this. |
| 14-602 | A | 21 | 6 | 21 | 6 | Hurricane frequency certainly increased in 2005. (Hank Margolis, Université Laval) | 3 Years 2004 and 2005 may change the conclusion. Not yet in the literature |
| 14-603 | A | 21 | 7 | 21 | 22 | Note that this paragraph contradicts itself. Emanuel says that hurricane intensity has increased; references on line 22 say that the number and intensity of extreme events have trended downward. (Kristie Ebi, Exponent) | 3 Until 2005, this was thought to be the case. Reword. Also note that we are getting more head-on strikes, which affects damage |
| 14-604 | A | 21 | 7 | | | At this point the following recent publications should be cited: P.J. Webster et al., Changes in tropical cyclone number, duration, and intensity in a warming environment, SCIENCE 309: 1844-1846, 2005; Emanuel K, Increasing destructiveness of tropical cyclones over the past 30 years, NATURE 436 (7051): 686-688 AUG 4 2005 (Thomas Graedel, Yale University) | 3 – how to treat intro of these references. Most previous research was based on number of storms, not an intensity index as these are. Reword. |
| 14-605 | A | 21 | 7 | | | there have been a couple of other critical publications on the documented increase of intensity during 2005. Should add. (Susanne Moser, National Center for Atmospheric Research) | 2 Added |
| 14-606 | A | 21 | 11 | | | close bracket (Geoffrey Wall, University of Waterloo) | 1 Done |
| 14-607 | A | 21 | 16 | | | There has been a notable increase in the number of extreme summer dew point days in the Midwest between 1949-2000 (Sandstrom et al., 2004). (David Changnon, Northern Illinois University) | 2 Include? |
| 14-608 | A | 21 | 16 | | 17 | Linguistically awkward, hence hard to understand. (Susanne Moser, National Center for Atmospheric Research) | 1 Reword |
| 14-609 | A | 21 | 17 | 21 | 17 | EDIT... shortcomings have BEEN documented (Francesco Nicola Tubiello, Columbia University) | 1 Reword |
| 14-610 | A | 21 | 18 | 21 | 23 | seem misleading. Hurricanes are becoming more intense (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 3 Include 2005 articles. Reword. |

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|--------|---|----|----|----|----|---|--|
| 14-611 | A | 21 | 18 | 21 | 23 | long sentence needs attention (Geoffrey Wall, University of Waterloo) | 1 Split into two. |
| 14-612 | A | 21 | 21 | 21 | 21 | EDIT ...please inserte parentheses around "floods,hurricanes, etc.." (Francesco Nicola Tubiello, Columbia University) | 1 Done |
| 14-613 | A | 21 | 22 | 21 | 23 | Hopefully a new study will be done to see how these patterns look including the data (hurricanes) from 2005. (Mark Schwartz, University of Wisconsin-Milwaukee) | 2 New studies from 2005 incorporated,and what is currently know about the 2005 experience. |
| 14-614 | A | 21 | 25 | 21 | 30 | repeated from earlier in this chapter (Coastal regions). (Dominique Bachelet, Oregon State University) | 2 Reword at earlier point |
| 14-615 | A | 21 | 25 | 21 | 30 | again, add more recent hurricanes to this. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 3 Add impacts from Katrina et al. |
| 14-616 | A | 21 | 25 | | 30 | This paragraph should be extended and modified through the experience we just made with Katrina: katrina revealed additional vulnerabilities due to the LACK OF PREPAREDNESS, even in as rich and developed country as the US. Make the concomitant adjustment in the Executive Summary. (Susanne Moser, National Center for Atmospheric Research) | 3 Agreed to some extent. Katrina exposed lack of preparedness. But Mississippi also got destroyed. |
| 14-617 | A | 21 | 25 | 21 | 30 | if possible please update with latest katrina/new orleans numbers (Francesco Nicola Tubiello, Columbia University) | 3 Add impacts from Katrina et al. |
| 14-618 | A | 21 | 27 | 21 | 27 | I would suggest that some literature (and recent experience) question the preparedness of these communities/prone areas. Questions raised by Pielke and others related to decisions taken by various levels of government (relative investments in preparedness, enforcement of building codes) and individuals (protecting their properties and selves) having enhanced vulnerabilities. (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | 2 Agreed to some extent. Katrina exposed lack of preparedness. But Mississippi also got destroyed. References to Pielke? |
| 14-619 | A | 21 | 29 | 21 | 29 | I think vary in number and become more common should be more clearly explained; I had to read twice to understand what was meant. (Kristie Ebi, Exponent) | 2 Reword |
| 14-620 | A | 21 | 29 | 21 | 29 | if extremes vary in number and intensity, how can they not become more common and/or more severe? (Francesco Nicola Tubiello, Columbia University) | 2 Vary, not increase over the long term, but reword |
| 14-621 | A | 21 | 32 | | | When a phrase like 'Since the TAR' is used, does this mean that other statements throughout the report are 'old news'? In other words, whenever ther's a new finding or new emphasis, do you need to preface it with 'Since the TAR'? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 Drop language. It seems to confuse. |
| 14-622 | A | 21 | 32 | 14 | 47 | The Yukon Geological Survey has conducted extensive hazard mapping of surficila deposits that because of climate induced effects (floods, permafrost, etc.) could impact the major corridor of the Alaska Highway which may also be used for a future rail, gas pipeline, and general utility corridor. (phone contact Panya Lipovsky 867 667 8520) (Ian Church, Yukon Government) | 2 – maybe more appropriate in Polar/arctic chapter. I don't think we can use a telephone contact. |

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| 14-623 | A | 21 | 32 | 21 | 47 | Are these observations or projected changes? (Kristie Ebi, Exponent) | Both. Clarify |
| 14-624 | A | 21 | 32 | | | The point re mapping of hazards may be suitable for 14.2.2 Key differences from TAR. Check for more. (Elaine Wheaton, Saskatchewan Research Council) | ?? |
| 14-625 | A | 21 | 33 | 21 | 36 | I have gray literature available to illustrate the ongoing efforts to map risks and develop tools to increase capacity of communities and decision makers (Best examples are in Permafrost and coastal erosion) (Alain Bourque, Ouranos Consortium) | 2 – can provide contact information; issue of material in French . Obtain material from Bourque. |
| 14-626 | A | 21 | 36 | | 37 | a place is not "at hazard", a place is "at risk" - this is not just a linguistic edit, but there are distinct differences between the concept of hazard and risk. (Susanne Moser, National Center for Atmospheric Research) | 2 Change wording |
| 14-627 | A | 21 | 36 | 21 | 39 | I suggest the authors go back to Ouranos (2004) so they can refer to permafrost thawing in Salluit, Nunavik, and the ensuing impact on local infrastructures such as moving of oil reservoirs or houses and ultimately relocation of the whole village. (Alain N. Rousseau, Institut national de la recherche scientifique) | 3 – polar chapter. Treat on an example basis. How many is too many examples? |
| 14-628 | A | 21 | 36 | | | while the GCMs are noted, the time slices are not. This raises a general question for this chapter (and others) about what information will be provided regarding the climate change scenarios used in impact assessments being cited (i.e., just time slices or specific GCMs and emission scenarios as well). CLAs will need to request CAs provide this information because not all did (or were asked to). (Daniel Scott, University of Waterloo) | 3- how to treat time slices, GCMs and scenarios |
| 14-629 | A | 21 | 36 | | 39 | another northern example could omit if trying to reduce size (Robert Taylor, Bedford Institute of Oceanography) | 2 ok |
| 14-630 | A | 21 | 37 | 21 | 39 | Inuvik is in the NWT- not the Yukon. The Dempster Highway is in both Yukon and NWT. (Ian Church, Yukon Government) | 1 Change |
| 14-631 | A | 21 | 37 | 21 | 38 | Inuvik is in the Northwest Territories, not the Yukon. The Dempster Highway runs from Dawson City, Yukon to Inuvik, NT. (Jaime Dawson, The University of Western Ontario) | 1 Change |
| 14-632 | A | 21 | 37 | 21 | 37 | Inuvik is NOT in the Yukon!!!!!!!!!!!!!!!!!!!!!! (Aynslye Ogden, Government of Yukon) | 1 Change |
| 14-633 | A | 21 | 39 | 21 | 47 | repeats info in sect 14.3.3 (Douglas Fox, Colorado State University) | 2 Lines 42-47 deleted and reworded to include additional references.. |
| 14-634 | A | 21 | 39 | | 47 | Adjust to account for experience with hurricanes in 2005. (Susanne Moser, National Center for Atmospheric Research) | Done earlier |
| 14-635 | A | 21 | 44 | | | The writing was on the wall. This now needs a few words about New Orleans' special case and the state of readiness of this country to large scale events. (Dominique Bachelet, Oregon State University) | Done earlier |
| 14-636 | A | 22 | 4 | 22 | 5 | Red River of the north - Dop you mean of North Dakota and Manitoba (Ian Church, Yukon Government) | Correct. Reword? |
| 14-637 | A | 22 | 5 | | 9 | Check for recent (2004 or 2005) study by Rebecca Morss, Mary Downton and | Downton? Appear to be Morss, R. E., O. V. |

**Expert Review of First Order Draft - Confidential, Do Not Cite or Quote
December 5, 2005**

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| | | | | | | others for a similar study for the Colorado front range. (Susanne Moser, National Center for Atmospheric Research) | Wilhelmi, M. W. Downton, and E. Grunfest, 2005: Flood risk, uncertainty, and scientific information for decision-making: Lessons from an interdisciplinary project. Bulletin of the American Meteorological Society, in press. Downton, M. W., R. E. Morss, O. V. Wilhelmi, E. C. Grunfest, and M. L. Higgins, 2005: Interactions between scientific uncertainty and flood management decisions: Two case studies in Colorado. Environmental Hazards, submitted. |
| 14-638 | A | 22 | 9 | | | the difficulty of (Geoffrey Wall, University of Waterloo) | Change made |
| 14-639 | A | 22 | 10 | 22 | 12 | Last sentence not needed. (Dominique Bachelet, Oregon State University) | Drop |
| 14-640 | A | 22 | 10 | | 12 | Adjust to account for experience with hurricanes in 2005. (Susanne Moser, National Center for Atmospheric Research) | Add references to Katrina-Rita-Wilma Losses |
| 14-641 | A | 22 | 15 | | | S 14.3.7 Needs to be more focus on impacts and seek for a balance in the information presented. (Encinas Carla , IPCC WG2 TSU) | I am not sure what is meant by this comment. Please be more specific. What is the focus now, other than documented impacts? What is unbalanced about the section? If you are suggesting there needs to be more information on positive impacts of warmer weather, this is not documented and does not usually make headlines. |
| 14-642 | A | 22 | 15 | 23 | 2 | No mention of impacts on ski tourism/economy due to warming. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | This issue is discussed in section 14.5.7 (future impacts). A brief statement has been added on the ski industry in this section, but impacts due to current warming trend have not been examined systematically. |
| 14-643 | A | 22 | 15 | 23 | | Section 14.3.7. is totally missing any mention of the skiing industry. New England's skiing decline is well documented and it has everything to do with bad winters. Also may want to include beach closures in here somewhere. Or make at least a list of other venues in which the tourism industry could be impacted, even if not discussed in greater detail. (Susanne Moser, National Center for Atmospheric Research) | If the reviewer has information on how impacts on NE ski industry has been documented please provide a source. Where are the beach closures being referred to? Please provide a source if possible. Beach closures are sometimes weather related, at least partially, but generally a pollution source is needed as well. |

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|--------|---|----|----|----|----|---|---|
| 14-644 | A | 22 | 15 | 23 | | Section 14.3.7" Are there no Canadian studies of the sensitivity of Tourism and Recreation? (Dave Sauchyn, University of Regina) | No. |
| 14-645 | A | 22 | 15 | | | Ocean-related tourism and recreation in California was \$12.4 billion in 2000 (Kildow and Colgan 2005). Full citation- Kildow, J. and C.S. Colgan. 2005. California's Ocean Economy. National Ocean Economics Program. 156pp. (Franklin Schwing, NOAA Fisheries Service) | How does the reviewer feel this reference relevant to this section? No discussion of California coastal recreation impacts are discussed in this section, so why would it include the economic value of it? Economic values of many sectors could be identified, but there is no space available for this discussion. |
| 14-646 | A | 22 | 17 | | | Add potential losses to ski resorts in "Tourism and Recreation". How about complete shifts in some kinds of fishing (see sockeye comment above) and perhaps loss of brown trout? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 'Potential' (i.e., future) losses to ski industry are discussed section 14.5.7. Similarly, any 'complete shifts in fishing' would be in the future and there is no post-TAR research on how this might affect the sport fishery. |
| 14-647 | A | 22 | 17 | | | are important components of tourism... (billion respectively...) (Liette Vasseur, Laurentian University) | corrected |
| 14-648 | A | 22 | 24 | 22 | 27 | A published reference would strengthen this paragraph. (Dominique Bachelet, Oregon State University) | The original references provided were removed during editing when this section was split from the original contribution. They have been reinserted and updated. |
| 14-649 | A | 22 | 24 | 22 | 27 | Where is the data and/or reference on impacts of Colorado wildfires on tourism? Where is the reference to the billion dollar dollar hit on the Florida tourism industry following the 2004 hurricane season? Are these estimates reliable and useful? (Robert Harriss, NCAR/ESIG) | The original references provided were removed during editing when this section was split from the original contribution. They have been reinserted and updated. The references provided are the best (peer-reviewed when possible and most current available). |
| 14-650 | A | 22 | 24 | | 27 | What really made this such a slap in the face of tourism is that the governor of Colorado said on TV for the world of tourists to hear: Don't come to Colorado! (major snaffoo in the eyes of the tourism industry, especially in light of when he said it -- when the worst was over). So you may want to investigate this a bit further and finetune - to not represent what really happened here. (Susanne Moser, National Center for Atmospheric Research) | I agree the comments made to the media did not help the situation, but there is no way to sore out the impact of just fires from fires with unfortunate comments to the media (perception of risk is what influenced travellers decisions). |
| 14-651 | A | 22 | 24 | 22 | 26 | Could also reference the 2003 fireseason in BC, and the 2004 fire season in the Yukon (the largest fire season on record, the amount of area burned in YT in 2004 more than doubled the previous record). | The BC fire impacts have been added. I could find no information on the impact of |

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|--------|---|----|----|----|----|---|---|
| | | | | | | (Aynslye Ogden, Government of Yukon) | Yukon fires. Please provide a reference. |
| 14-652 | A | 22 | 24 | | | Information about the recent severe Okanagan Valley fire situation would be useful here. Again more Canadian information is needed (Elaine Wheaton, Saskatchewan Research Council) | The BC fire impacts have been added. |
| 14-653 | A | 22 | 26 | | 27 | "had a significant impact" is really vague. (Thomas Graedel, Yale University) | The impact numbers in the original draft had been removed in editing. I have reinserted them and updated them. |
| 14-654 | A | 22 | 26 | 22 | 26 | I would suggest to eliminate .."and media coverage". It reads oddly: More people would have gone had they not seen it on TV? Should they not have been warned? I would assume that "Dangerous fire conditions" would implicitly include dissemination of info and thus also media coverage. (Francesco Nicola Tubiello, Columbia University) | See comment 14-650. There is no space to provide the details of the media coverage. But briefly – a statement was made in the media that ‘the whole state is on fire’, which was obviously not the case. There were areas/parks with no fire that were open for tourists (and safe), but many travellers avoided the entire state because of such comments. |
| 14-655 | A | 22 | 29 | 22 | 30 | Change Great-Lakes for Great-Lakes and St-Lawrence? (Alain Bourque, Ouranos Consortium) | No. The impacts are largely isolated on Lakes Huron and Michigan and do not involve the St. Lawrence. |
| 14-656 | A | 22 | 38 | | 39 | The economic loss to the rafting industry (a very minor industry) would be swamped by the gain to golfers, hikers, and campers. (Thomas Moore, Stanford University) | Why would drought benefit golfers? Some courses actually closed due to lack of water or restricted play. Similarly hikers and campers restricted from some areas due to drought related fires (see impacts on state parks). Does the reviewer have evidence to the contrary to support this comment? |
| 14-657 | A | 22 | 38 | 22 | 38 | EDIT. Should be ...EXCEEDING (Francesco Nicola Tubiello, Columbia University) | corrected |
| 14-658 | A | 22 | 47 | 23 | 2 | I suggest this paragraph be updated with respect to the ensuing damages done in Mississippi and Louisiana by the landfall of hurricanes Katrina and Rita. (Alain N. Rousseau, Institut national de la recherche scientifique) | New information on the impacts of Katrina has been added. |
| 14-659 | A | 22 | 47 | 23 | 2 | Update for 2005. (Antje Schwalb, Institut für Umweltgeologie) | New information on the impacts of Katrina has been added. |
| 14-660 | A | 22 | 47 | 23 | | note the reference for this fact. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service). | The original references provided were removed during editing when this section was split from the original contribution. They have been reinserted and updated. |
| 14-661 | A | 22 | 49 | | | add the following: The unusually warm, dry, and snow-free winter of 2001-2002 in the U.S. brought huge losses (>\$15 million) to the ski industry of the Northeast and major increases (>\$7 million) in tourist expenditures in Florida and the Southeast (Changnon and Changnon, 2005b). (David Changnon, Northern Illinois University) | The reference provided (Changnon and Changnon, 2005b).does not exist. Following this reference (journal, vol, pg) provides this paper: The use of Geographic Information Systems in climatology and meteorology: |

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| | | | | | | | <p>COST 719 Izabela Dyras Hartwig Dobesch Estelle Grueter Antonio Perdigao Ole E. Tveito John E. Thornes Frans van der Wel Lorenzo Bottai <u>Meteorological Applications, Volume 12, Issue 01, March 2005, pp 1-5</u></p> <p>Examining the paper by these authors (Changnon and Changnon) in the same journal (but pgs 187-191) also revealed no such economic impact numbers for skiing or the southern US. The only economic reference to tourism in this paper is a general impact of \$270 million which was attributed to Hunt (2003). A search for this reference revealed no such title or author having published in the cited journal (American Economic Review).</p> <p>Given the inability to find the information suggested by the reviewer, it has not been added to this section.</p> |
| 14-662 | A | 22 | 49 | | | <p>Where is the data and/or reference on impacts of Colorado wildfires on tourism? Where is the reference to the billion dollar dollar hit on the Florida tourism industry following the 2004 hurricane season? Are these estimates reliable and useful? (Robert Harriss, NCAR/ESIG)</p> | <p>The original references provided were removed during editing when this section was split from the original contribution. They have been reinserted and updated.</p> |
| 14-663 | A | 22 | 49 | 23 | 2 | <p>The loss to the tourism industry in Florida was undoubtedly equalled by gains to other industries. The spending was not saved. (Thomas Moore, Stanford University)</p> | <p>I agree this is likely and this could be said of many of the impacts discussed in this assessment (including Katrina relief for example). The point being made here is that there are impacts to this destination and local/state economy.</p> |
| 14-664 | A | 23 | 0 | | | <p>are we missing vulnerability in the transportation and communications sectors eg broken cables in storms -port navigation shut down in hurricanes etc some transportation on pg 38,43 (Robert Taylor, Bedford Institute of Oceanography)</p> | <p>Add a sentence that describes the multiple system effects of a SuperCAT (RMS 2005).</p> |
| 14-665 | A | 23 | 2 | | | <p>What is the estimated costs of the damage in New Orleans? (Dominique Bachelet, Oregon State University)</p> | <p>Add a sentence that describes the multiple system effects of a SuperCAT (RMS 2005).</p> |
| 14-666 | A | 23 | 2 | | | <p>add the following: The warm and dry winter of 2001-02 led to significant winter recreation losses in the Great Lakes and New England (Changnon and Changnon, 2005—see above).</p> | <p>See response to comment 14-661. Evidence to substantiate this was not found in the reference suggested.</p> |

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| | | | | | | (David Changnon, Northern Illinois University) | |
| 14-667 | A | 23 | 5 | 23 | 33 | We unfortunately have many undocumented or difficult to access information on impacts and adaptation in Industry : Implementation of cooling systems in henhouse after 500 000 chicken died of excessive heat during the warm summer of 2002 (Ouranos, 2004). Industry is not that excited to publicize its vulnerabilities... (Alain Bourque, Ouranos Consortium) | Get references from Ouranos or ignore? Or put with agriculture. |
| 14-668 | A | 23 | 5 | 23 | 33 | Early work on pressure trends and wind trends are pointing towards recent decrease in wind energy potential in northern north america (AMS conference 2005) (Alain Bourque, Ouranos Consortium) | Contradicts Barrow, Maxwell, and Gachon (Wheaton—Comment 14-007). Get these two references and reconcile. Check WGI conclusions. |
| 14-669 | A | 23 | 5 | 23 | 33 | S 14.3.8 only energy supply is going to be approached as industry? S 14.5.8 considers transportation. (Encinas Carla , IPCC WG2 TSU) | Pull in material on current sensitivity on energy supply (oil and gas), construction and transportation from 14.5.8 |
| 14-670 | A | 23 | 5 | | | This sub-section does not match the scope, content, and length of the other 14.3 subsections. It focussed on power outages. Are there other examples in industry or energy supply that are vulnerable? What about transportation? Also adaptation and adaptive capacity were not addressed in this sub-section. (Jaime Dawson, The University of Western Ontario) | Pull in material on current sensitivity on energy supply (oil and gas), construction and transportation from 14.5.8 |
| 14-671 | A | 23 | 5 | 23 | | Section 14.3.8 seems insufficient. For example, you don't mention what happened to the oil refineries and platforms out in the Gulf of Mexico during those hurricanes in 2004 and 2005 - well documented damages that could be cited from the industry's own sources. you don't mention costs to oil pipeline maintenance as permafrost creates challenges and damages. And so on... the "energy system" is larger than "power supply". (Susanne Moser, National Center for Atmospheric Research) | Pull in material on current sensitivity on energy supply (oil and gas), construction and transportation from 14.5.8 |
| 14-672 | A | 23 | 5 | | | Section 14.3.8: The energy sector is also sensitive to the impact of variability of water supplies on the generation of power, but perhaps there is no literature on this topic. (Dave Sauchyn, University of Regina) | Refer to water section and Columbia River box? |
| 14-673 | A | 23 | 12 | 23 | 33 | There was no treatment of risks to hydropower supply in summer in the West and its likely consequences. I therefore assume that this issue will be treated in Section 14.4. (Miles Edward, School of Marine Affairs) | Refer to water section and Columbia River box? |
| 14-674 | A | 23 | 17 | | 33 | Since the 2003 summer outage was not weather related, why is it being given so much attention? (Thomas Moore, Stanford University) | Pull in material on current sensitivity on energy supply (oil and gas), construction and transportation from 14.5.8 |
| 14-675 | A | 23 | 20 | | | of rather than to (Geoffrey Wall, University of Waterloo) | Reword |
| 14-676 | A | 23 | 33 | 0 | | Add a sentence on impacts on hydropower from Box 1 and Great Lakes (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | Refer to water section and Columbia River box? |
| 14-677 | A | 23 | 33 | | | ENSO and decadal climate variability are reflected in shifts in fishery populations | Add material on this from U of Washington , |

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| | | | | | | along the North American west coast. (Franklin Schwing, NOAA Fisheries Service) | but check oceans chapter first. |
| 14-678 | A | 23 | 36 | | | Section 14.4 should precede sections 14.3 and 14.5 which should be combined. Distinguishing or keeping separate "Current sensitivity/vulnerability" from "key future impacts and vulnerabilities" does not serve a purpose. It creates a false separateness. The same subsection headings are used and hence the only distinction between the two sections is a temporal division of processes which are ongoing and dynamic. Furthermore, by combining the two sections considerable space could be saved, something you asked us to look out for during our review. (Robin Sydneysmith, University of British Columbia) | Structure required by TSU |
| 14-679 | A | 23 | 36 | | | Section 14.4 should precede sections 14.3 and 14.5 which should be combined. (Robin Sydneysmith, University of British Columbia) | Structure required by TSU |
| 14-680 | A | 23 | 36 | 25 | 50 | Section 14.4. Assumptions about future trends. The first part of this section, 14.4.1, is useful. The remainder of the section, however, is of limited use. Largely, these subsections fail to relate the material to climate change impacts and adaptation, except mitigation. I recommend scaling back this section substantially or eliminating it. (Brent Yarnal, The Pennsylvania State University) | Substantially reduced |
| 14-681 | A | 23 | 40 | | | Why not reference some modelled changes in extreme events? e.g. Kharin and Zwiers 2005. J. of Climate 18:1156-75. Gregory, et al., 1997 (drought). J. of Climate 1014:662-686. Knutson, T., GFDL: Hurricane intensities. An many more! (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | Revisit extreme events |
| 14-682 | A | 23 | 40 | 24 | 32 | There is no discussion of drought frequency/intensity. This absence seems odd to me. (Miles Edward, School of Marine Affairs) | Need to add drought |
| 14-683 | A | 23 | 40 | 23 | 40 | It would be useful to show precipitation predictions in graphic form. (Hank Margolis, Université Laval) | Lack of consensus makes this difficult |
| 14-684 | A | 23 | 40 | | | Page 23 line 40 Which climate models? The IPCC results include many more models and many more results than these. The archive contains a significantly wider range. At least one US model, and more than one is available, should be included to balance the use of the Canadian and British models. GFDL and NCAR have both submitted results and published reports. (David Schimel, NCAR) | Summary is from pcmdi database |
| 14-685 | A | 23 | 44 | | | Replace "2010" with "2020s". (Dave Sauchyn, University of Regina) | ok |
| 14-686 | A | 24 | 0 | | | Adaptation to climate change will depend greatly on the social and economic systems that are affected. Hence, it is important to take a careful look at these systems to understand how they function especially under stress. Unfortunately, this section is not helpful. The section is remarkably brief and does not include a single reference to the vast literature on the social and economic context of Canada or the USA. For Canada a good place to start is Hessing, Melody. Howlett, Michael | No room for expanded treatment of social context, though it is a good idea. |

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| | | | | | | and Summerville, Tracy, Canadian Natural Resource and Environmental Policy, Chapter 2 and bibliography, Second edition, UBC Press 2005. I recommend that the social and economic context be given a much more complete and research-based treatment. (Peter Victor, York University) | |
| 14-687 | A | 24 | 1 | 24 | 3 | Very vague sentence. Can the scenario be named? (Dominique Bachelet, Oregon State University) | Draft does name the scenario. |
| 14-688 | A | 24 | 1 | 24 | 33 | I recommend that some effort be made to link past experience with climate variability to potential estimates of sensitivity of climate change in specific regions and locations. (Robert Harriss, NCAR/ESIG) | Good suggestion. |
| 14-689 | A | 24 | 12 | 24 | 22 | For a lot of readers, it would be good to briefly define ENSO, PDO, AO, NAO, and QBO. (Hank Margolis, Université Laval) | Ok. |
| 14-690 | A | 24 | 12 | | 22 | Northeast of NA is also affected - in terms of extratropical storm frequency and paths - by the NAO. (Susanne Moser, National Center for Atmospheric Research) | Ok, add to SOD |
| 14-691 | A | 24 | 24 | 24 | 25 | The Timmerman, et al conclusion should be balanced by the conclusions reached by Cobb et al (Cobb, K.M., et al., 2003: El Nino/Southern Oscillation and the tropical Pacific climate of the last millennium. Nature, 424: 271-6.) Cobb, et al found that while ENSO varied considerably in strength over the last 1000 years, these variations were not related to the major changes in global climate (Medieval Warm Period, Little Ice Age) that occurred during that time. The authors conclude that ENSO variations were not driven by external factors, making it questionable whether a change in GHG concentration would, in fact, lead to more "El Nino-like" conditions. (Lenny Bernstein, IPIECA) | Still need to capture this idea. |
| 14-692 | A | 24 | 24 | | 33 | Seems like this section could be beefed up by more recent investigations into ENSO changes under different GW scenarios. Lots has been published on this in Geophysical Research Letters and such journals. (Susanne Moser, National Center for Atmospheric Research) | Ok – also check WG1 |
| 14-693 | A | 24 | 24 | | | Timmerman et al. (Timmerman et al. 1999) remove the second... just Timmerman et al. (1999) will suffice (Liette Vasseur, Laurentian University) | ok |
| 14-694 | A | 24 | 26 | | | add the following: "...Atlantic Hurricanes and but warmer winters over most of the eastern U.S." (David Changnon, Northern Illinois University) | Hurricanes and warmer winters added throughout text. |
| 14-695 | A | 24 | 36 | 25 | 50 | Although not an expert on those specific sections: 14.4.2, 14.4.3 and 14.4.4 (and 14.9 although unrelated to previous 3) are not solid and many economists would disagree with the current text which has little references. SRES scenarios criterias or considerations could help to summarize items like future demographics and type of economies (liking to the page 11/line 4 for example which was commenting on | Extensively revised for SOD |

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| | | | | | | water demand in an economy of growing services) (Alain Bourque, Ouranos Consortium) | |
| 14-696 | A | 24 | 36 | 25 | | It's not entirely clear what the purpose of Section 14.4.2 is, in this short and incomplete form. You may as well drop it, if you're not going to state something a bit more fine-tuned. What do we know about growing socio-economic disparities? What do we know about real wages and the trends in those, affecting individuals' and families' ability to cope with additional stresses? What do we know about bankruptcy trends? What do we know about devolution and what financial pressures that puts on lower levels of government? This is all CRITICAL context for a discussion of adaptive capacity and prospects for what adaptation can be undertaken. You can do way better than that, I hope! (Susanne Moser, National Center for Atmospheric Research) | Extensively revised in the SOD |
| 14-697 | A | 24 | 36 | | | Please do not classify all of north america as having a developed economy, extensive infrastructure, and access to working capital. We do have social and economic disparities in North America. Consider northern indigenous communities, and the ability of those to recover who lived in poverty in New Orleans before the hurricane hit. Are these disparities (which affect adaptive capacity) expected to change in time? You may wish to expand your literature search to look for insight into changing social/economic trends outside of the mainstream . The recently released Arctic Human Development Report may assist for northern Canada. (Aynslie Ogden, Government of Yukon) | Extensively revised in the SOD |
| 14-698 | A | 24 | 36 | 25 | 2 | Expected to see some discussion related to the diversity of economic, social, and political development within North America and its impacts in creating a mosaic of adaptive capacity at the individual, community and local/regional levels. This also could include the role of maladaptive responses (e.g., building and re-building in flood-prone areas) in increasing the vulnerability of communities (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | Addressed in the SOD |
| 14-699 | A | 24 | 38 | 25 | 25 | Very nice & I agree but is this appropriate for this document, where are the references that support all these fine words? (Douglas Fox, Colorado State University) | Mostly eliminated through condensation |
| 14-700 | A | 24 | 38 | | 39 | That first sentence is strange, and strangely uninformative. Can you make this a bit more meaningful. I mean, every nation does that to varying degrees. (Susanne Moser, National Center for Atmospheric Research) | Fixed in SOD |
| 14-701 | A | 24 | 39 | | | The proper spelling is "palette". (Thomas Graedel, Yale University) | Not in my dictionary. |
| 14-702 | A | 24 | 41 | | | add the following: A recent assessment of insured and government paid losses for natural hazards has shown a huge growth in losses partly due more hazardous events and to increasing societal vulnerability (Mills et al., 2005). (David Changnon, Northern Illinois University) | Addressed in SOD |
| 14-703 | A | 24 | 41 | | | Replace "investment" with "responsibility" or "obligation" or at least with something like "vested interested" (Susanne Moser, National Center for Atmospheric Research) | Edited out in SOD |

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| 14-704 | A | 24 | 43 | 24 | 49 | More broad statements that need references to have authority. (Robert Harriss, NCAR/ESIG) | agreed |
| 14-705 | A | 24 | 43 | 24 | 44 | To say that the "Canada and, especially, the U.S. have faced a range of economic and geopolitical challenges..." suggests that they are victims rather than protagonists, which is highly questionable especially in the case of the U.S. (Peter Victor, York University) | Good point |
| 14-706 | A | 25 | 5 | 25 | 25 | There are no references in this section. (Kristie Ebi, Exponent) | Fixed in SOD |
| 14-707 | A | 25 | 5 | 25 | 7 | Section 14.4.3 - suggest changing section heading to something like, "Governance and social change" as there is not much about culture in this brief section. Use of "9/11" seems out of context here (too colloquial perhaps), it would be more consistent to write it out, "since the attacks on the World Trade Centre and the Pentagon in 2001" (Robin Sydneysmith, University of British Columbia) | ok |
| 14-708 | A | 25 | 7 | 25 | 11 | The delta in US and Canadian budgets for impacts and adaptation research should be added (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Good suggestion |
| 14-709 | A | 25 | 7 | | 25 | The discussion of "Government and culture" is weak, fuzzy, and of little value. (Thomas Graedel, Yale University) | Revised and condensed in SOD |
| 14-710 | A | 25 | 7 | 25 | 25 | While I like the notions being put forward in these paragraphs, the description is so general as to be totally diffuse. Please add some substance and references to cases that support the hypotheses being addressed. (Robert Harriss, NCAR/ESIG) | ok |
| 14-711 | A | 25 | 7 | | 11 | And, could you please add how not only budget is consumed by the war on terror, but that there is documented evidence how this shift in focus on national security has diverted moneys from disaster preparedness. All got exposed badly in the case of Katrina. There was a good paper by Ken Mitchell (at Rutgers) a couple years ago that already documented shifts in government and how it impacted hazard management across federal management. It's a critical piece at least for some climate-related hazards! (Susanne Moser, National Center for Atmospheric Research) | Point discussed in SOD. Still need to check Mitchell paper. |
| 14-712 | A | 25 | 7 | | | While those in North America will clearly know what '9/11' refers to, this is an international document and others may not (especially after translation). I suggest a more specific wording ('the terrorist attacks on New York on September 11th'). (Daniel Scott, University of Waterloo) | ok |
| 14-713 | A | 25 | 7 | | | This is another indaequate section which reads like an individual's opinion rather than the results of analysis based on an extensive literature and deep reflection on some complicated issues. There is far more about government and culture that is relevant to climate change than is captured in this section. (Peter Victor, York University) | Revised, condensed, improved, and made better in SOD |
| 14-714 | A | 25 | 11 | | | In trying to convey the lack of flexibility to deal with climate changes, you might | definitely |

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| | | | | | | want to refer to the problems that the government is having with the costs/losses related to the hurricanes strikes which occurred in 2004 and 2005. (David Changnon, Northern Illinois University) | |
| 14-715 | A | 25 | 13 | 25 | 14 | "services" is repeated twice. (Hank Margolis, Université Laval) | Than ks |
| 14-716 | A | 25 | 13 | 25 | 14 | repetition of services (Geoffrey Wall, University of Waterloo) | ok |
| 14-717 | A | 25 | 14 | 25 | 14 | edit. Please remove one of the "services". Repeat (Francesco Nicola Tubiello, Columbia University) | ok |
| 14-718 | A | 25 | 15 | | | well, maybe in the US. But there is a paper coming out by Shui Bin and Bob Harriss that documents that our energy efficiency gain through outsourcing has resulted in increased emissions of China. So, not the whole picture here. It's also not a zero-sum game, but that paper actually documents that because of outsourcing emissions are higher than they would be, if we had continued manufacturing here. (Susanne Moser, National Center for Atmospheric Research) | Still need to check this paper. |
| 14-719 | A | 25 | 16 | | | A reference is needed (Elaine Wheaton, Saskatchewan Research Council) | added |
| 14-720 | A | 25 | 17 | 25 | 18 | The statement regarding 'making it big', is this supported in the literature or a personal observation? (Jaime Dawson, The University of Western Ontario) | Deleted from SOD |
| 14-721 | A | 25 | 17 | 25 | 18 | this statement about social unrest seems a bit farfetched...reference? (Francesco Nicola Tubiello, Columbia University) | Referenced in 14.4.9 |
| 14-722 | A | 25 | 18 | | | making it big ... in brackets or another phrase that my translate clearer (Daniel Scott, University of Waterloo) | Deleted in SOD |
| 14-723 | A | 25 | 18 | 25 | 18 | Conjecture, ought to be struck or at least substantiated in some way (Robin Sydneysmith, University of British Columbia) | Deleted from SOD |
| 14-724 | A | 25 | 20 | 25 | 25 | There should be some distinction drawn between Canada's heavily resource based economy and the US situation. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | agreed |
| 14-725 | A | 25 | 20 | 25 | 25 | The point the author makes in this short paragraph is a very important one. I think the last sentence can be exxtended to add: "The role of government in making economic policy is eroding and non-state actors are ascendant. Economic policies designed by a single state will likely exhibit increasingly indeterminate effect. [This is a logical extrapolation of the last sentence in the paragraph]. (Miles Edward, School of Marine Affairs) | Suggested sentence not added, but we tried to capture the idea in the SOD. |
| 14-726 | A | 25 | 20 | | 25 | What is the relevance of this paragraph? (Thomas Moore, Stanford University) | Context |
| 14-727 | A | 25 | 20 | | 21 | This undifferentiated sentence is just laughable. While we PREACH these things, the US economy in particular is HEAVILY influenced by governmental subsidies, protectionism, and other price distortions that have nothing to do with free market. Let's be a bit less ideological, and a bit more factual, please! | Anything to provide a little humor. |

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| | | | | | | (Susanne Moser, National Center for Atmospheric Research) | |
| 14-728 | A | 25 | 20 | 25 | 21 | Some attention to the differences between Canada and the US would be helpful in understanding the different adaptation mechanisms and process. For example, the public sector is more prominent in Canada than in the US. Rather than group the two countries together under a statement that "the economies ...are strongly based on free market mechanism and the philosophy of private ownership", it is more accurate to describe the Canadian economy as a mixed economy with extensive public ownership (of natural resources for example.) (Peter Victor, York University) | Good suggestion. Not addressed her, but attempts to do this throughout. |
| 14-729 | A | 25 | 28 | 25 | 50 | Suggest that this section would update the reader on advances related to adaptive technologies and strategies (e.g., irrigation, health monitoring and and communications, enhanced climate monitoring and reporting, and building technologies and strategies within permafrost regions). Beginning by discussing mitigation technologies misses an opportunity. (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | Whole section dropped. |
| 14-730 | A | 25 | 30 | 25 | 50 | seem pretty superficial. Some techs make more sense for N America than others-- IGCC, regional renewables, new cleaner supply technologies. Incorporate some of Jae Edmonds' work into this section. Talking about major breakthroughs in cellulosic biomass, wind, geological carbon sequestration, fuel cells, and intent on moving to hydrogen make sense. A whole paragraph on the speculative role of GMOS seems unwarranted if you can only have 2 paragraphs on all of tech potential in N. America.. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Whole section dropped. |
| 14-731 | A | 25 | 32 | 25 | 32 | I am not sure what is meant by "massively scaling existing technologies". Can you clarify? (Hank Margolis, Université Laval) | Whole section dropped. |
| 14-732 | A | 25 | 38 | | | Follow with "Energy conservation measures will be essential and technologies for non-fossil energy production and use must receive high priority." (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | Whole section dropped. |
| 14-733 | A | 25 | 38 | | | and no doubt will require both scaling up and new technologies (Douglas Fox, Colorado State University) | Whole section dropped. |
| 14-734 | A | 25 | 40 | | 50 | again, where does this all come from, where are the references that support this rather extreme position...as an engineer, I rather thing scaling the concepts & technologise we currently have hold a lot more potential than GMO's do, but who is to say? (Douglas Fox, Colorado State University) | Whole section dropped. |
| 14-735 | A | 25 | 40 | 25 | 50 | This section on technology is useless. There is an enormous literature on subjects like the future of agriculture and energy in North America. Please reference some of the many recent books and review articles on this subject. I assume these topics are being addressed in detail by WGIII. | Whole section dropped. |

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| | | | | | | (Robert Harriss, NCAR/ESIG) | |
| 14-736 | A | 26 | 1 | | | Balance: of the 62 pages, 20 are devoted to Section 14.5 on Impacts. The recommendation is that Impacts should occupy about half the chapter text. Therefore the authors should concentrate their efforts to shorten the text in the other sections (Jean Palutikof, Hadley Centre) | 3 Done to some extent. Ch14 authors feel that WG2 report will be more useful with slightly less emphasis on impacts. |
| 14-737 | A | 26 | 1 | 26 | 6 | General comment valid for this entire section. Since this section is supposed to discuss primarily impacts and vulnerabilites from future climate change (currently observed changes go in the previous section for the most part), it needs to rely, as it does, on simulation studies. It is then very important that the reader understands that results from single assessments or from a single model are investigations on potential consequences, not facts. To this end, verbs should be used more precisely. For instance, a model simulation does not really SHOW anything; FIND anything, etc., in other words, verbs typically used for scientific facts should not be employed here. Rather, model simulations of climate change SUGGEST, INDICATE, COMPUTE, PROJECT, etc. There are several cases in this section as well as in some of the boxes (4) that could be edited accordingly. (Francesco Nicola Tubiello, Columbia University) | 3 Addressed in SOD |
| 14-738 | A | 26 | 1 | 26 | 6 | General comment III. I certainly share the views of the authors that climate change needs to be viewed within the larger context of socio-economic development. Yet--and perhaps it is only a matter of writing style--the reader of the "vulnerabilities from climate change" chapter is often left with the impression that climate change is not as important within the larger context. Yet that is not correct: socio-economic development provides merely a baseline against which we assess climate change impacts. The real question is: do they matter? if so where? and by when? I suggest the authors review the language of this section for style, making sure their important point does not generate misunderstandings and ambiguities due to lack of sufficient clarity. (Francesco Nicola Tubiello, Columbia University) | 3 Addressed throughout new 14.4 |
| 14-739 | A | 26 | 1 | 26 | 6 | General comment II. I appreciate the structure of this section, in that future projected climate change impacts are given proper context both in terms of current changes and some future socio-economic pressures. Yet sometimes subsections come across as only dealing with current trends in climate change, mainly climate variability, and not future climate change per se. For the most part, this is a style problem, as the material is largely there. Yet i would suggest increased homogeneity among different subsections, so that the reader does not have to adjust attention continuously in order to look for similar information in different parts of the various subsections. In particular, I would expect subsections of this section to be organized similarly, in the following way: first a quick review of current trends --beign careful not to repeat statements of the earlier section on current vulnerabilities, nor to insert too many things that might as well have been put there -- followed by some coicnise statements about general expectations from climate | 3 Addressed in SOD |

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| | | | | | | impacts: time horizons, % changes, including from increased climate extremes, etc.. Only then I would insert discussions of specific technical aspects. The forestry section --though perhaps too short--- offers in my view a good example of how this could be done across all subsections. (Francesco Nicola Tubiello, Columbia University) | |
| 14-740 | A | 26 | 1 | 26 | 6 | General comment II (continued). Only then I would insert discussions of specific technical aspects. The forestry section --though perhaps too short--- offers in my view a good example of how this could be done across all subsections. ALSO, SEE A GENERAL COMMENT AT THE END OF ALL COMMENTS. (Francesco Nicola Tubiello, Columbia University) | Thanks for the advice |
| 14-741 | A | 26 | 2 | 45 | | In this section observations of changes are sometimes mixed in with model projections. Care should be given to make clear which is an observation and which is a projection about the future. (Donald Boesch, University of Maryland Center for Environmental Science) | 3 Addressed in SOD |
| 14-742 | A | 26 | 2 | | | S 14.5 should be: Key future sensitivities, vulnerabilities, impacts and adaptation options (Encinas Carla , IPCC WG2 TSU) | 3 ok |
| 14-743 | A | 26 | 2 | 46 | 25 | S 14.5 on impacts is around 20.5 pages which are about the right length of this section considering that the text should be reduced to around 49 pages. An example to illustrate this section and summarize it as well, are Figures 4.9 and 4.10. F 4.9 is a map of the location of major impacts. F 4.10 is a sectoral burning embers diagram. This concept could be applied at the regional scale. We would include such material in the SPM and TS, but needs the underlying evidence from the chapters. (Encinas Carla , IPCC WG2 TSU) | 3 ok |
| 14-744 | A | 26 | 2 | | | It may be useful to maintain the same format (with sub-headings and introductory statements) as in Section 14.3. This will allow readers to easily refer to both sections. (Jaime Dawson, The University of Western Ontario) | 3 fixed in SOD |
| 14-745 | A | 26 | 2 | | | In general there was a lack of consideration for the three time slices authors were asked to consider in evaluating impacts. (Jaime Dawson, The University of Western Ontario) | 3 more attention in SOD |
| 14-746 | A | 26 | 2 | 30 | 16 | Very little material on the direct and indirect impacts of poor water quality on human health. Need more information on transport of bacteria and other microbes due to poor water quality and the potential impact on human health. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | Water quality and human health will be treated in Health section |
| 14-747 | A | 26 | 2 | 46 | 25 | The end of the title to section 14.5 suggests adaptation options while section 14.6 is titled adaptation. What differentiates the two? Adaptation options are lacking from section 14.5.1 to 14.5.7. Need more in terms of adaptation options. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 3 guidance from TSU – more balance now |
| 14-748 | A | 26 | 2 | 46 | 25 | Reduce number of examples, focus on most pertinent ones and generalize. (Antje Schwalb, Institut für Umweltgeologie) | 3 ok |

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| 14-749 | A | 26 | 2 | | | Section 14.5 -- this section could be integrated on a subsection by subsection basis with section 14.3. As mentioned earlier this would save space and eliminate redundancy. (Robin Sydneysmith, University of British Columbia) | Need to maintain IPCC-determined structure and need to address current conditions in 14.3 and future climate change in 14.5 |
| 14-750 | A | 26 | 7 | 26 | 7 | This is true for almost any I&A issues not only water resources: Climate change is another "driving force" in a myriad of forces. (Alain Bourque, Ouranos Consortium) | will remove statement |
| 14-751 | A | 26 | 17 | | 24 | Another reference to use in this paragraph is Jha et al. (2004), who found an increase of flow in the Upper Mississippi River as a result of greenhouse warming. *Jha, M., Z. Pan, E. S. Takle, and R. Gu, 2004: Impacts of climate change on streamflow in the Upper Mississippi Basin: A regional climate model perspective. J. Geophys. Res., 109, D09105, doi:10.1029/2003JD003686. (Brent Lofgren, NOAA/Great Lakes Environmental Research Laboratory) | Cited in SOD |
| 14-752 | A | 26 | 26 | 26 | 34 | Either here or elsewhere, the 2005 Christiansen et al article on effects of climate change on the Colorado River basin should be cited. (Katharine Jacobs, University of Arizona) | Cited in SOD |
| 14-753 | A | 26 | 32 | 26 | 34 | Over what time period did springtime snowmelt discharge advance? (Jaime Dawson, The University of Western Ontario) | will include time period |
| 14-754 | A | 26 | 32 | | | Sushama et al., 2006 has been only just submitted for publication. (Dave Sauchyn, University of Regina) | will monitor acceptance and publication |
| 14-755 | A | 26 | 33 | | | Include the time period for this advancement of snowmelt discharge timing (Elaine Wheaton, Saskatchewan Research Council) | yes – as above |
| 14-756 | A | 26 | 36 | 26 | 37 | The snow patch work in the southern Yukon is a dramatic illustration of this decrease of snow packs. Ancient hunting sites (some 4000 years old) complete with exquisitely preserved artifacts- many with extensive preserved organic components and large deposits of caribou dung are being exposed. The emergence of these deposits suggest a climate that is warmer than at any period since the deposits were laid down. Contact Greg Hare Yukon Archaeology for publications 867 667 3771 (Ian Church, Yukon Government) | Interesting but as this is about current changes it is not applicable to section on future climate changes May be more appropriate for polar chapter |
| 14-757 | A | 26 | 37 | | | significant reductions in the snowpack ... where specifically (this comes later, but the region could be identified here) (Daniel Scott, University of Waterloo) | add western cordillera or mountains |
| 14-758 | A | 26 | 41 | | | What are the simulations being referred to? (Jaime Dawson, The University of Western Ontario) | make wording more clear |
| 14-759 | A | 26 | 47 | | | After "US" add "and Canada" (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | done |
| 14-760 | A | 26 | 48 | 26 | 48 | Case study x? (Kristie Ebi, Exponent) | will add case study numbers |
| 14-761 | A | 26 | 48 | | | case study meaning box 1? (Douglas Fox, Colorado State University) | same as above |

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| 14-762 | A | 27 | 0 | | | In the discussions related to the Great Lakes two other impacts came to mind. Warmer lakes (that don't get covered by ice) may provide the opportunity for more lake effect snow events and to ship more in the cold season. (David Changnon, Northern Illinois University) | 2 – focusing on impacts and adaptation to low lake levels |
| 14-763 | A | 27 | 2 | | | Excellent succinct section on Great Lakes - Congratulations! Could consider adding: Burnett, E.W. et al., 2003. Increasing Great Lakes lake-effect snowfall during the 20th Century: a regional response to global warming. J. of Climate 16:3535-42. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 will review paper and consider adding; this seems to be a trend paper not applicable to this section |
| 14-764 | A | 27 | 2 | | 5 | This ignores the ambiguous results of Quinn and Lofgren (2000) and Lofgren et al. (2002) already cited. It also ignores the results of Milly et al. (2002) and Wetherald and Manabe (2002), who anticipate increased flow rates in the St. Lawrence River, which implies higher lake levels in the Great Lakes. Since it seems that citation of submitted papers is permissible at this point in the draft process, you might also add Lofgren (2006), which shows greater net basin supply in the Great Lakes with greenhouse warming. On the other hand, Croley (2003) reinforces the dropping lake levels scenario described in the draft. These papers use various methodologies to arrive at their conclusions, each of which has strengths and weaknesses. I disagree with the 'high confidence' assessment of this anticipated result based on the studies cited, all of which used the same method of one-way coupling of GCM output to a regional hydrologic model, the main difference among them being the GCM runs that were used as input. *Croley, T. E., II, 2003: Great Lakes climate change hydrologic impact assessment: IJC Lake Ontario-St. Lawrence River regulation study. NOAA/Great Lakes Environmental Research Laboratory Technical Memo. TM-126, 77 pp. * Lofgren, B. M., 2006: Laurentian Great Lakes future climate scenarios using the Coupled Hydrosphere-Atmosphere Research Model (CHARM). Part II: Hydrologic Response. Int. J. Climatol., submitted. * Milly, P. C. D., R. T. Wetherald, K. A. Dunne, and T. L. Delworth, 2002: Increasing risk of great floods in a changing climate. Nature, 415, 514-517. * Wetherald, R. T., and S. Manabe, 2002: Simulation of hydrologic changes associated with global warming. J. Geophys. Res., 107, D19, doi:10.1029/2001JD001195. (Brent Lofgren, NOAA/Great Lakes Environmental Research Laboratory) | 2 will review suggested papers and consider implications rewrote section noting factors in Wetherald and Kutzbach paper |
| 14-765 | A | 27 | 4 | | | are Crowley 1990 and Hartman 1990 a bit dated for the 4AR or could it be noted that recent work is consistent with that cited in SAR, TAR? (Daniel Scott, University of Waterloo) | 2 removed |
| 14-766 | A | 27 | 7 | 27 | 28 | Inconsistent and somewhat confusing use of both currencies (Robin Sydneysmith, University of British Columbia) | 1 removed to energy section only Canadian currency |
| 14-767 | A | 27 | 10 | 27 | 12 | A report on the "evaluation of adaptation strategies in the context of Maritime transportation in the St-Lawrence Seaway" will be published in early 2006. (Alain Bourque, Ouranos Consortium) | 2 will obtain if available and review |

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| 14-768 | A | 27 | 14 | 27 | 15 | Delete (Changnon, 1989 barges and diversion), and add (Changnon et al., 1989) (David Changnon, Northern Illinois University) | 1 Chagnon 1993 used as not in other IPCC reports |
| 14-769 | A | 27 | 14 | 27 | 15 | check if brackets in correct place (Geoffrey Wall, University of Waterloo) | 1 endnote problem |
| 14-770 | A | 27 | 17 | 27 | 17 | "in Chicago" is better than "at Chicago". (Hank Margolis, Université Laval) | 1 no |
| 14-771 | A | 28 | 3 | 28 | 19 | Uncertainty in models relative to the precipitation variable is amplified by uncertainty in groundwater analysis. The absence of systematic monitoring produces spotty data, so that the problem is larger than aquifer recharge. (Miles Edward, School of Marine Affairs) | 2 noted |
| 14-772 | A | 28 | 3 | | | Section 14.5.1 Groundwater -- first paragraph could possibly be a table summarizing and simplifying groundwater effects. Section is also quite technical, language could be simplified (Robin Sydneysmith, University of British Columbia) | 2 will consider |
| 14-773 | A | 28 | 4 | 28 | 49 | There should be more acknowledgement of the connections between surface water and groundwater, eg that groundwater supports the baseflows of rivers, that reductions in baseflow affect riparian habitat and important ecosystems, that conjunctive management of surface water and groundwater is an important adaptation mechanism. Saltwater intrusion has been documented in many places in the US, not just in Kouchibouguac National Park. It is a key management issue for the Orange County Water District, for example, and many locations in Florida and on the east coast. Not sure how much is documented to be related to sea level rise, a lot is related to increased gw pumpage, but there are clearly combined effects. Line 16 about groundwater flows implies that as a general case, there are seasonal changes in flows, whereas in most basins, changes in response to precipitation are more gradual and are measured in terms of depth to water, not groundwater flow rates. Note that individual high surface flow events have been documented to have long-term implications for water levels in aquifers in Southern Arizona (San Pedro and Santa Cruz rivers) (see Don Poole, USGS, Tucson) (Katharine Jacobs, University of Arizona) | 2 may remove section to shorten Will check and modify if necessary – this is referring to a region with winter freezing and snowmelt |
| 14-774 | A | 28 | 7 | | | The shallow unconfined aquifers have more rapid responses. But how important are they in terms of the entire water supply or the entire groundwater supply? If they are an important contributor, than the climate effects are even more important. (Elaine Wheaton, Saskatchewan Research Council) | 2 removed |
| 14-775 | A | 28 | 13 | | | I know I should not note the grammar problems but it's missing "either" after 2080 and the "and" should be an "or" after CGCM1. (Dominique Bachelet, Oregon State University) | 1 changed |
| 14-776 | A | 28 | 13 | | | were any socio-economic changes incorporated (i.e., changes in demand from population growth)? (Daniel Scott, University of Waterloo) | 2 will remove section |
| 14-777 | A | 28 | 13 | 28 | 13 | EDIT. please use numbers instead of letters. | 1 |

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| | | | | | | (Francesco Nicola Tubiello, Columbia University) | done |
| 14-778 | A | 28 | 19 | | | add the following: Hydrologic modeling of effects of a projected summer precipitation increases of 10 and 25 percent on an Illinois basin revealed that increases in shallow groundwater levels would be 25 to 35 percent (Changnon, 2003b). (David Changnon, Northern Illinois University) | 2 will review paper and consider inclusion |
| 14-779 | A | 28 | 21 | 28 | 22 | Saltwater inundation in Kouchibouguac National Park will have an impact on the ecosystem and surrounding communities. It would be interesting to have an example of a city with a large population where saltwater inundation will have a major impact on available water resources. (Jaime Dawson, The University of Western Ontario) | 2 removing section for space considerations |
| 14-780 | A | 28 | 21 | | 22 | "likely impact" implies to me little hard evidence -increased demands by people maybe more of a problem? Too local an example maybe omit The next section covers the impact over a much wider area and it appears more definitive (Robert Taylor, Bedford Institute of Oceanography) | 2 removing section for space considerations |
| 14-781 | A | 28 | 26 | 28 | 28 | "Numerous studies assess..." - what studies? There were no sources provided? (Jaime Dawson, The University of Western Ontario) | 1 removing section for space considerations |
| 14-782 | A | 28 | 26 | | 27 | One or more citaions to "willingness to pay for water quality" should be given; they might stimulate political decision-making. (Thomas Graedel, Yale University) | 2 omitting this section |
| 14-783 | A | 28 | 31 | | | If you are going to use this system of declaring the level of confidence, it should be used consistently throughout the paper. I only see it used here and one or two other places. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 3 – including confidence intervals |
| 14-784 | A | 28 | 32 | 28 | 32 | Where is the Edwards (Balcones) Fault Zone? (Hank Margolis, Université Laval) | 1 include location |
| 14-785 | A | 28 | 32 | 28 | 33 | Where in the Southwest ins the Edwards aquifer loacetd? (Antje Schwalb, Institut für Umweltgeologie) | 1 include location |
| 14-786 | A | 28 | 37 | | | Is there a published reference of the 6 GCM runs? Loaiciga? Anything else that would not be hard-to-get grey literature? (Dominique Bachelet, Oregon State University) | 2 endnot prolem; correct reference used |
| 14-787 | A | 28 | 45 | | | what is the time-frame here? (Daniel Scott, University of Waterloo) | 1 will add |
| 14-788 | A | 29 | 1 | | | consider adding to this section a brief mention of the anticpated 'flush' of various pollutants that have accumulated in now retreating glaciers in the west (Daniel Scott, University of Waterloo) | 2 if included should be in 14.2 |
| 14-789 | A | 29 | 6 | 29 | 17 | Can't this information be quantified? Other paragraphs like this one contain quantitative information. (Rae Zimmerman, Robert F. Wagner Graduate School of Public Service) | 2 will add range of temperature increase for 1 6 to 9 |
| 14-790 | A | 29 | 10 | | | what is the time-frame here? (Daniel Scott, University of Waterloo) | 2 added time frame |

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|--------|---|----|----|----|----|---|---|
| 14-791 | A | 29 | 20 | | | latitudes (Geoffrey Wall, University of Waterloo) | 1 done |
| 14-792 | A | 29 | 22 | 29 | 22 | Rewrite to say "the inner portion of the Bay of Quinte in the Great Lakes Basin" (Hank Margolis, Université Laval) | 1 done |
| 14-793 | A | 29 | 22 | | | the Bay (Geoffrey Wall, University of Waterloo) | 1 done |
| 14-794 | A | 29 | 37 | 29 | 39 | Since non-point source loadings are associated with wet-weather events, how can these loadings increase under runoff decrease. The authors need to further explain the results of the studies referred to here (Scheffer et al., 2001 (in Nature) and/or Mortsch et al., 2003 (in grey literature)). (Alain N. Rousseau, Institut national de la recherche scientifique) | 2 will modify section |
| 14-795 | A | 29 | 38 | 29 | 39 | Are the percentage changes in the right order to correspond with the years? (Ian Church, Yukon Government) | 2 will modify section |
| 14-796 | A | 29 | 39 | | | missing co2 scenario (Dominique Bachelet, Oregon State University) | 2 will modify section |
| 14-797 | A | 29 | 39 | | | Missing scenario (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 will modify section |
| 14-798 | A | 29 | 39 | 29 | 39 | _____ scenario? (Kristie Ebi, Exponent) | 2 fixed in SOD |
| 14-799 | A | 29 | 39 | | | scenario? (Douglas Fox, Colorado State University) | 2 fixed in SOD |
| 14-800 | A | 29 | 47 | 29 | 47 | Isn't this relationship a function of intensity that is not linear? (Katharine Jacobs, University of Arizona) | 2 check reference for numbers used |
| 14-801 | A | 29 | 47 | 29 | 47 | Delete "one" (Hank Margolis, Université Laval) | 1 done |
| 14-802 | A | 29 | 47 | | | 0.01 (Geoffrey Wall, University of Waterloo) | 1 no |
| 14-803 | A | 29 | 50 | | | lengthen increase (Geoffrey Wall, University of Waterloo) | 1 ok |
| 14-804 | A | 30 | 1 | | | result (Geoffrey Wall, University of Waterloo) | 1 ok |
| 14-805 | A | 30 | 11 | 30 | 16 | This does not deal with the impacts of de-icing chemicals and abrasives applied to road surfaces. These get washed off, blown off or transported by vehicles to waters, or terrestrial ecosystems at near freezing or below freezing temperatures. Often these materials are released in a pulse during winter warm periods or during spring freshet. During freshet they dilution factor minimizes some effects but in short warming periods in winter the effects may not be diluted. (Ian Church, Yukon Government) | 2 focusing on urban and agricultural effects will remove section for space limits |
| 14-806 | A | 30 | 16 | | | A summary sentence is lacking for this section. | 2 will add sentence |

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| | | | | | | (Elaine Wheaton, Saskatchewan Research Council) | |
| 14-807 | A | 30 | 19 | 31 | | Section 14.5.2: Large parts of this section (p. 30, lines 21-34; p. 31, lines 9-19) discuss the sensitivity of ecosystem and not future vulnerability and as such it belongs in Section 14.3.2. (Dave Sauchyn, University of Regina) | 3 fixed in SOD |
| 14-808 | A | 30 | 21 | 30 | 39 | Excellent summary (Miles Edward, School of Marine Affairs) | Thanks |
| 14-809 | A | 30 | 21 | | 39 | seems to be missing the oft repeated theme that climate stress sits on top of land use, population, pollution and an assorted complex of potential changes. (Douglas Fox, Colorado State University) | 2 fixed in SOD |
| 14-810 | A | 30 | 25 | | 26 | Longer growing seasons are increasing productivity — a good thing. (Thomas Moore, Stanford University) | 2 we state in 14s increased recently |
| 14-811 | A | 30 | 28 | 30 | 31 | A version of this statement should appear in the executive summary. (Paul J. Hanson, Oak Ridge National Laboratory) | 2 This is a major theme of section 14.8. |
| 14-812 | A | 30 | 31 | 30 | 31 | I suggest that you define NDVI briefly. (Hank Margolis, Université Laval) | 1 SR - noted |
| 14-813 | A | 30 | 31 | | | define NDVI, NEP, NPP in this section (Daniel Scott, University of Waterloo) | 1 SR - ok |
| 14-814 | A | 30 | 31 | | 49 | too much use of short forms which are undefined NDVI, NEP, NPP sections on North not sure if better in Polar chapter or this one (Robert Taylor, Bedford Institute of Oceanography) | 1 ok |
| 14-815 | A | 30 | 31 | | | NVDI in full (Geoffrey Wall, University of Waterloo) | 1 SR - removed |
| 14-816 | A | 30 | 34 | | | Fung et al. 2005 is published and actually referenced in full in the list of references. Fung uses 6 ecosystem models to simulate possible outcomes of carbon sources and sinks across the globe. Uncertainty is associated with these models and processes explaining the simulation results vary between the models. Her results for North America could be summarized here rather than global outcomes. (Dominique Bachelet, Oregon State University) | 2 fixed in SOD |
| 14-817 | A | 30 | 38 | 30 | 38 | NEP should be defined. (Kristie Ebi, Exponent) | 1 dropped NEP |
| 14-818 | A | 30 | 38 | | | NEP in full (Geoffrey Wall, University of Waterloo) | 1 dropped NEP |
| 14-819 | A | 30 | 39 | 30 | 39 | At the end of this paragraph add: However, increases in disturbance will decrease net biome productivity, since disturbance frequency (especially wildfire) dictates ecosystem carbon sequestration (Kurz and Apps 1999). Reference: Kurz WA, Apps MJ(1999) A 70-year retrospective analysis of carbon fluxes in the Canadian forest sector. Ecological Applications 9 526-547. (Brian Amiro, University of Manitoba) | 2 SR – agree will add |
| 14-820 | A | 30 | 41 | 31 | 28 | There is a growing literature on the implications of ecosystem and species responses to climate change for protected areas management. This literature should be referred to briefly somewhere, whether at the end of this section or elsewhere. A | 2 SR – no room |

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| | | | | | | <p>few North American specific examples include: Scott, D. and Lemieux, C. 2005. Climate change and protected areas planning in Canada. The Forestry Chronicle, Sept/Oct. 696-703. D. Scott, J. Malcolm, C. Lemieux. 2002. Climate change and biome representation in Canada's national parks system: implications for system planning and park mandates. Global Ecology and Biogeography, 11, 475-484. L. Hannah, G. Midgley, T. Lovejoy, W. Bond, M. Bush, J. Lovett, D. Scott, F.I. Woodward. 2002. Conservation of global biodiversity in a changing climate. Conservation Biology, 16, 264-268.</p> <p>(Daniel Scott, University of Waterloo)</p> | |
| 14-821 | A | 30 | 41 | | | <p>an updated map of projected biogeography change from DGVMs (or a decadal, multi-time slice series) would be a more climate change relevant figure to include than 14.5</p> <p>(Daniel Scott, University of Waterloo)</p> | 3 SR – I agree |
| 14-822 | A | 30 | 42 | 31 | 6 | <p>don't think the influence of disturbance changes is captured since this a major point of the Bachelete work, it deserves a sentence or two. Also I think a figure here would be helpful for readers to see how different the projected land cover will be under the scenarios. Fire should explicitly be mentioned.</p> <p>(Douglas Fox, Colorado State University)</p> | 2 SR- agree, will add |
| 14-823 | A | 30 | 44 | 30 | 44 | <p>"increased" is better than "improved".</p> <p>(Hank Margolis, Université Laval)</p> | 1 edited out |
| 14-824 | A | 30 | 44 | | | <p>NPP in full</p> <p>(Geoffrey Wall, University of Waterloo)</p> | 1 edited out |
| 14-825 | A | 30 | 46 | 30 | 47 | <p>"Shrubs have invaded..." - does this statement rather belong to chapter 14.3.2?</p> <p>(Antje Schwalb, Institut für Umweltgeologie)</p> | 1 yes |
| 14-826 | A | 30 | 50 | 30 | 50 | <p>Should read "spruce has an elevational rise of 2-10"</p> <p>(Brian Amiro, University of Manitoba)</p> | 1 edited out |
| 14-827 | A | 30 | 50 | 30 | 50 | <p>After "(Gamache and Payette, 2005)", add "Add "The timing of leaf emergence in a boreal aspen stand varied by up to four weeks between 1994 and 2003 and this had a large effect on annual carbon sequestration (Barr et al., 2004). Furthermore, the timing of leaf senescence was nearly constant while the mid growing season leaf area index varied from 3.7 to 5.2."</p> <p>(Hank Margolis, Université Laval)</p> | 2 SR – too much detail |
| 14-828 | A | 31 | 0 | 32 | | <p>more detailed information known but little new info on vulnerabilities in the future since TAR; nothing about problems of sedimentation , increased erosion causes sedimentation somewhere ; although noted elsewhere what about increased release of contaminants with increased erosion on pg 38 it is covered for cities; or eutrophication and infill of coastal lagoons and ponds and algae problems; maybe a sentence that says no new progress on analysis of future vulnerabilities ??therefore a gap?</p> <p>(Robert Taylor, Bedford Institute of Oceanography)</p> | 3 fixed in SOD |
| 14-829 | A | 31 | 2 | 31 | 6 | <p>What is the basis for Bachelet et al.'s sweeping projections about future carbon</p> | 2 SR – DGVM runs |

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|--------|---|----|----|----|----|---|--|
| | | | | | | sources and sinks? (Hank Margolis, Université Laval) | |
| 14-830 | A | 31 | 6 | | | These results are across 7 climate change scenarios not including the most recent for this assessment. (Dominique Bachelet, Oregon State University) | 2 ok, fixed |
| 14-831 | A | 31 | 8 | 31 | 9 | Johnson et al. 2005. BioScience 55:863-872. Vulnerability of northern prairie wetlands to climate change. This article outlines the results of wetland model simulations to changes in temperature and precipitation that suggest productive habitat for breeding waterfowl will shift geographically under a drier climate from the center of the PPR to the wetter eastern and northern fringes - areas that are currently less productive or where most wetlands have been drained. (Glenn Guntenspergen, U.S. Geological Survey) | 2 SR – good paper, will add |
| 14-832 | A | 31 | 8 | 31 | 28 | This whole section on population and community dynamics is missing fire and insects. It seems like a big hole, although I recognize that these can be covered elsewhere. (Hank Margolis, Université Laval) | 2 SR – see box |
| 14-833 | A | 31 | 8 | 31 | 28 | All US examples (Robin Sydneysmith, University of British Columbia) | 2 SR – could still add more examples |
| 14-834 | A | 31 | 8 | | | This section has a useful concluding sentence, but organization needs improvement. (Elaine Wheaton, Saskatchewan Research Council) | 2 reorganized |
| 14-835 | A | 31 | 9 | 31 | 13 | natural disturbances are essential events to maintain many ecosystem types, communities, species populations in many systems such as the boreal forest or mediteranean systems where fire is a natural disturbance. For instance Jack Pine Pinus banksiana requires that fire occurs on a semi-regular basis to be maintained in the system (Gauthier et al. 1996 J.Ecol). (Sylvie Gauthier, Laurentian Forestry Center, Canadian Forestry Service) | 2 This is a tricky issue. Treatment can still be improved. |
| 14-836 | A | 31 | 13 | 31 | 19 | These refer to current observations and not future trends.They should be moved accordingly. (Dominique Bachelet, Oregon State University) | 2 yes |
| 14-837 | A | 31 | 15 | 31 | 16 | Should define C4 and C3 grasses. (Kristie Ebi, Exponent) | 1 dropped |
| 14-838 | A | 31 | 17 | | | stop required (Geoffrey Wall, University of Waterloo) | 1 edited out |
| 14-839 | A | 31 | 23 | 31 | 26 | The Thomas, et al study was for species with limited in ability to migrate. Its applicability to species that can migrate is highly questionable. Also, the term "committed to extinction" while highly emotive, implies a certainty that cannot be demonstrated. Despite the projection of massive extinction due to climate change, according to Thomas, et al., the 0.6 C global tempertaure rise of the 20th century could be documented to have contributed to the extinction of only one species. If species were as vulnerable to climate change as implied by the Thomas et al study, one would assume that the climate change of the 20th century would have caused many more extinctions and that some of these would have been documented by | 2 revised discussion of this paper. |

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| | | | | | | biologists. Saying that it may take centuries for these species to become extinct makes the proposition unverifiable. There is ample evidence, some of which is cited earlier in the paragraph, that climate change will affect biodiversity. However, there is not evidence to support sweeping generalities such as the Thomas, et al claim. (Lenny Bernstein, IPIECA) | |
| 14-840 | A | 31 | 26 | 31 | 28 | It is stated that "Clearly, managed systems can adapt to news climatic conditions more rapidly". While this may be true, the evidence for this statement has not been clealy presented in this sub-section. (Jaime Dawson, The University of Western Ontario) | 2 SR- text removed |
| 14-841 | A | 31 | 26 | 31 | 28 | The previous paragraph does not clearly provide the information to support this statement. (Kristie Ebi, Exponent) | 2 SR – text removed |
| 14-842 | A | 31 | 26 | 31 | 28 | not so clear here that the selected populations which may be adapted to the new climatic conditions will also be adapted to the change of disturbance regimes (for instance) that may occur concurrently (Sylvie Gauthier, Laurentian Forestry Center, Canadian Forestry Service) | 2 SR – text removed |
| 14-843 | A | 31 | 26 | 31 | 28 | I would have thought that the capacity of managed ecosystems to adapt to new climatic conditions depends on the characteristics of the species under management and the type of management. Hence the statement in the text is too broad and should be qualified. (Peter Victor, York University) | 2 SR – text removed |
| 14-844 | A | 31 | 31 | | | Section 14.5.3. Phil Hill, Pacific Geoscience Centre, Natural Resources Canada leads a project on sea level rise in the Delta are of Greater Vancouver. Good potential source, would allow inclusion of Vancouver Lower Mainland and Lower Fraser River - key coastal region and relatively large population centre in Canada vulnerable to coastal changes. (Robin Sydneysmith, University of British Columbia) | 2 – No new publications yet, but reference to vulnerability in this area was added in 14.3.3. |
| 14-845 | A | 31 | 31 | 32 | 50 | Section 14.5.3. This section could use a brief discussion of differential socioeconomic vulnerability to coastal zone hazards exacerbated by sea-level rise and possibly increases in storm frequency and intensity. As Hurricane Katrina demonstrated in New Orleans, vulnerability in coastal zones is greatly determined by socioeconomic status. As sea level rises, those areas inundated by storm surge and storm-generated floods will increase, with the areas containing large vulnerable populations (e.g., urban cores) suffering disproportionately. Work has been conducted on this problem by Wu et al. (2002) and Rygel et al. (in press a, and in press b). (Brent Yarnal, The Pennsylvania State University) | 3 – Sentence added. |
| 14-846 | A | 31 | 33 | 32 | 50 | section on coastal regions should cross-refernce polar chapter (15) to ensure impacts on polar regions of North America are adequately covered and to avoid overlap. (Steven Solomon, Geological Survey of Canada) | 2 – More general issue for chapter as a whole. Comment added in 14.0 (Introduction). |

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| 14-847 | A | 31 | 41 | | | the word "defined" should read "refined". (Thomas Graedel, Yale University) | 1 – Agreed. |
| 14-848 | A | 31 | 50 | | | after "storm", add "and wave" climatology (Susanne Moser, National Center for Atmospheric Research) | 1 – Agreed. |
| 14-849 | A | 32 | 1 | 32 | 4 | Add the following citations: Wu, S.-Y., B. Yarnal, and A. Fisher (2002). Vulnerability of Coastal Communities to Sea-Level Rise: A Case Study of Cape May County, New Jersey. <i>Climate Research</i> 22, 255-270; and Rygel, L., B. Yarnal, and A. Fisher (in press, b). Vulnerability of Hampton Roads, Virginia to Storm-Surge Flooding and Sea-Level Rise. <i>Natural Hazards</i> . (Brent Yarnal, The Pennsylvania State University) | 2 – References added in earlier paragraph. |
| 14-850 | A | 32 | 11 | 32 | 13 | Larsen et al. 2004. The Blackwater NWR Inundation model. Rising sea level on a low lying coast: Land use planning for wetlands. USGS Open File Report 04-1302. This is a good example of the LIDAR based DEM approach for a Mid-Atlantic coastal wetland and potential wetland loss modeled using the current IPCC sea-level rise rates. (Glenn Guntenspergen, U.S. Geological Survey) | 2 – LiDAR references added earlier. |
| 14-851 | A | 32 | 11 | 32 | 15 | The impacts of rising sea levels on coastal marshes seems to be given relatively slight importance and the paragraph gives little support to the high confidence assertion. The Chapter 6 sections on wetlands provide much of the information required to do a better job on this section. (Philip Hill, Geological Survey of Canada) | 3 – This paragraph has now been greatly expanded. |
| 14-852 | A | 32 | 13 | | | delete) (Geoffrey Wall, University of Waterloo) | 1 – Deleted. |
| 14-853 | A | 32 | 17 | | 17 | I think the list in parentheses should include what's happening in northern Alaska (Susanne Moser, National Center for Atmospheric Research) | 2 – Yes, and we have referred to northern issues, but as a regional example, this is beyond the geographic scope of Chap 14. |
| 14-854 | A | 32 | 19 | 39 | 27 | The Timmerman, et al conclusion should be balanced by the conclusions reached by Cobb et al (Cobb, K.M., et al., 2003: El Nino/Southern Oscillation and the tropical Pacific climate of the last millennium. <i>Nature</i> , 424: 271-6.) Cobb, et al found that while ENSO varied considerably in strength over the last 1000 years, these variations were not related to the major changes in global climate (Medieval Warm Period, Little Ice Age) that occurred during that time. The authors conclude that ENSO variations were not driven by external factors, making it questionable whether a change in GHG concentration would, in fact, lead to more "El Nino-like" conditions. (Lenny Bernstein, IPIECA) | 2 – We have modified the text, noting Cobb et al. conclusions? |
| 14-855 | A | 32 | 31 | | 33 | consider rewriting in view of the Sept 2005 experiences, to be a fact rather than speculation. (Douglas Fox, Colorado State University) | 2 – No, one event does not make a trend. We have already specified high confidence. |
| 14-856 | A | 32 | 31 | 32 | 33 | right on! (Francesco Nicola Tubiello, Columbia University) | Thanks |
| 14-857 | A | 32 | 33 | | | The documented loss of life in New Orleans last September can illustrate this point. | 2 – Point noted. |

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| | | | | | | (Dominique Bachelet, Oregon State University) | |
| 14-858 | A | 32 | 33 | | | This references to risk in New Orleans needs to be updated to reflect the effects of Katrina. (Donald Boesch, University of Maryland Center for Environmental Science) | 2 – Ditto. |
| 14-859 | A | 32 | 33 | | | could add Houston to that list - had much worse problems than Galveston in the recent experience with Hurricane Rita (Susanne Moser, National Center for Atmospheric Research) | 2 – Agreed. |
| 14-860 | A | 32 | 39 | 32 | 41 | Add Cape May County, New Jersey (Wu et al. 2002) and Hampton Roads, Virginia (Rygel et al. in press, b) (Brent Yarnal, The Pennsylvania State University) | 2 – We are just providing examples. These references have already been included elsewhere. |
| 14-861 | A | 32 | 46 | | 50 | Add, northern Arctic coastlines here, and add the issue of melting permafrost, mentioned already above (Susanne Moser, National Center for Atmospheric Research) | 2 – Brief mention added with reference to Chap 15. |
| 14-862 | A | 32 | 50 | | | add the following: The open (unfrozen) Great Lakes increase the opportunity for lake effect snows throughout the cold season. (David Changnon, Northern Illinois University) | 2 – Will consider adding in section on precipitation. |
| 14-863 | A | 32 | 50 | | | predicted decreases in Arctic sea ice will also result in potential exacerbation of coastal erosion (Steven Solomon, Geological Survey of Canada) | 2 – Covered in Chap 15. |
| 14-864 | A | 33 | 2 | 34 | 28 | Despite the title, nothing is included on fisheries. (Donald Boesch, University of Maryland Center for Environmental Science) | Have added an inland fishery component |
| 14-865 | A | 33 | 3 | 34 | 28 | No material on fisheries for section 14.5.4 (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | Have added an inland fishery component |
| 14-866 | A | 33 | 3 | | | This major section on the future vulnerabilities in the Agriculture sector has no Canadian content. (Dave Sauchyn, University of Regina) | Several Canadian refs added to this section. |
| 14-867 | A | 33 | 3 | | | Need fishery section (Franklin Schwing, NOAA Fisheries Service) | Have added an inland fishery component |
| 14-868 | A | 33 | 6 | 33 | 36 | Should this section not start by saying something general about potential impacts of climate change on agriculture in the N America? Vulnerability to current climatic trends was discussed --briefly--in a previous section. This is the place to talk about current AND future climate change. Why start with a set of technical issues on spatial results? Conversely, what is the state-of the art in terms of likely impacts in N America? what Is current work after TAR saying? These should come before technical issues of scale. Furthermore, If references from 2002 are included here, why not include work published under the US national assessment in 2002? Simply saying that current research is moving away from top-down assesement to more field-scale type of analyses (and the reference used herein is a position paper, not a set of peer reviewed articles), does not say much about what the impacts may be. Additionally, field-scale studies are not new; There have been miriads local assessments at the farm scale of climate change impacts in N America, certainly more so than national assessments. Finally, i note that published spatial analyses | Intro to this section has been revised & now starts with a summary statement about what is new since the TASR & then proceeds to provide details on new findings and reasons supporting the overall conclusion than NA ag prospects under cc remain generally positive but slightly more tempered. |

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| | | | | | | <p>may have found more negative effects on production, but certainly not on YIELD, which is a number per unit space. The authors seem to confuse crop yield and production. Back to production, these "spatial" findings discussed apply to results subsequently aggregated regionally. Farm-scale type of analyses had always found more negative impacts of climate change than their regionally integrated counterparts.</p> <p>(Francesco Nicola Tubiello, Columbia University)</p> | |
| 14-869 | A | 33 | 13 | | | <p>additional support for this statement and for later mention of impact assessments is in Bootsma, A., S. Gameda, and D. W. McKenney. 2005 Impacts of potential climate change on selected agroclimatic indices in Atlantic Canada. Canadian Journal of Soil Science 85(2):293-343.</p> <p>Bootsma, A., S. Gameda, and D. W. McKenney. 2005. Potential impacts of climate change on corn, soybeans and barley yields in Atlantic Canada. Canadian Journal of Soil Science 85(2): 345-357.</p> <p>Also note Boland et al's summary of what potential plant disease impacts are. Boland, G., M. Melzer, V. Higgins, A. Hopkin, and A. Nasuth. 2003. Climate change and plant disease in Ontario. In Griefenhagen, S. and T. Noland (eds), A Synopsis of the Known and Potential Diseases and Parasites Associated with Climate Change. Forest Research Information Paper No. 154. Ontario Ministry of Natural Resources. 7-89.http://article.pubs.nrc-cnrc.gc.ca/ppv/RPViewDoc?_handler_=HandleInitialGet&journal=tcjpp&volume=26&articleFile=k04-050.pdf Also referenced as Canadian Journal of Plant Pathology 26: 335-350 (2004)</p> <p>(Ellen Wall, University of Guelph)</p> | <p>Comment 14-438 incorporated here (ie Rochette et al 2004 ref added)</p> <p>Ref 2nd Bootsma et al paper added to this section.</p> <p>Boland et al 2004 ref incorporated in Sec 14.3.4 as part of response to comment 14-462.</p> |
| 14-870 | A | 33 | 15 | 33 | 15 | <p>Is this 2002 paper with adaptation really all there is? Dozens of farm-level type of climate change impact studies have analyzed adaptation to that same extent.</p> <p>(Francesco Nicola Tubiello, Columbia University)</p> | <p>Several refs in this initial para of Sec 14.5.4 cover the sector broadly, no action taken.</p> |
| 14-871 | A | 33 | 17 | 33 | 17 | <p>Add "Marshall et al. (2003) present evidence that draining of wetlands for agricultural production in south Florida may have inadvertently increased the frequency and severity of damaging frosts in the region."</p> <p>(Hank Margolis, Université Laval)</p> | <p>Could not track Marshall et al 2003, no action taken</p> |
| 14-872 | A | 33 | 19 | 33 | 36 | <p>Should mention that the Ag Extension is being diminished even as info flow to individual farmers becomes more important</p> <p>(Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan)</p> | <p>While this is mostly correct, a supporting reference was not found. No action</p> |
| 14-873 | A | 33 | 19 | | 24 | <p>The authors recognize the new "field-based, participatory approaches" to vulnerability assessment, and then follow this with many cases of the the traditional "top-down, scenario-driven approach".</p> <p>(Dave Sauchyn, University of Regina)</p> | <p>Paragraph removed</p> |
| 14-874 | A | 33 | 19 | 33 | 22 | <p>very general statement, ins this necessary?</p> <p>(Antje Schwalb, Institut für Umweltgeologie)</p> | <p>See 14-873</p> |

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|--------|---|----|----|----|----|---|---|
| 14-875 | A | 33 | 19 | 33 | 22 | This statement seems out of place given that it is followed by a list of "top-down" assessments; suggest moving it to before line 38 (Ellen Wall, University of Guelph) | See 14-873 |
| 14-876 | A | 33 | 24 | 33 | 36 | This section doesn't adequately discuss how crop yield simulations vary depending on the climate scenario and the sensitivity of the model to the soil water balance and to changes in plant water use efficiency. These assessments of direct climate impacts on crop productivity have limited application to adaptation planning, because 1) crop yield projections are particularly sensitive to the forecasting of precipitation changes, the parameter that GCMs simulate with the least certainty, 2) they are based on annual and seasonal climate conditions, and 3) crop yields are strongly influenced by local weather and soil factors, and agriculture in general is most vulnerable to climate variability and extremes: it is adapted to average conditions and has high adaptive capacity to changes in average conditions. Furthermore, much of the increased productivity is attributable to the positive effects of higher concentrations of CO ₂ in terms of fertilizing crops and reducing transpiration and improving water use efficiency. There are important temperature and CO ₂ thresholds, however, where crop yields level off and potentially decline as water and nutrients become limiting factors. Future crop yields could also depend on the changing effectiveness of herbicides and pesticides with global warming. (Dave Sauchyn, University of Regina) | Concluding sentence to this section deleted and revised to capture main points in this comment. Ref to Betts, R 2005 Integrated approaches to climate-crop modelling: needs and challenges. <i>Philosophical Transactions of the Royal Society B.</i> 360:2049-2065 added to support arguments |
| 14-877 | A | 33 | 24 | 33 | 36 | One uncertainty not mentioned is: High sensitivity of crop models to variables (i.e., precipitation) that are poorly simulated by climate models: Takle, E. S., and Z. Pan, 2003: Climate Change and Crop Production: Challenges to Modeling Future Scenarios. In Lal, R., J. Duxbury, B. A. Stewart, and D. O. Hansen, 2003; ed., Climate Change and Global Food Security. Marcel Dekker. (Eugene Takle, Iowa State University) | Comment included in rewrite of concluding sentence to this paragraph. Paper by Betts 2005 from a refereed journal used in place of Takle & Pan 2003 (see response to comment 14-876 for more info) |
| 14-878 | A | 33 | 26 | | | delete spatial heterogeneity (Dominique Bachelet, Oregon State University) | done |
| 14-879 | A | 33 | 26 | 33 | 26 | The words « spatial heterogeneity » are out of place here. (Alain N. Rousseau, Institut national de la recherche scientifique) | See 14-878 |
| 14-880 | A | 33 | 26 | | | spatial heterogeneity – just sits there! (Geoffrey Wall, University of Waterloo) | See 14-878 |
| 14-881 | A | 33 | 26 | | | "less favourable assessment" How was the assessment less favourable? Was this in terms of yields or other quantities? (Elaine Wheaton, Saskatchewan Research Council) | Economic ... revision made |
| 14-882 | A | 33 | 32 | | | Why are the yields more adversely impacted? (Elaine Wheaton, Saskatchewan Research Council) | Clarification added ... newer assessments captured greater variability in climate & soil conditions |
| 14-883 | A | 33 | 38 | 33 | 48 | No discussion is offered on increased vulnerability of agriculture from a potentially higher frequency of extreme events under climate change. There have been post-TAR studies investigating issues of increased climate variability in north america, within crop models. See rosenzweig et al., 2002 (full reference in agricultural | Reference to extreme events & Rosenzweig et al 2002 added |

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|--------|---|----|----|----|----|--|---|
| | | | | | | chapter). What about issues of pest and competition from weeds, etc.? (Francesco Nicola Tubiello, Columbia University) | |
| 14-884 | A | 33 | 39 | 33 | 39 | is determined interactions? (Kristie Ebi, Exponent) | « by » added |
| 14-885 | A | 33 | 39 | 33 | 39 | EDIT. ...Determined BY interactions ... (Francesco Nicola Tubiello, Columbia University) | See 14-884 |
| 14-886 | A | 33 | 39 | | | by interactions (Geoffrey Wall, University of Waterloo) | See 14-884 |
| 14-887 | A | 33 | 43 | 33 | 47 | "...areas with the poorest financial and ...endowment..." such as? (Francesco Nicola Tubiello, Columbia University) | Ref to northern plains in the US added |
| 14-888 | A | 33 | 47 | | | What specific coping capacities have declined? (Elaine Wheaton, Saskatchewan Research Council) | Clarified that unsustainable land use practices increase ag vulnerability to CC |
| 14-889 | A | 33 | 48 | | | consider the Canadian example from Wheaton, E., V. Wittrock, S. Kulshreshtha, G. Koshida, C. Grant, A. Chipanshi, and B. Bonsal. 2005. Lessons learned from the Canadian drought years of 2001 and 2002: Synthesis report For Agriculture and Agri-Food Canada. SRC Publication No. 11602-46E03. 38. (Ellen Wall, University of Guelph) | Could not locate ref, no action taken |
| 14-890 | A | 34 | 1 | 34 | 28 | Increased fire risk is an impact currently predicted with high confidence for the boreal forests of Central and Western Canada. See Flannigan, M.D., Logan, K.A., Amiro, B.D., Skinner, W.R. and Stocks, B.J. 2005. Future area burned in Canada. Climatic Change. 72:1-16). See also anticipated expansion of zone of severe forest drought stress (Hogg and Bernier, Forestry Chronicle 2005 81: 675-682). Also see Beaulieu and Rainville in the same Forestry Chronicle issue 81: 704-709 on the reaction of white spruce to climate change. The author is also correct that the greatest change will come from a change in forest dynamics. Fire is a physical phenomenon whose behaviour in relation to a changing climate can be predicted in a statistical sense. But the wildcard remains insects and pathogens, locals, invasives and exotics, whose dynamics are greatly affected by complex biological interactions modulated by climate, and in the case of exotics, whose propagation is fueled by globalisation of trade. (Pierre Bernier, Natural Resources Canada) | SR – see fire/bugs box |
| 14-891 | A | 34 | 1 | 34 | 28 | Need more on pests and fires (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 SR – see fire/bugs box |
| 14-892 | A | 34 | 1 | 34 | 28 | Insufficient information on the effect of invasive species and forest fires (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 SR – see fire/bugs box |
| 14-893 | A | 34 | 1 | 34 | 28 | This section on forestry, as well as section 14.3.4 on forestry, are very weak and cursory. They neglect a significant body of literature from Canadian scientists and, I expect, from US scientists as well. Pierre Bernier from the Canadian Forest Service is an IPCC external reviewer and he will supply suggestions for improving these two forestry sections. (Hank Margolis, Université Laval) | 3 SR – no more room |

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| 14-894 | A | 34 | 1 | 30 | 28 | This section is titled 'forestry' which should include implications for the forestry industry not just implications for biophysical systems (i.e., forest growth change), which is all that is discussed here. There is a literature on various implications for the forestry industry that is not reviewed (for example, a recent special issue on climate change was published in the journal Forestry Chronicle). (Daniel Scott, University of Waterloo) | 3 Added some in the SOD – may still need more |
| 14-895 | A | 34 | 1 | 34 | 22 | Can't have this discussion and not mention Mountain Pine Beetle. Contact CCIARN Forestry or CCIARN BC for more information. (Robin Sydneysmith, University of British Columbia) | 2 SR – see fire/bugs box |
| 14-896 | A | 34 | 2 | | 5 | don't think this "panel of experts" paper is anywhere near as compelling as the research results. Leave it out. (Douglas Fox, Colorado State University) | 2 cite de-emphasized |
| 14-897 | A | 34 | 2 | | 4 | Forest growth will increase — another good thing (Thomas Moore, Stanford University) | 2 The draft states that forest growth will likely increase. |
| 14-898 | A | 34 | 8 | | | delete stop after replacement (Geoffrey Wall, University of Waterloo) | 1 extensive editing |
| 14-899 | A | 34 | 17 | 18 | | How are temperature increases causing these changes, including the decimation of forests? (Elaine Wheaton, Saskatchewan Research Council) | 2 This is a review. We report what the paper says. |
| 14-900 | A | 34 | 24 | 34 | 28 | This conclusion regarding impacts is quite true, given the scale of impact and catastrophic nature of these two natural disturbances, both of which are climate sensitive. However, I refer the authors to comments two rows above. Retrospective reviews on the roles of air pollution/climate change and of ozone on forests in NA provided ample evidence that shifts in ecosystem function and productivity have occurred across diverse regions over a wide geographic area (Water, Air and Soil Pollution 116: 151-197; Karnosky et al 2005 invited paper in review). Section 14.5.5 contains an excellent subsection on ozone and human health. I strongly urge the authors to add a similar subsection to 14.5.4. Apart from sources listed above, there is a large volume of literature, including the recently published synthesis papers in Nature (2002, 420: 403-407), Functional Ecology (2003, 17: 289-304) Plant Cell and Environment (2005, 28:965-981), from the world's largest free air carbon dioxide enrichment experiment (Aspen FACE) in Wisconsin that illustrates the nature and magnitude of impacts from CO2 and ozone singly and together that can be predicted. The key message is that ozone at today's levels (the US NAAQS) for over half of US forest area, will offset productivity enhancement from rising CO2 and may predispose certain species to insects and drought. This is a world class, international (100 PI's/9 countries) experiment at the ecosystem scale that is occurring in North America due to US (minor Canadian) funding. There are key messages from this "window into the future" that should be highlighted. (Kevin Percy, Canadian Forest Service) | 2 Added pollutant effects on forests to SOD. Could still do more. |
| 14-901 | A | 34 | 28 | | | Reference to Gillett et al should be replaced by: Flannigan, MD, KA Logan, BD Amiro, WR Skinner and BJ Stocks. 2005. Future area burned in Canada. Climatic | 22 SR- no I like to show current trends first |

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| | | | | | | Change 72:1-16. (Brian Amiro, University of Manitoba) | |
| 14-902 | A | 34 | 33 | 34 | 33 | I would add public health infrastructure to the list. (Kristie Ebi, Exponent) | 2 good point |
| 14-903 | A | 34 | 33 | | | since we are waving our hands here, how about mentioning the mobility of populations, air passengers which seems to be the primary way disease is transferred today. (Douglas Fox, Colorado State University) | 2 good point and it is mentioned with WNV |
| 14-904 | A | 34 | 36 | 34 | 38 | Not only are elderly people at risk of dying during heat waves but they are more vulnerable to extreme events and more susceptible to some diseases. (Jaime Dawson, The University of Western Ontario) | 2 added to SOD |
| 14-905 | A | 34 | 37 | 34 | 38 | In addition, significant changes will occur as a result of the aging population living longer. (Kristie Ebi, Exponent) | 2 yes, and we mention re demographic trends |
| 14-906 | A | 34 | 38 | | | Heat waves are not the only impact of climate on human health. Generalize. (Elaine Wheaton, Saskatchewan Research Council) | 2 yes and we expand on these other risks. But this section addresses only impacts where future quantitative projections have been made |
| 14-907 | A | 34 | 40 | 34 | 43 | does the issue heat waves need to be explained here in detail (general issue), or would it be sufficient just to focus on the future impact of heat waves in North America? (Antje Schwalb, Institut für Umweltgeologie) | 2 link to Health chapter |
| 14-908 | A | 34 | 40 | | | Include more Canadian examples and references. (Elaine Wheaton, Saskatchewan Research Council) | 2 done now |
| 14-909 | A | 34 | 42 | | | alter the following sentence: "...severity of annual heat waves are stagnant, warm and humid air masses, and ..." (David Changnon, Northern Illinois University) | 2 done |
| 14-910 | A | 34 | 45 | | | add the following: A study of dew point values during 13 extreme Chicago heat waves during a 75-year period (1928-2002) found increased levels of humidity in events that have occurred since 1980 (Changnon et al., 2003). (David Changnon, Northern Illinois University) | 2 but is this linked to an increase in risk? |
| 14-911 | A | 34 | 46 | 34 | 47 | Does this mean a increase from 12 to between 44 and 95 days? (Ian Church, Yukon Government) | yes |
| 14-912 | A | 34 | 50 | | | Add material for Canada: - e.g. Toronto report 2005 (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 May still need more attention. |
| 14-913 | A | 35 | 1 | | 4 | More people die of the cold than of heat. The death rate overall is significantly higher in the winter. Warmer winters will therefore reduce deaths more than warmer summers will increase them for a net savings in mortality. (Thomas Moore, Stanford University) | 2 this is true for the UK however has not been shown in US true that more people die in the winter, however it the heat-slope mortality is much steeper for heat than for cold temperatures. Also many elderly die from influenza pneumonia in winter; influenza –while seasonal—has not |

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|--------|---|----|----|----|----|---|--|
| | | | | | | | necessarily temperature driven (that is, colder winters do not translate to more influenza). |
| 14-914 | A | 35 | 1 | 35 | 4 | also very general issue, should the given example rather go to chapter 14.3.5? (Antje Schwalb, Institut für Umweltgeologie) | 2 good suggestion |
| 14-915 | A | 35 | 8 | 35 | 8 | 0,27C per decade? Per year? (Alain Bourque, Ouranos Consortium) | 2 per decade – (check) |
| 14-916 | A | 35 | 11 | 35 | 12 | But the health consequences are uncertain because adaptation measures are not taken into account. (Kristie Ebi, Exponent) | 2 Condensation removes the issue |
| 14-917 | A | 35 | 14 | 37 | 49 | This section is large compared to other sections and not always fully linked to climate change. I propose to reduce this section if other sections need more space. (Alain Bourque, Ouranos Consortium) | 3 Dramatically condensed for SOD |
| 14-918 | A | 35 | 14 | | | Section 14.5.5 Air Pollution -- section could be reduced, seems over emphasized compared to other subsections/topics. May be worth mentioning at outset of this subsection that discussion of ground level ozone is distinct from Ozone layer depletion in the upper atmosphere, which is not a climate change issue per se. See Willet Kempton's paper "How the Public Views Climate Change", 1997, in the journal Environment, Vol 39, Issue 9. (Robin Sydneysmith, University of British Columbia) | 2 This contains a recent modelling study of future climate change, thus for this section more description is appropriate. But we have deleted a figure and table and text here |
| 14-919 | A | 35 | 17 | | | No one knows the causes of asthma in children (Thomas Moore, Stanford University) | 2 Etiological factors are variable and there is debate. That said, there are several new studies that implicate ozone as 1 potential factor –though certainly we do not claim that is the key or most important factor –that does remain in question |
| 14-920 | A | 35 | 18 | 35 | 20 | The role of clouds should be included, as should the uncertainty in how cloud cover may change under different scenarios. (Kristie Ebi, Exponent) | 2 good point |
| 14-921 | A | 35 | 21 | 35 | 26 | Seems to imply that trees are the primary emitters of VOC's which strikes me as unlikely. I.e. the emphasis seems wrong, industrial sources of VOC's should be described appropriately in terms of their relative contribution compared to trees. (Robin Sydneysmith, University of British Columbia) | 2 source of VOCs depends on location |
| 14-922 | A | 35 | 22 | 35 | 23 | Would this happen everywhere? (Kristie Ebi, Exponent) | 2 Text seems about right. |
| 14-923 | A | 35 | 24 | | 26 | I suggest "Higher levels of isoprene generally result in higher levels of ozone." I suspect you are thinking of ozone isopleths, but there will always be places or times of day when the ozone is VOC sensitive, so as a time and spatial average, the direction is clearly that ozone will increase. (J. Jason West, Princeton University) | 2 Ok, thanks |
| 14-924 | A | 35 | 28 | 35 | 34 | The uncertainties in these studies need to be discussed. (Kristie Ebi, Exponent) | 2 This may still warrant further attention |

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|--------|---|----|----|----|----|--|---|
| 14-925 | A | 35 | 28 | | | A2 ... which climate model and time-slice? (Daniel Scott, University of Waterloo) | 2 date added |
| 14-926 | A | 35 | 40 | | | Specify the GCM as well as the emission scenario (Elaine Wheaton, Saskatchewan Research Council) | 2 include in figure legend |
| 14-927 | A | 35 | 44 | 35 | 48 | The uncertainties in this study (not referenced in the paragraph) need to be discussed. (Kristie Ebi, Exponent) | 2 may still need more work |
| 14-928 | A | 35 | 49 | | | A section on air quality degradation from increase wildfire smoke and gases should be added. For example " Increased wildfires are also expected to affect air quality in local areas, but transport of smoke and gases, such as carbon monoxide, can be over large regions and even global (Begum et al 2005, Wotawa and Trainer 2000, Liu et al 2005)." References: Liu, J, JR Drummond, Q Li, JC Gille, DC Ziskin 2005. Satellite mapping of CO emissions from forest fires in Northwest America using MOPITT measurements. Remote Sensing Environ 95:502-516. Begum BA, Kim E, Jeong CH, Lee DW, Hopke PK(2005) Evaluation of the Potential Source Contribution Function Using the 2002 Quebec Forest Fire Episode. Atmospheric Environment 39 3719-3724. Wotawa G, Trainer M(2000) The influence of Canadian forest fires on pollutant concentrations in the United States. Science 288 324-328. (Brian Amiro, University of Manitoba) | 2 link to fires section |
| 14-929 | A | 36 | 1 | 37 | 22 | Remove Figures 14.7 and 14.8. (David Changnon, Northern Illinois University) | 3 done |
| 14-930 | A | 36 | 2 | | | Graphs show 03 increasing in Ontario by 2020 and declining thereafter. This is counter-intuitive - also is Canadian data for 1990's correct? It is entirely inconsistent with data and maps Figure 14 and 15 in IJC's 2002 Report on Canada-US Air Quality Agreement. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 these are the model results |
| 14-931 | A | 36 | 29 | 36 | | The figures are not intuitively clear- a. shows current condition and b,c and d show degree of change which does not indicate what this cumulative change will be unless one adds the value of a pixel in a to the change for the same pixel in b,c or d. It is valuable to see that some areas will have a degree of change but it really does not give people an idea of the future hazard (Ian Church, Yukon Government) | 2 simplified just to include the 2050 panel |
| 14-932 | A | 36 | 29 | | | Fig. 14.7 could be condensed to just (c) and (d) and the caption hugely shortened. (Jean Palutikof, Hadley Centre) | 2 as above |
| 14-933 | A | 36 | 36 | | 48 | I'd leave this out,it is a trivialization of a complex issue, ignores the SIP process that leads to steady improvement in air quality as well as the new NAAQS for PM2.5. You can save space by removing the figure and putting in its place the figure I mentioned above on the p.30, line 42 comment. Also there is no reference for this that I can identify. (Douglas Fox, Colorado State University) | 2 edited out |

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|--------|---|----|----|----|----|---|---|
| 14-934 | A | 36 | 38 | 36 | 40 | This should be moved to the text. (Kristie Ebi, Exponent) | 2 |
| 14-935 | A | 37 | 20 | | | Length is a disaster, even after we have eased the situation on space for references. This chapter must employ all the tricks in the book: bullet points, summarizing tables, cross-references to other chapters. Just leafing through, it's clear that the authors haven't really considered length an issue: Fig 14.8 has little to say (the changes look small) and the information in teh table below is inappropriate for a regional chapter. (Jean Palutikof, Hadley Centre) | 3 condense in SOD |
| 14-936 | A | 37 | 24 | | | Remove Table on page 37. (Liette Vasseur, Laurentian University) | 2 ok |
| 14-937 | A | 37 | | | | figure 14.7 ... could this be made much small or represented as a table? (Daniel Scott, University of Waterloo) | 2 yes |
| 14-938 | A | 37 | | | | section of 14.5.4. As above this seems rather weak, particularly on the adaptation side. See Spittlehouse, D.L., 2005, Integrating climate change adaptation into forest management. The Forestry Chronicle 81:91-695. And see comments below regarding section14.6.3. There is a wide range of adaptation options in an earlier article I wrote referenced the abovementioned one. Major social concerns since many rural communities in Canada are based on forestry. They could impacted negatively through changes in forest disturbance, forest growth and the global timber supply (expected to increase and negatively impact Canada in the next few decades). Protection of non-timber resources such as water supply and fish may become a high prioirty affecting access to timber. (David Spittlehouse, BC Ministry of Forests) | 3 revised SOD to address these points |
| 14-939 | A | 38 | 0 | | | Cynthia Rosenzweig et al., have looked at NYC infrastructure a great deal. This work, begun in the National Assessment as the NY Metro Region has been updated. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Material has been added here and we will refer to the cities box. |
| 14-940 | A | 38 | 1 | | | I find this section weak and with only one reference, not really solid. The timing of pollen release because of change of blooming phenology would make more sense. This means that in the spring for example, allergies could start faster. (Liette Vasseur, Laurentian University) | 3 tightened in SOD |
| 14-941 | A | 38 | 2 | 38 | 7 | But we don't know how the allergenic content of pollen will change in a changing climate. (Kristie Ebi, Exponent) | 2 accepted |
| 14-942 | A | 38 | 10 | | | S 14.6 should be: Adaptation: practices, options and constraints (Encinas Carla , IPCC WG2 TSU) | 2 will revise in SOD |
| 14-943 | A | 38 | 10 | | | Organization of this section could improve. Introduction and conclusion sentences should be used. (Elaine Wheaton, Saskatchewan Research Council) | 2 good point |
| 14-944 | A | 38 | 12 | 38 | 19 | This does not reflect Hurricane Juan 2003 experience, increases in SST's and recent papers 2005 by Emmanuel and Webster. | 2 Emmanuel and Fisher papers are now included, but not address the future. Refer to |

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| | | | | | | (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | WGI results. |
| 14-945 | A | 38 | 12 | 39 | 6 | There is no discussion of impacts and adaptation options. What about insurance, investments in more adaptive infrastructure? (Jaime Dawson, The University of Western Ontario) | 2 Refer to section 14.6 |
| 14-946 | A | 38 | 17 | | | Specify the GCM as well as the emission scenario. Check for this throughout the chapter. (Elaine Wheaton, Saskatchewan Research Council) | 3 Will include models |
| 14-947 | A | 38 | 18 | | | drop the word "only" - maybe that's not much by Bangladeshi or Indian standards, but for coastal managers dealing with all this extra evacuation, this is A LOT. So, drop the qualifier, and leave the interpretation to readers. (Susanne Moser, National Center for Atmospheric Research) | 1 Dropped |
| 14-948 | A | 38 | 18 | | 19 | clarify statement lagged evolving protection??. only 100,000 per year but what time scale is it over over 70 years if so its a lot of people???? (Robert Taylor, Bedford Institute of Oceanography) | 2 Dropped |
| 14-949 | A | 38 | 21 | 38 | 39 | There should be some reference to increased frequency of over-taxing city storm management systems (Kovacs has data) (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 Checking with Kovacs. Also add reference to Midwest Foundation Report for U.S. National Assessment |
| 14-950 | A | 38 | 21 | 38 | 39 | Wu et al. (2002) and Rygel et al. (in press, a) found large increase in the number of critical facilities exposed to storm-surge flooding with sea-level rise. For instance, with a scenario of a category 3 hurricane, 60 cm sea-level rise, and facilities in the same places and numbers as today, Wu et al. found that the percentage of critical facilities exposed to very high flood risk increased by 157% in Cape May, New Jersey. (Brent Yarnal, The Pennsylvania State University) | 2 Added these references |
| 14-951 | A | 38 | 23 | | 24 | a useful thing to know as is comment on loss of data line 42; are these gaps brought out in conclusions? (Robert Taylor, Bedford Institute of Oceanography) | 2 Bring out in conclusion |
| 14-952 | A | 38 | 39 | | 40 | several examples of adaptation, they are good statements not clear if should be in this section or adaptation section which ever reduces content I guess? (Robert Taylor, Bedford Institute of Oceanography) | 2 This is not adaptation. Clarify. |
| 14-953 | A | 38 | 41 | 38 | 43 | I am not sure the point of this paragraph. (Kristie Ebi, Exponent) | 2 Will clarify that physical impacts could not be translated into financial impacts. Due to lack of data. |
| 14-954 | A | 38 | 41 | | 43 | However, it did raise the spectre of the many challenges that future climate change could present to urban centres and infrastructure. Should state that and say that more study is needed. (Susanne Moser, National Center for Atmospheric Research) | 2 Add to conclusions |
| 14-955 | A | 38 | 41 | 39 | 14 | are all these details really necessary? (Antje Schwalb, Institut für Umweltgeologie) | 2 Details can be dropped. Add material on oil slicks, etc. from Katrina. |

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| 14-956 | A | 38 | 45 | 38 | 45 | I would expect that since the Katrina hit on New Orleans people are much more aware of this and there will now be more documentation (Ian Church, Yukon Government) | 2 There is some. Include to extent possible. |
| 14-957 | A | 38 | 45 | 39 | 6 | This paragraph is nearly identical to one presented on page 15, line 25-32. (Jaime Dawson, The University of Western Ontario) | 2 Reword at p. 15. |
| 14-958 | A | 38 | 45 | 39 | 6 | See comments above on some studies that mention the impacts on Barrow Alaska, and also the recent experience in the Gulf Coast region after the hurricanes (Susanne Moser, National Center for Atmospheric Research) | 2 Details can be dropped. Add material on oil slicks, etc. from Katrina. Not sure about Barrow. Add Material collected from ACIA and Alaska State Government. |
| 14-959 | A | 39 | 1 | 39 | 6 | mentioned earlier (Dominique Bachelet, Oregon State University) | 2 Details can be dropped. Add material on oil slicks, etc. from Katrina. |
| 14-960 | A | 39 | 1 | | 6 | This text is duplicated on page 15. (Thomas Graedel, Yale University) | 2 Reword at p. 15. |
| 14-961 | A | 39 | 1 | | 6 | Another good place to illustrate with Katrina's impact (Thomas Moore, Stanford University) | 2 Details can be dropped. Add material on oil slicks, etc. from Katrina. |
| 14-962 | A | 39 | 6 | 39 | 6 | if possible, update with 2005 new orleans tragedy. (Francesco Nicola Tubiello, Columbia University) | 2 Details can be dropped. Add material on oil slicks, etc. from Katrina. |
| 14-963 | A | 39 | 9 | | | Nicely organized section (Elaine Wheaton, Saskatchewan Research Council) | thanks |
| 14-965 | A | 39 | 16 | 39 | 22 | these projections are without changes in climate extremes. Reader should be informed. (Francesco Nicola Tubiello, Columbia University) | This is likely the case for most analyses that use monthly GCM data. If it is the policy of the CLAs to include such caveats for all similar types of analysis, then readers should be informed of this as the review suggests. |
| 14-966 | A | 39 | 27 | 39 | 27 | Are the percentages, change in annual or winter only figures (Ian Church, Yukon Government) | These are annual changes and this has been clarified in the text. |
| 14-967 | A | 39 | 31 | | 36 | maybe also mention recent economic assessments of the value of beaches to the state economy of California; several studies have been done (King; Kildow et al (see http://resources.ca.gov/press_documents/CA_Ocean_Econ_Report.pdf); Pendleton/Hanemann and others) (Susanne Moser, National Center for Atmospheric Research) | A search for the term 'climate change' in this document produced 0 references. Thus, what is the specific relevance of this study for this assessment? There are economic assessments of beach recreation-tourism in many states. |
| 14-968 | A | 39 | 38 | 39 | 40 | Would it be possible and appropriate to get a more recent resource than 1996 for park visitors? (Jaime Dawson, The University of Western Ontario) | We have updated these numbers with the most recently available from Parks Canada and NPS. |
| 14-969 | A | 39 | 42 | 39 | 47 | Are these projections separate from increasing population? (Kristie Ebi, Exponent) | Yes. This has been clarified in the text ('solely'), but an additional sentence could be added if CLAs want further clarification. |
| 14-970 | A | 40 | 1 | | 6 | What was the question posed to the respondents? How a question is asked can shape the answer. (Thomas Moore, Stanford University) | Yes it can, but there is no space to provide such detail for two studies in this assessment. Readers will have to see both peer-reviewed |

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| | | | | | | | studies and judge for themselves. |
| 14-971 | A | 40 | 6 | | | I think USGS did a study of when Glacier National Park would no longer have a reason to be called that (within 30 years) - it should be mentioned - such an iconic place for the national psyche. (Susanne Moser, National Center for Atmospheric Research) | They did and the estimate was 2030-2040. I agree this is a potentially important point for Americans (and one that has been made in some US government education materials I believe), but because of space restrictions, I have focused on studies that provide insight into how climate change may affect visitation. |
| 14-972 | A | 40 | 8 | | 27 | I am familiar with the Rocky Mountains ski situation although without published documentation. The key here is that ski areas have invested heavily in snow making in order to extend their early season in November and December. US thanksgiving (end of November) and Christmas make or break the ski area for a season so getting & keeping snow November is critical. The key climatic parameter therefore is night time temperature in November being consistently below 0C in November. How this changes with the scenarios will determine how the ski tourism in Rocky Mountains fares. (Douglas Fox, Colorado State University) | These comments are correct, but to my knowledge there has been no published study on how snowmaking capacity might change or how that might impact operations or skier visits. |
| 14-973 | A | 40 | 8 | 40 | 35 | cut by half or put into a box as a case study, otherwise too much detail in these two paragraphs (Robin Sydneysmith, University of British Columbia) | CLA decision on case study. I have shortened this paragraph by removing one sentence (line 14-15). Line 18-22 could be removed, but the instructions were to include discussion of adaptation where possible. |
| 14-974 | A | 40 | 11 | 40 | 11 | ...« which has been » not « as » been . (Alain N. Rousseau, Institut national de la recherche scientifique) | corrected |
| 14-975 | A | 40 | 22 | | 24 | Not sure this is true. There are studies done or already underway (and will be finished before this report comes out) for Colorado. Don't have cites, but you should poke into this a bit. Also should include what's already going on and what is projected for the winter tourism industry in the Northeast. (Susanne Moser, National Center for Atmospheric Research) | It was when this draft was written (to my knowledge), but recent publications with analysis on the ski industry in California and Banff have been added to this section. Aspen is doing work like the Banff study, but nothing published yet. |
| 14-976 | A | 40 | 25 | 40 | 46 | incomplete sentence (Antje Schwalb, Institut für Umweltgeologie) | This sentence was removed to add coverage on western ski areas. |
| 14-977 | A | 40 | 27 | 40 | 27 | Regions "are" (Kristie Ebi, Exponent) | This sentence was removed to add coverage on western ski areas. |
| 14-978 | A | 40 | 27 | 40 | 27 | EDIT. ...Regions WERE more negative ... (Francesco Nicola Tubiello, Columbia University) | This sentence was removed to add coverage on western ski areas. |
| 14-979 | A | 40 | 32 | | 35 | Many people would welcome less snowmobiling (Thomas Moore, Stanford University) | I don't disagree, but that is not for us to decide. Some people would mind. |
| 14-980 | A | 40 | 34 | 40 | 35 | Do ATV emit more GHGs? (Kristie Ebi, Exponent) | Investigation revealed no conclusive answer. 4-stroke engines have lower emissions than 2-stroke, but both are available on ATVs and snowmobiles. |

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|--------|---|----|----|----|----|---|---|
| 14-981 | A | 40 | 37 | | | missing the verb (are) (Dominique Bachelet, Oregon State University) | Not sure where 'are' is required? |
| 14-982 | A | 40 | 37 | | 40 | not needed. (Douglas Fox, Colorado State University) | CLAs decision. It isn't crucial to the discussion of impacts, just a summary statement. |
| 14-983 | A | 40 | 37 | | 40 | A longer warm season will benefit most outdoor activities such as golf, hiking, canoeing, tennis, camping, bird watching, etc. The benefits here will exceed the losses to those who prefer winter outdoor activities such as skiing. (Thomas Moore, Stanford University) | That is my hypothesis as well, but we currently lack systematic evidence for that conclusion. |
| 14-984 | A | 40 | 38 | 40 | 38 | EDIT... Critical uncertainties. No article necessary. (Francesco Nicola Tubiello, Columbia University) | Corrected ... may be removed by CLAs (see comment 14-982) |
| 14-985 | A | 40 | 40 | 40 | 40 | EDIT. ...preclude... (Francesco Nicola Tubiello, Columbia University) | Corrected ... may be removed by CLAs (see comment 14-982) |
| 14-964 | A | 39 | 13 | 39 | 14 | In brackets the reader is referred to a source. Should the reader not be referred section 14.3 for an overview of current sensitivity/vulnerability? (Jaime Dawson, The University of Western Ontario) | This additional reference provides readers with a source for a more detailed discussion and additional types of impacts that could not be discussed here because of space restrictions. |
| 14-986 | A | 40 | 43 | 41 | 28 | Ouranos, 2004 offered an evaluation of energy demand (driven mostly by winter) and climate change for Montreal. This work has been updated since (poster available on www.ouranos.ca/symposium/) (Alain Bourque, Ouranos Consortium) | 2 Collected new references from source given. Include. |
| 14-987 | A | 40 | 45 | | | "form this work"? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 1 Dropped |
| 14-988 | A | 40 | 46 | | | delete "from this work" (Dominique Bachelet, Oregon State University) | 1 Dropped |
| 14-989 | A | 40 | 46 | 40 | 46 | Text missing at end of this line. (Ian Church, Yukon Government) | 1 Dropped |
| 14-990 | A | 40 | 46 | | | missing section (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 1 Dropped |
| 14-991 | A | 40 | 46 | 40 | 46 | Form this work? (Kristie Ebi, Exponent) | 1 Dropped |
| 14-992 | A | 40 | 46 | | | leave out "Form..." (Douglas Fox, Colorado State University) | 1 Dropped |
| 14-993 | A | 40 | 46 | 40 | 46 | The words « Form this work » are out of place here. (Alain N. Rousseau, Institut national de la recherche scientifique) | 1 Dropped |
| 14-994 | A | 40 | 46 | 40 | 46 | From this work....???? (Robin Sydneysmith, University of British Columbia) | 1 Dropped |
| 14-995 | A | 40 | 46 | | | sentence missing or words left in ? (Robert Taylor, Bedford Institute of Oceanography) | 1 Dropped |
| 14-996 | A | 40 | 46 | 40 | 46 | EDIT. FROM this work | 1 Dropped |

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|---------|---|----|----|----|----|--|---|
| | | | | | | (Francesco Nicola Tubiello, Columbia University) | |
| 14-997 | A | 40 | 46 | | | Form this work? Not sure what this means... (Liette Vasseur, Laurentian University) | 1 Dropped |
| 14-998 | A | 40 | 47 | 40 | 47 | Missing text. (Miles Edward, School of Marine Affairs) | 1 Dropped |
| 14-999 | A | 40 | 49 | 41 | 28 | This paragraph should address changes in peak demand and seasonal demand. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 May be able to address seasonality, but peak demand may be a subject for further research. If so, state this. |
| 14-1000 | A | 41 | 14 | 41 | 14 | this study SHOWs an increase...this is a simulation. More appropriate verbs should be used (projects, etc.) see also on this page lines 18, 22, with improper use of SHOW, FOUND. (Francesco Nicola Tubiello, Columbia University) | 2 Agree. Changes made to wording |
| 14-1001 | A | 41 | 32 | | | 41 Hydro/people/salmon conflicts in the PNW region from Ed Miles, et al, UW, also continuing work of the National Assessment (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 Flows are mentioned in Lettenmaier et al. reference. Add Impact on Slamon restoration from Parson et al. 2001 (Pacific NW Case study for U.S. National Assessment). |
| 14-1002 | A | 41 | 32 | 41 | 32 | You do not spell out degrees Celsius elsewhere. (Kristie Ebi, Exponent) | 1 Reword |
| 14-1003 | A | 41 | 35 | | | Predictions of future climate parameters cannot, by defination, be supported by evidence. (Thomas Graedel, Yale University) | 2 Agree. Reword. |
| 14-1004 | A | 41 | 43 | 41 | 46 | It is not clear that these \$(dollar) losses are from Great Lakes system. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 Table 3 of the referenced article makes it clear that these dollar changes are from Great Lakes hydro operations. |
| 14-1005 | A | 41 | 45 | 41 | 45 | Delete 'a' (Kristie Ebi, Exponent) | 1 Deleted |
| 14-1006 | A | 42 | 4 | 42 | 19 | how uncertain are these projections of wind speeds from GCMs? A statement to this end would help the reader to better interpret these numbers. (Francesco Nicola Tubiello, Columbia University) | 2 Need input from WG I |
| 14-1007 | A | 42 | 9 | | | GCM2 and SRES scenarios show increased average annual wind speeds across Canada of about 5-10% (Barrow, Maxwell and Gachon 2004 MSC Environment Canada). Which CGCM and emission scenarios give the results of potential reductions in wind power generation? This appears contradictory. Please check and correct as needed. (Elaine Wheaton, Saskatchewan Research Council) | 2 Cannot locate the reference the commenter mentioned. Check with her. Breslow and Sailor used CGCMI and Scenario IS92 a1, and HADCMII, scenario IS92 a4 |
| 14-1008 | A | 42 | 11 | 42 | 12 | 2040-2050 is repeated. (Kristie Ebi, Exponent) | 1 Dropped first instance |
| 14-1009 | A | 42 | 21 | 42 | 21 | It should read « bioenergy crops » instead of « biomass crops ». (Alain N. Rousseau, Institut national de la recherche scientifique) | 1 Changed |
| 14-1010 | A | 42 | 24 | 42 | 34 | I would urge clear separation between observed facts and models throughout this chapter. If there is a consensus among many models of specific trends, one could say "...would likely ... this or that," or better yet "...may ...this or that". But in | 2 Agree. Changes made to wording |

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| | | | | | | commenting on a few specific simulations studies, using specific scenarios and model assumptions, i would rather write: "this study projected that..." etc. Also, these simulations studies do not "show" anything. At best they suggest, imply, etc.; they are not experiments with the real world. (Francesco Nicola Tubiello, Columbia University) | |
| 14-1011 | A | 42 | 26 | 42 | 26 | May help to define/explain these units Mg and GJ for wider readership (Robin Sydneysmith, University of British Columbia) | 2 Units are in acronyms and units section. |
| 14-1012 | A | 42 | 27 | 42 | 31 | ??? Wording (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 I did not understand the comment |
| 14-1013 | A | 42 | 30 | 42 | 31 | Crops in the ---- are of the central US? (Kristie Ebi, Exponent) | 2 "are" should be "area" |
| 14-1014 | A | 42 | 36 | 42 | 37 | after "hurricanes" add "lightning strikes" (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 Words added |
| 14-1015 | A | 42 | 36 | 42 | 49 | are all these details necessary or can this paragraph get shortened? (Antje Schwalb, Institut für Umweltgeologie) | 2 Reword lines 36-38. Move39-42 to section 14.3.8 |
| 14-1016 | A | 42 | 36 | 42 | 49 | a great deal of this paragraph does not deal with future climate change, but with current variability and currently observed change. Should be moved to appropriate earlier section. (Francesco Nicola Tubiello, Columbia University) | 2 Move to section 14.3.8 |
| 14-1017 | A | 42 | 37 | 42 | 37 | Insert « made » after « has been ». (Alain N. Rousseau, Institut national de la recherche scientifique) | 1 Change made |
| 14-1018 | A | 43 | 1 | 43 | 14 | Cohen et al (2003, 2004) provides excellent discussion of complex water issues in Okanagan region of central BC in which climate change is but one of several interacting factors. (Robin Sydneysmith, University of British Columbia) | 2 Refer to Box 1 and add material on the Okanagan in Box 1? |
| 14-1019 | A | 43 | 1 | 43 | 14 | same as above. Where is the climate change part? (Francesco Nicola Tubiello, Columbia University) | 2 Move to section 14.3.8 |
| 14-1020 | A | 43 | 2 | | | what about combined sewer overflow systems? Highlighted in MW region of the National Assessment (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 Easterling and Karl reference added |
| 14-1021 | A | 43 | 3 | 43 | 6 | Should cite the DOI report "Water 2025" re expected water crises, not a definitive document from a scientific perspective but important in terms of perceptions of vulnerability (Katharine Jacobs, University of Arizona) | 2 Will check and cite if appropriate. |
| 14-1022 | A | 43 | 9 | 43 | 9 | Waters et al . Should only 1 "t" at Waters (Yves Michaud, Geological Survey of Canada - Québec Division) | 1 Change made |
| 14-1023 | A | 43 | 16 | 43 | 45 | Ice and snow roads are also a significant transportation issue for the forest industry (in Canada only?) which uses this to get woodstocks out of the forests (Alain Bourque, Ouranos Consortium) | 2 Keep here |
| 14- | A | 43 | 17 | | 25 | examples from permafrost areas okay and are correct for subarctic areas too but | 2 Keep here |

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| 1024 | | | | | | maybe put in Polar chapter ? (Robert Taylor, Bedford Institute of Oceanography) | |
| 14-1025 | A | 43 | 17 | 43 | 25 | lack of comments on increased climate variability under climate change (Francesco Nicola Tubiello, Columbia University) | 3 Not sure if we have references or if WG I would agree. |
| 14-1026 | A | 43 | 25 | | | add the following: Warmer temperatures during the cold season may increase construction opportunities as reported in the winter of 2001-02 (Changnon and Changnon, 2005—see above). (David Changnon, Northern Illinois University) | 2 Obtain reference. May be more appropriate in section 14.3.8. |
| 14-1027 | A | 43 | 27 | | | Transportation: although this is grey literature, there might be a need to investigate if there is any information on the increase in number of fog events on land in the coastal communities due to land-ocean temperature differential (e.g. Halifax airport) (Liette Vasseur, Laurentian University) | Have incorporated references on (downward) trend in fog days. |
| 14-1028 | A | 43 | 28 | | | Problems with winter roads may be a serious concern in Canada. Check to ensure that this statement also applies to Canada (Elaine Wheaton, Saskatchewan Research Council) | Assume reviewer is asking about the U.S. Have incorporated information on Alaska winter roads as reported in media. |
| 14-1029 | A | 43 | 32 | 43 | 39 | The MacKenzie and to a lesser extent the Yukon (especially in Alaska) are major transportation corridors. Historically, draft has been an issue on the Yukon which has had projections done by Yukon Energy as to the impact glacial melt in the headwaters would have on summer runoff and thus power generation. Obviously this would also affect river draft. I am unaware of similar studies on the MacKenzie but I would assume Northern Transportation Limited and the various oil industry/pipeline interests have considered this. (Ian Church, Yukon Government) | Had a phone conversation with Northern Transportation Ltd, but they have not considered this issue. |
| 14-1030 | A | 43 | 41 | 43 | 48 | McBeath, J. (2003). "Institutional Responses to Climate Change: the Case of the Alaska Transportation System." <i>Mitigation and Adaptation Strategies for Global Change</i> 8(1): 3-28. (Alain Bourque, Ouranos Consortium) | Excellent reference has been incorporated, and text amended accordingly on p. 43, line 46. |
| 14-1031 | A | 43 | 41 | 43 | 48 | Many very relevant internal reports available from provincial government on the subject of impacts of permafrost melting on communities, transportation and infrastructures best illustrated by 2 references: #1: Allard, M., Fortier, R., Duguay, C. and Barrette, N. (2002). A new trend of fast climate warming in Northern Quebec since 1993. Impacts on permafrost and man-made infrastructures. American Geophysical Union, 2002 Fall Meeting, Moscone Center, San Francisco, California. #2: Beaulac, I., Doré, G. (2005). Impacts du dégel du pergélisol sur les infrastructures de transport aérien et routier au Nunavik et adaptations - état des connaissances, Faculté des Sciences et de Génie - Université Laval: 141 p. (Alain Bourque, Ouranos Consortium) | Information from the two references have been incorporated. |
| 14-1032 | A | 43 | 41 | | 48 | same comments -are these too northern? (Robert Taylor, Bedford Institute of Oceanography) | “Northern” has been qualified. |
| 14-1033 | A | 43 | 42 | | | add the following: However, a warmer, less snowy winter would reduce delays and improve ground and air transportation across much of North America (Changnon | Agree. However, suggest that the comment be added to p. 44, line 12 as a replacement for |

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| | | | | | | and Changnon, 2005—see above). (David Changnon, Northern Illinois University) | “Less severe winters are also expected to generate mobility benefits,” |
| 14-1034 | A | 43 | 44 | | | Ice roads are also built directly over water bodies (rivers, lakes, sea ice) and as vulnerable to warming climate as those built over land. (Steven Solomon, Geological Survey of Canada) | OK – will modify sentence to read “Ice roads, which are constructed by clearing a route over frozen land and water bodies in order to service ...” |
| 14-1035 | A | 43 | 50 | | 50 | note. This statement could be used in the other subsections as a model for addressing the climate variability component under climate change. (Francesco Nicola Tubiello, Columbia University) | No action needed. |
| 14-1036 | A | 44 | 4 | | 6 | Cold weather is much worse for transportation than is warm weather. (Thomas Moore, Stanford University) | I agree. Point already noted on p. 44, line 5. |
| 14-1037 | A | 44 | 7 | | | How? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | Have elaborated with new information on road damage in Canada. |
| 14-1038 | A | 44 | 9 | 44 | 19 | Should add: "More intense winter storms observed and projected (McCabe 2001, Lambert 1995 and see earlier) require more effective snow removal from roads in Canada and northern USA and more robust power transmission systems." (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | OK Have added reference for McCabe. |
| 14-1039 | A | 44 | 21 | 44 | 33 | Paragraph heavy on numbers, could be better in a small table. (Robin Sydneysmith, University of British Columbia) | Only the 1 st paragraph pertains to transportation. Have made modification to preceding paragraph in order to incorporate. The rest of the material was not written by JA. MS? |
| 14-1040 | A | 44 | 24 | | | this sentence seems to refer to all sectors, yet the sentence above is transport specific. Is the remainder of this paragraph transport specific? If so, perhaps clarify. (Daniel Scott, University of Waterloo) | This was inadvertently left in the text – should be removed |
| 14-1041 | A | 44 | 24 | 44 | 31 | Are the losses referred to just for transportation or are they an estimate of total economic losses? Please clarify. (Peter Victor, York University) | This was inadvertently left in the text – should be removed? |
| 14-1042 | A | 44 | 28 | 44 | 31 | Do the Mendelsohn and Smith figures hold up in face of increased hurricane intensities (Emmanuel, Webster 2005, Knudson) (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | This was inadvertently left in the text – should be removed |
| 14-1043 | A | 44 | 36 | 45 | 25 | S 14.5.9 doesn't add much information to the chapter and results redundant considering the literature assessed in previous sections of this chapter. (Encinas Carla, IPCC WG2 TSU) | 2 extensively revised in SOD |
| 14-1044 | A | 44 | 36 | 44 | 50 | very general statements - shorten? (Antje Schwalb, Institut für Umweltgeologie) | 2 revised and condensed in SOD |
| 14-1045 | A | 45 | 0 | | | There are no citations this page. Does this represent a value added interpretation from the authors or can some literature be cited? | 3 cites added in SOD |

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|---------|---|----|----|----|----|---|--|
| | | | | | | (Dave Sauchyn, University of Regina) | |
| 14-1046 | A | 45 | 0 | 46 | | interesting section -what about geothermal solutions for heating and cooling it is becoming more important -maybe for the adaption section maybe mention it here?what are the vulnerabilities to earth by using geothermal techniques? (Robert Taylor, Bedford Institute of Oceanography) | 2 condensed in SOD |
| 14-1047 | A | 45 | 2 | 45 | 10 | important issue: both the regional impact of global climate change as well as the interactions among sectors I find very important! (Antje Schwalb, Institut für Umweltgeologie) | 2 thanks – we are condensing for SOD |
| 14-1048 | A | 45 | 12 | 45 | 12 | Not true. Many assessment studies of N America have analyzed both rainfed and irrigated conditions, including an economic analysis of cost of water when changing management in order to adapt. (Francesco Nicola Tubiello, Columbia University) | 2 thanks – fixed in SOD |
| 14-1049 | A | 45 | 15 | 45 | 15 | YIELD is a number divided by area. Authors should use PRODUCTION instead. It is irrigated crop production in the US that is 50% of total crop production, not yield. (Francesco Nicola Tubiello, Columbia University) | 2 ok, thanks |
| 14-1050 | A | 45 | 20 | 45 | 27 | a bit too vague. Numbers? Dates? References? If no quantitative studies exist, say so. (Francesco Nicola Tubiello, Columbia University) | 2 dropped from SOD |
| 14-1051 | A | 45 | 29 | 45 | 34 | “invasives facilitated by climate change are rare”? Need cite for this. There are studies that show climate change is altering cheatgrass success in the West, e.g. Kuzdu is limited by frost line in N and moisture in West, currently.... (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 dropped from SOD |
| 14-1052 | A | 45 | 29 | 45 | 35 | No discussion provided concerning the effect of increasing temperatures on invasives already in place, e.g.Spartina. (Miles Edward, School of Marine Affairs) | 2 good point – this topic was dropped for condensation |
| 14-1053 | A | 45 | 29 | | 35 | I think fire is an equal or greater threat. Take Los Angles for example, the October fires in 2003 in the San Bernadino National Forest we dramatic & explosive. In part they were driven by dead trees causing high fuel loadings. But although the fire came close, it actually only burned something like 2% of the available fuels, in other words, the San Bernadino NF is a time bomb waiting for the next fire start, likely to be in about 10 years if historical trends hold although they may be modified by climate change. my point is that as ecosystems become less comfortable in their climate niche, because climate change is altering the position of the neiche in the landscape, fire will become even more pronounced as a tool to adjust ecosystems. (Douglas Fox, Colorado State University) | 2 fire gets a lot of discussion in box 1 |
| 14-1054 | A | 45 | 29 | 45 | 35 | I am surprised by the statement "examples of invasives facilitated by climate change are rare". Maybe there is no definitive work on this, but clearly the huge forest fires in the west are related to drought, and drought is likely related to climate change, either now or in the future, and there is a direct link to broad scale vegetative change and the spread of invasives. See Julio Betancourt, Univ of | 2 topic dropped from SOD |

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| | | | | | | Arizona/USGS (Katharine Jacobs, University of Arizona) | |
| 14-1055 | A | 45 | 29 | 45 | 35 | a bit too vague. Numbers? Dates? References? If no quantitative studies exist, say so. (Francesco Nicola Tubiello, Columbia University) | 2 dropped from SOD |
| 14-1056 | A | 45 | 30 | | | I think there is a need to search more the literature, within a few minutes, I had a few manuscripts such as Townsend Peterson, A; Scachetti-Pereira, R (2004) American Midland Naturalist [Am. Midl. Nat.]. Vol. 151, no. 1, pp. 170-178; Morrison, Lloyd W; Korzukhin, Michael D; Porter, Sanford (2005) Diversity and Distributions [Divers. Distrib.]. Vol. 11, no. 3, pp. 199-204; Geographical potential of Argentine ants (<i>Linepithema humile</i> Mayr) in the face of global climate change Roura-Pascual, N; Suarez, AV; Gomez, C; Pons, P; Touyama, Y; Wild, AL; Peterson, AT, Proceedings of the Royal Society of London, Series B: Biological Sciences [Proc. R. Soc. Lond., Ser. B: Biol. Sci.]. Vol. 271, no. 1557, pp. 2527-2535. 22 Dec 2004. etc. (Liette Vasseur, Laurentian University) | 2 point dropped from SOD |
| 14-1057 | A | 45 | 38 | 45 | 47 | there should be a brief paragraph introducing the concept of indirect effects, rather than starting immediately with agriculture. (Francesco Nicola Tubiello, Columbia University) | 3 condensed in SOD |
| 14-1058 | A | 45 | 38 | | | "climate change contributing to..." should read "possibly contributing to..." (Ellen Wall, University of Guelph) | 1 text extensively revised in SOD |
| 14-1059 | A | 45 | 41 | 45 | 41 | production; not yields. (Francesco Nicola Tubiello, Columbia University) | 1 ok |
| 14-1060 | A | 45 | 43 | 45 | 47 | Assumes transport will be economic leading to enhanced globalization. What if it becomes less cost competitive to transport food, a relatively low cost commodity with high waste and volume and the need for specialized transport such as refrigeration? One of those synergistic effects discussed in first paragraph page 45. (Ian Church, Yukon Government) | 2 good point – dropped from SOD |
| 14-1061 | A | 45 | 47 | | | Add "changes in agricultural trade and subsidy policies could have profound effects." (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 condensed in SOD |
| 14-1062 | A | 46 | 5 | 46 | 10 | very general statement - omit? (Antje Schwalb, Institut für Umweltgeologie) | 2 condensed in SOD |
| 14-1063 | A | 46 | 5 | 46 | 10 | which is it? Are there going to be conflicts or not? This paragraph starts with one argument, and ends with the opposite one. (Francesco Nicola Tubiello, Columbia University) | 2 topic dropped from SOD |
| 14-1064 | A | 46 | 5 | 46 | 25 | This passage is too speculative and detracts from the discussion (Ellen Wall, University of Guelph) | 3 condensed in SOD |
| 14-1065 | A | 46 | 8 | 46 | 10 | I'm not sure that this statement is supported by the extensive research conducted by Prof. Homer-Dixon of the University of Toronto on this topic. | 2 condensed in SOD |

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| | | | | | | (Peter Victor, York University) | |
| 14-1066 | A | 46 | 10 | | | What about the other types of conflicts, besides armed conflicts? (Elaine Wheaton, Saskatchewan Research Council) | 2 topic dropped from SOD |
| 14-1067 | A | 46 | 12 | 46 | 17 | The statement about environmental scarcity not being the sole driver of migrations is pretty amazing. What about the Dust Bowl? What about huge dislocations in Africa? Obviously current urban US populations are well insulated but not resource-based economies. (Katharine Jacobs, University of Arizona) | 2 topic dropped from SOD |
| 14-1068 | A | 46 | 12 | 46 | 17 | This paragraph on migration patterns could certainly be revised to refer to the events in New Orleans. (Hank Margolis, Université Laval) | 2 topic dropped from SOD |
| 14-1069 | A | 46 | 14 | 46 | 15 | also increased climate variability is a reason for migration...see recent hurricane examples. (Francesco Nicola Tubiello, Columbia University) | 2 topic dropped from SOD |
| 14-1070 | A | 46 | 19 | 46 | 25 | very general statement - omit? (Antje Schwalb, Institut für Umweltgeologie) | 2 dropped from SOD |
| 14-1071 | A | 46 | 22 | | 25 | Come out and say it: North America is more likely to benefit than be harmed from Climate Change (Thomas Moore, Stanford University) | 2 we disagree |
| 14-1072 | A | 46 | 28 | | | As I read through this section I wondered how much of the information is regionally specific and would overlap with information on adaptation presented in other regional chapters and possibly in chapter 17. Other general comments on this section include the following. In section 14.3 and 14.5 subsections include information on both human and natural systems. In section 14.6 the focus is only on adaptation of human and built environments. The adaptive capacity of natural environments directly and indirectly impacts the capacity of human and built environments. (Jaime Dawson, The University of Western Ontario) | 3 – there remains a strenuous effort to focus on regional examples and findings |
| 14-1073 | A | 46 | 29 | | | Sections 14.6, 14.8 and 14.9 are interesting but not at the same level of tight writing in the rest of the report. They seem to go over the same rather familiar ground & don't add a great deal to the value of the report. In most cases that have a paragraph of words per reference, this can & should be tightened to no more than a sentence per reference, so please reduce the words & tighten the message. (Douglas Fox, Colorado State University) | 3 – will use edits to tighten the writing |
| 14-1074 | A | 46 | 30 | 46 | 37 | Adaptation can be “behavioral” but also technological, management, institutional, regulatory. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 3 – agree, will expand in the edit |
| 14-1075 | A | 46 | 30 | 46 | 32 | The definition of adaptation is given as an adjustment in behaviour. Is it only an adjustment in behaviour? Should this definition include an adjustment in perception, capacity...? Secondly, this definition focuses on humans and does not include the natural environment. | 3 – agree, will expand in the edit |

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| | | | | | | (Jaime Dawson, The University of Western Ontario) | |
| 14-1076 | A | 46 | 30 | | 37 | Could point to discussion in Chapter 17 (Susanne Moser, National Center for Atmospheric Research) | 2 – agree, and this will be easier as chapter 17 comes together |
| 14-1077 | A | 46 | 30 | 55 | | Section 14.6: There are large differences in adaptation options, adaptation histories and adaptive capacity among regions and sectors that are not captured by the framework for this section. Given the generally high adaptive capacity in most sectors and most communities in North America, to what extent do most climate impact assessment represent studies of potential impacts as opposed to residual impacts of (much?) less severity given appropriate and adequate adaptation? (Dave Sauchyn, University of Regina) | 3 – agree, will add this emphasis in edits but space limitations will constrain the depth of reporting |
| 14-1078 | A | 46 | 30 | 46 | 30 | the definition given is unclear. Is adaptation considered here in response to projected future changes to climate and extremes, or does it also include responses to current extremes? From the material that follows, I assume that current variability is included in the definition. In fact, there seems to be a focus on adaptation to current climate conditions, including currently observed climate changes, and too little on what could be done specifically under future, more severe climate change. As it stands, this section seems to focus on current climate changes, with many generic statements about the future; not surprisingly, the reader runs into many repeats by about pg. 53. I would have expected an additional discussion of adaptation under future climates, with attention focused on which of the strategies that work today might work under specific climate changes, and which would not. (Francesco Nicola Tubiello, Columbia University) | 3 – the definition is set out in detail in Ch. 17 and does include projected future changes and responses to current extremes. Much more literature is available about responses to current extremes. |
| 14-1079 | A | 46 | 31 | 50 | | Adaptation section is confusing. Are the actions of communities, cities, states, and blocks of states to reduce move to renewable portfolio standards or adopt emissions reductions worth noting? (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 the ZOD reviews pressed to separate these mitigative actions from the adaptation literature |
| 14-1080 | A | 46 | 35 | | | Some adaptation is proactive in theory but in practice isn't adaptation to future conditions attributable to the impacts of recent climate events of variability on a sector or community. Can the authors identify a case of proactive adaptation that has resulted from reaction to past climate impacts? (Dave Sauchyn, University of Regina) | 2 – agree, Toronto's heat/health alert program is a reaction to past heat waves yet is proactive adaptation due to taking into account future climate change |
| 14-1081 | A | 46 | 36 | | | The sentence beginning with "a third approach" should be deleted; it does not follow since the others are not called approaches, nor are they numbered. As well..taking no action might be considered a form of adaptation. (Ellen Wall, University of Guelph) | 2 – agree, will fix in the text. |
| 14-1082 | A | 46 | 39 | 46 | 44 | It is fair to say that adaptive capacity varies regionally in that some have more and some have less. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 – agree, this is addressed in the text under constraints |
| 14-1083 | A | 46 | 39 | 46 | 44 | With particular reference to climate change, another key issue, not mentioned here, is the rate of climate change versus the rate of adaptation. This concept should be part of the definition of adaptive capacity specific to climate change: it does not | 3 – agree, but addressed in Ch. 17 |

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| | | | | | | in fact apply to current variability. (Francesco Nicola Tubiello, Columbia University) | |
| 14-1084 | A | 46 | 40 | | | Sentence beginning with: "However..." should be deleted; it adds nothing to discussion. (Ellen Wall, University of Guelph) | 2 – Chapter comment 14-17 identified this as an important statement, and we believe it adds much |
| 14-1085 | A | 46 | 42 | 46 | 50 | Sentence is repeated. (Kristie Ebi, Exponent) | 2 – agree, will edit |
| 14-1086 | A | 46 | 47 | 50 | 25 | S 14.6.1 is divided by stakeholders and their considerations to face climate change "challenges" this can be shorter, the use of bullets can help to make more concise this section and the identification of adaptation practices and options easier. (Encinas Carla , IPCC WG2 TSU) | 2 – agree, however, we are right at the space limit. |
| 14-1087 | A | 46 | 47 | 47 | 42 | if this is about current trends, then move to appropriate previous section. Where is adaptation to climate change discussed then? (Francesco Nicola Tubiello, Columbia University) | 2 – chapter 17 defines adaptation to include change to future climate and current extremes these are future trends are related to climate change. |
| 14-1088 | A | 46 | 49 | 47 | 9 | In essence it comes down to changing human behaviour and the willingness to do so based on driving factors. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 – yes |
| 14-1089 | A | 46 | 49 | | | Why mention market-based economies? This point and the one following it have just been made in the preceding paragraph. There is no need to repeat here especially if length is an issue. Businesses and communities do not make decisions, react or take actions, the individuals running them do. This kind of phrasing is repeated often and detracts somewhat from the discussion. (Ellen Wall, University of Guelph) | 2 – market based economies clarifies between a non-centrally and centrally planned economy. Choices are made differently in these two types of economies and this should be noted. Agree with the repeat on individuals, etc. Will edit for clarity and focus |
| 14-1090 | A | 47 | 1 | 47 | 9 | shorten (Antje Schwalb, Institut für Umweltgeologie) | 2 – agree, we can further clarify |
| 14-1091 | A | 47 | 1 | 47 | 9 | This section is poorly developed. For instance, government agents may take steps for adaption that include formulating and implementing policies and programs; they do not "adapt their own practices". Further,it may be that government policies and programs undermine adaptive capacity development (eg. allowing development on floodplains) rather than support it--have there been any studies on this topic? To claim that sharing knowledge about the climate and information about options is helpful is weakly supported. Do we know this is the case? Also, how do you know the process of learning and adapting needs to be promoted? The text reads like it came from government documents, not refereed literature. In agriculture, for instance, many of us have discovered a vast array of knowledge and adaptations among the farming community. Promotion is not necessarily needed in this case. See page 24-25 of Wall et al 2004 for a summary of producers' recommendations about what is needed. The final 2 sentences of this section may be too general to be of use-- Adaptation is system specific. (Ellen Wall, University of Guelph) | 3 – These comments will be used as guidance in the edit for clarity and focus.. |
| 14- | A | 47 | 9 | | | Reference is needed | 2 – agree, the extraordinary losses in 2005 will |

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| 1092 | | | | | | (Elaine Wheaton, Saskatchewan Research Council) | provide many, will put reference in |
| 14-1093 | A | 47 | 11 | 47 | 42 | The discussion in this subsection does not address the key issue: adaptation to a set of conditions that may be outside the individual's experience. We drive slower during storms because we have past experience of what storms will be like. We will buy a house without air conditioning in an area where, based on past experience, it is currently not needed, but will we have the adaptive capacity to ensure that air conditioning can be installed in that house should the climate change and summers become warmer? The subsection needs to at least raise these questions, and the broader question of what information the individual would need to make appropriate adaptation decisions. The issue is raised in section 14.6.2, but it would be more effective to connect it to this earlier discussion, or at least provide a cross-reference in this section. The same comments apply to the next two subsections on businesses and communities. (Lenny Bernstein, IPIECA) | 3 – agree, will try to reflect this view in the edit |
| 14-1094 | A | 47 | 11 | 50 | 25 | I found this section to be very informative. Nice work. (Hank Margolis, Université Laval) | Thanks |
| 14-1095 | A | 47 | 11 | 47 | 35 | are these issues only crucial for North Americans or could go part of this discussion go to another chapter (17)? (Antje Schwalb, Institut für Umweltgeologie) | 2 – not only for N.A. but definitely for North Americans |
| 14-1096 | A | 47 | 11 | 47 | 18 | Evidence (surveys by most NMHS) indicates that individuals use weather forecasts for more than just making decisions related to what clothing to wear. Daily decisions related to their health and safety, investments, and social activities are made by referring to weather forecasts on a daily basis. (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | 2 – this is an excellent point that will be backed up by further referencing |
| 14-1097 | A | 47 | 11 | 47 | 11 | Use of "invest" in subsection title here and below is somewhat misleading, suggest, "Adaptation at the individual level"); (Robin Sydneysmith, University of British Columbia) | 2 – will consider, however extensive economic literature support this wording |
| 14-1098 | A | 47 | 12 | 47 | 15 | Try for shorter summary wording (Robin Sydneysmith, University of British Columbia) | 2 – agree, will try to clarify |
| 14-1099 | A | 47 | 12 | 47 | 42 | The section on individuals adapting comes across as trite in a document where every word counts. Do we really need to waste 2 lines learning that individuals listen to a forecast to determine what to wear? There is also a middle class bias with respect the discussion on home ownership/construction and driving. What are the important points to get across in this section? From my perspective, they are what we know about the factors that constrain/enhance individual adaptive capacity. Studies looking at the role of socioeconomic and institutional resources would be more appropriate.--consider what just happened with Katrina-- If these studies do not exist for North America then that needs to be identified as a major gap since it is so important. (Ellen Wall, University of Guelph) | 2 – agree, these comments will be used as guidance in the edits |
| 14-1100 | A | 47 | 13 | | 14 | We hardly need to be told that people check the weather report to help them select clothing. | 2 – agree, these comments will be used as guidance in the edits |

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| | | | | | | (Thomas Graedel, Yale University) | |
| 14-1101 | A | 47 | 17 | | 18 | Also depend on personal experience. Much of the hazards literature documents this. (Susanne Moser, National Center for Atmospheric Research) | 2 – agree, this is true and discussed later in the chapter. |
| 14-1102 | A | 47 | 20 | | | “affects” should be effects (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 1 – agree |
| 14-1103 | A | 47 | 20 | 47 | 25 | Strike this paragraph (Robin Sydneysmith, University of British Columbia) | 2 – disagree, maladaptation in driving during severe weather increases collisions by 70%. This is important research |
| 14-1104 | A | 47 | 27 | 47 | 34 | Additionally, groups like engineers are beginning to incorporate climate change into their design standards thus removing some of the onus from the individual. The systems are adapting not just the individuals. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 – agree, many Canadian sources for this |
| 14-1105 | A | 47 | 36 | | | correct but individuals often do not use information about climatic driven hazards in locating residences, ie coasts, but as stated on pg 48 line 11 businesses are using the climate / GIS information to adapt. (Robert Taylor, Bedford Institute of Oceanography) | 2 – agree, there is some literature coming out of Katrina that there is evidence to support this. Agree that businesses are using GIS to adapt. |
| 14-1106 | A | 47 | 41 | 47 | 42 | Manufacturers upcaling vehicles to increase profit margins- It is hard to find a vehicle that is not air conditioned. (Ian Church, Yukon Government) | 2 – agree that it is hard to find cars without AC, however, this could be adaptation now because of cheaper inputs |
| 14-1107 | A | 47 | 41 | 47 | 42 | I would suggest that socio-cultural factors are the drivers here... "global warming" is the scapegoat. Personal experience suggests that the Southern US and Eastern North America are "over air conditioned" compared to other societies living in warm or hot climates. (Robin Sydneysmith, University of British Columbia) | 2 – agree, it is difficult to attribute causality to one factor or another. |
| 14-1108 | A | 47 | 44 | 47 | 44 | Suggest, "Adaptation in the business sector" or "Corporate adaptations"; (Robin Sydneysmith, University of British Columbia) | 2 – will consider |
| 14-1109 | A | 47 | 45 | | 50 | Should mention that efforts are underway now in many industries by stakeholders that drive their businesses to find ways to minimize exposure, hedge against risks, etc. Beginning to be documented in the literature. (Susanne Moser, National Center for Atmospheric Research) | 2 – agree, have just seen literature that explains this. |
| 14-1110 | A | 47 | 45 | 48 | 7 | This section also comes across as superficial and too general to be of value. Is "business" the correct term? Or should it be "industrial sector"? Is demand for golf and skiing products the most significant example one could use here? The quote on line 7 page 48 attributed to Smit and Wall 2003 is not accurate, nor does such a document exist (to my knowledge) (Ellen Wall, University of Guelph) | 3 – the alternative would be to lengthen the chapter and we are already above limit |
| 14-1111 | A | 47 | 50 | | | add the following: The losses from increased incidence of weather hazards will create major problems for the insurance industry (Mills et al., 2005). (David Changnon, Northern Illinois University) | 2 – thank you and agree |
| 14-1112 | A | 47 | 50 | | | add the Dutton (2002) reference prior to Byers and Snowe, 2005. (David Changnon, Northern Illinois University) | 2 – agree |

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| 14-1113 | A | 48 | 2 | 48 | 7 | should this go rather to chapter 14.5.7? (Antje Schwalb, Institut für Umweltgeologie) | 2 – disagree, we have collected the adaptive information in this section |
| 14-1114 | A | 48 | 2 | 48 | 4 | Is there an adaptive response associated with the identified impacts on the length of the golf season? At first glance, courses staying open longer and adapting course management practices (spring and fall tees, etc.) come to mind. One other point that has been identified is that the longer golf season will place greater demands on local water resources (longer irrigation season). With the results from recent models indicating warming with little or no increase in precipitation suggests increased irrigation would have an impact on irrigation capacity. (Roger Brian Street, Meteorological Service of Canada, Environment Canada) | 2 – agree, the consideration of demand on irrigation will strengthen the text |
| 14-1115 | A | 48 | 3 | | | ... the golfing season (add) in some regions of North America ...' Also, the citation given for the golf sector is a conference presentation with no published output. There is a paper in the Journal of Leisure Research in 2006 that is a more suitable citation: 2. Scott, D. and Jones, B. (2006 - in press) The impact of climate change on golf participation in the Greater Toronto Area: a case study. Journal of Leisure Research, 38 (4). (Daniel Scott, University of Waterloo) | 2 – agree, have received the articles. Will properly reference them. Addition will be put in. |
| 14-1116 | A | 48 | 3 | 48 | 3 | ..there will be an increased ... this is from a simulation study.better: there MAY be an increased ... (Francesco Nicola Tubiello, Columbia University) | 2 – agree |
| 14-1117 | A | 48 | 4 | 48 | 6 | I think there are more citations related to ski industry activities. (Katharine Jacobs, University of Arizona) | 2 – agree, have some of them and will add references |
| 14-1118 | A | 48 | 4 | 48 | 4 | I am not clear why there will be an increased number of days of inclement weather for golfing. I would think that this would be regionally dependent since some places will get more rain and others less. Some cold places will be warmer, some warm places will be too hot, etc. (Hank Margolis, Université Laval) | 2 – agree that change will be varied. Will clarify this point in the text. More drought and more extreme rainfall events are anticipated across most regions |
| 14-1119 | A | 48 | 5 | | | Most of the work cited in Elsasser et al 2003 is specific to Europe, with the exception of one study from Canada (Scott et al. 2003). A more suitable reference that documents the historical development of snowmaking in North America is: Scott, D. 2005. Ski Industry Adaptation to Climate Change: Hard, Soft and Policy Strategies. In: Tourism and Global Environmental Change. S. Gossling and M. Hall (eds). London: Routledge. (Daniel Scott, University of Waterloo) | 2 – agree, have the article stated will change to reflect N.A. |
| 14-1120 | A | 48 | 7 | | | add the following: "...including crop varieties planted (Smit and Wall, 2003) and the application of pesticides to reduce the risk of bug and/or disease damage." (David Changnon, Northern Illinois University) | 2 – thank you |
| 14-1121 | A | 48 | 9 | 48 | 14 | Regional governments have put in place temporary moratorium on construction and renovation along coastlines (Alain Bourque, Ouranos Consortium) | 2 – agree will try to find references to cite this in text |
| 14-1122 | A | 48 | 16 | 48 | 21 | it's the other way around actually. So called "mitigation strategies" in agriculture, i.e., C-sequestration, were originally devised to improve long-term sustainability | 2 – agree, will look at Ch. 17 |

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| | | | | | | and resilience to extremes...also, this is one good examples of synergies. Yet there's other examples where mitigation and adaptation in agriculture do not go together..see adaptation and mitigation chapter in this book for references. (Francesco Nicola Tubiello, Columbia University) | |
| 14-1123 | A | 48 | 16 | 48 | 25 | Where is the support for stating the conceptual divide between ag mitigation and adaptation is less pronounced? What does such a statement really mean? The final sentence to this section contibutes little to the discussion. The communities section that follows has much more substance to it than either "individuals" or "business". I strongly recommend the latter sections be re-written accordingly. (Ellen Wall, University of Guelph) | 2 – Thank you, we will investigate further |
| 14-1124 | A | 48 | 23 | 48 | 23 | "...there are few examples..." ... and they are? If there are no examples, say so. But if there are, this section would greatly benefit from their inclusion. (Francesco Nicola Tubiello, Columbia University) | 2 – agree, will add examples in to strengthen argument |
| 14-1125 | A | 48 | 27 | 48 | 27 | Suggest, "Adaptation at the Community level" (Robin Sydneysmith, University of British Columbia) | 2 – will consider |
| 14-1126 | A | 48 | 33 | 48 | 43 | This paragraph is way too general and oversimplified. MOST communities work to reduce the threat of flood damage, some more effectively than others. Need citations here. (Katharine Jacobs, University of Arizona) | 2 – agree to use most. Will seek to expand if space limitations permit |
| 14-1127 | A | 48 | 34 | | | Most water resource managers would tell you now that dam building is nto on their horizon anymore. Like it or now. (Susanne Moser, National Center for Atmospheric Research) | 2 – other issues include dam repair, maintenance, water storage, etc. |
| 14-1128 | A | 48 | 35 | 48 | 35 | update with 2005 new orleans if possible. (Francesco Nicola Tubiello, Columbia University) | 2 – agree, historical significance in Katrina |
| 14-1129 | A | 48 | 42 | 48 | 43 | after Hunt (2005). "which is larger than previous design criteria" (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – agree, thank you |
| 14-1130 | A | 48 | 43 | | | add the following: Recent droughts at six major U.S. cities including New York and Los Angeles, have led to a series of adaptative measures involving investments in water conservation systems and new water supply-distribution facilities (Changnon, 2000). (David Changnon, Northern Illinois University) | 2 – agree, thank you |
| 14-1131 | A | 48 | 47 | 48 | 47 | Misuse or misleading use of term "resilient". (Robin Sydneysmith, University of British Columbia) | 1 – will be addressed in the edit |
| 14-1132 | A | 49 | 7 | | 22 | This section should be informed by the following three publications: Moser, Susanne. 2000. "Community Responses to Coastal Erosion: Implications of Potential Policy Changes to the National Flood Insurance Program." (Appendix F, 101pp.) In: Evaluation of Erosion Hazards. A Project of The H. John Heinz II Center for Science, Economics and the Environment. Prepared for the Federal Emergency Management Agency, Washington, DC (available at: http://www.heinzctr.org/Programs/SOCW/Erosion_Appendices/Appendix%20F%20-%20FINAL.pdf); Moser, Susanne. 2005. Climate change and sea-level rise in | 2 – thank you. Reading over texts right now. Will strengthen section if necessary |

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| | | | | | | Maine and Hawai'i: The changing tides of an issue domain. In: Clark, W.C., et al. (eds.). Global Environmental Assessments: Information and Influence. Cambridge, MA: MIT Press.; Moser, Susanne. "Impacts Assessments and Policy Responses to Sea-Level Rise in Three U.S. States: An Exploration of Human Dimension Uncertainties." Global Environmental Change, in press. - Not to be self-centered, but to put local and state action in context and make this look a bit more real! (Susanne Moser, National Center for Atmospheric Research) | |
| 14-1133 | A | 49 | 15 | 49 | 15 | The comment about New Orleans was obviously written before Hurricane Katrina. It should be expanded based on the studies published before the hurricane that pointed out the city's vulnerability to a major storm. They provide an interesting case study of how local government and the public respond to information about climate risk. The rebuilding of New Orleans will obviously take storm risk into account, but what would be needed to make the lesson generalizable? (Lenny Bernstein, IPIECA) | 2 – agree historical significance from Katrina |
| 14-1134 | A | 49 | 15 | 49 | 17 | This is a remarkably good pre-Katrina statement but you now need to add a post-Katrina comment. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – agree, historical significance in Katrina |
| 14-1135 | A | 49 | 15 | | 22 | might want to revise based on recent storms in gulf coast. (Douglas Fox, Colorado State University) | 2 - agree, historical significance in Katrina |
| 14-1136 | A | 49 | 15 | 49 | 15 | I suggest this sentence refers to the ensuing damages done in Mississippi and Louisiana by the landfall of hurricanes Katrina and Rita. (Alain N. Rousseau, Institut national de la recherche scientifique) | 2 - agree, historical significance in Katrina |
| 14-1137 | A | 49 | 24 | 29 | 31 | It's possible to find this message in several parts of the chapter. Better in S 14.6.3 (Encinas Carla , IPCC WG2 TSU) | 2 – disagree, this section identifies examples of action while 14.6.3 explores constraints |
| 14-1138 | A | 49 | 24 | 54 | 40 | Too general, more citations needed. Could possibly be shortened (Katharine Jacobs, University of Arizona) | 2 – agree, some reference will be added |
| 14-1139 | A | 49 | 24 | | 31 | if you mention this, you should also mention similar efforts - many ! - in the US. And also, how difficult it is to have this kind of outreach be successful. See: Moser, Susanne and Lisa Dilling. "Making Climate Hot: Communicating the Urgency and Challenge of Global Climate Change." Environment 46(10): 32-46. (Susanne Moser, National Center for Atmospheric Research) | 2 – agree, will find better wording |
| 14-1140 | A | 49 | 25 | 49 | 25 | Not in the U.S. (Kristie Ebi, Exponent) | 2 – don't agree, above comment is evidence to the contrary |
| 14-1141 | A | 49 | 37 | 49 | 39 | "...conflicts with market based societies" is this somehow contradicting the opening statement on "practices and options" on pg. 46? (Francesco Nicola Tubiello, Columbia University) | 2 – agree, this is the point, will seek greater clarity |
| 14-1142 | A | 49 | 42 | 50 | 4 | The opening paragraphs for this section (as in other sections) read as if they have been written by bureaucrats, not researchers who should have critically reviewed the literature. The first sentence suggests impact studies and weather/climate data are the sum total of government investment in adaptation. What happened to building infrastructure? to education/promotion? to disaster relief? To state | 3 – building infrastructure, education and promotion were identified above as community actions. More research funding would be welcome, but it is important to acknowledge the funds provided in the US and |

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| | | | | | | "governments in N America support adaptation research" flies in the face of figures showing how little has been expended on the topic (especially compared to mitigation). (Ellen Wall, University of Guelph) | Canada |
| 14-1143 | A | 49 | 48 | 50 | 48 | "...support adaptation ...to climate events ...that may exceed ...thresholds. " Such as? Practical examples here would go a long way to add meat to this chapter. (Francesco Nicola Tubiello, Columbia University) | - agree, will add in some practical examples |
| 14-1144 | A | 49 | 50 | | | Whoa, that is pollianaish. Governs support adaptation research. Maybe Canada does - yes, much better than the US. In the US we're cutting research budgets for human dimensions research left and right. This should be stated much more carefully! It's just not true that the \$5 billiob mentioned on the next page go to adaptation and or impacts research. That is a lie. That is the research budget for the entire CCSP budget, and much of that goes to NASA and climate science research - only the smallest of fractions goes to human dimensions research. Hey - don't shoot yourself this badly in the foot! (Susanne Moser, National Center for Atmospheric Research) | 3 – clearly a touchy subject that can be avoided |
| 14-1145 | A | 50 | 0 | 61 | 0 | Little comments on pages 50 to 61 because of lack of time to verify different sources and since the case studies are good. (Alain Bourque, Ouranos Consortium) | 2 – thank you. |
| 14-1146 | A | 50 | 1 | 50 | 2 | The US will invest \$5 billion in climate programs in 2005, but only a small fraction of that is for adaptation. Most of the money is for climate science research or mitigation technology development. (Lenny Bernstein, IPIECA) | 2 – agree, will reword |
| 14-1147 | A | 50 | 1 | 50 | 4 | Because of emerging risks, lower level of governments and isolated businesses are also beginning to invests in adaptation (Ouranos, 2004) (Alain Bourque, Ouranos Consortium) | 2 – agree, |
| 14-1148 | A | 50 | 1 | 50 | 2 | This number should be investigated further or not reported. My understanding is that the U.S. is counting the costs of satellites in their annual investment. At a minimum, the cost of satellites should be separated out. (Kristie Ebi, Exponent) | 2 – agree, will reword this |
| 14-1149 | A | 50 | 2 | | | \$5 billion for what purpose? (Dominique Bachelet, Oregon State University) | 2 – agree, will reword |
| 14-1150 | A | 50 | 2 | 50 | 4 | True the U.S. conducted a National Assessment, but it has been buried and the people involved marginalized to the extent possible. (Kristie Ebi, Exponent) | 2 – No comment |
| 14-1151 | A | 50 | 6 | 50 | 16 | This relates to extreme events but what sort of options exist for chronic rather than acute climate change? (ex. subsidies for passive solar, hybrid cars, water efficient washers-Star program) (Dominique Bachelet, Oregon State University) | 2 – good point, however, these points are mitigation rather than adaptation |
| 14-1152 | A | 50 | 6 | | 16 | This, too, could be better informed by the above mentioned references: Moser, Susanne. 2005. Climate change and sea-level rise in Maine and Hawai'i: The changing tides of an issue domain. In: Clark, W.C., et al. (eds.). Global | 2 – agree, have articles and will add if they can strengthen |

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| | | | | | | Environmental Assessments: Information and Influence. Cambridge, MA: MIT Press.; Moser, Susanne. "Impacts Assessments and Policy Responses to Sea-Level Rise in Three U.S. States: An Exploration of Human Dimension Uncertainties." Global Environmental Change, in press. (Susanne Moser, National Center for Atmospheric Research) | |
| 14-1153 | A | 50 | 7 | | | add the following: Assessment of past and present U.S. policies for dealing with weather and climate extremes showed that future policies should require more personal responsibilities regarding mitigative actions (Changnon and Easterling, 2000). (David Changnon, Northern Illinois University) | 2 – agree, thank you |
| 14-1154 | A | 50 | 8 | 50 | 10 | It seems strange to claim that an incentive for tornado shelters is adaptation to climate change, since every assessment, including this chapter (Pg. 21, lines 9-11), dismisses a connection between tornado frequency and climate change. Delete the sentence. (Lenny Bernstein, IPIECA) | 2 – don't agree, it is not just frequency, but intensity that determines damage. Magnitude of tornadoes expected to rise. |
| 14-1155 | A | 50 | 16 | | | Add: "Canada's flood plain mapping program has in general not been keeping up to date with changes in land-use in basins and in climate." (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – agree, will find references |
| 14-1156 | A | 50 | 18 | 50 | 25 | It is not clear in the text how the Doppler radar system relates to climate. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – thank you, will clarify the text |
| 14-1157 | A | 50 | 23 | | 25 | does not fit this section eliminate as it is stated again in section on pg 54 line 24-26 more appropriate (Robert Taylor, Bedford Institute of Oceanography) | 2 – agree, will move to integration issues |
| 14-1158 | A | 50 | 28 | 52 | 48 | S 14.6.2 needs to be clearer and direct in its approach and message. Some of this information is already in Current Sensitivity/Vulnerability. S 14.3 (Encinas Carla , IPCC WG2 TSU) | 2 – agree, will read full text to not overlap |
| 14-1159 | A | 50 | 30 | | 37 | What's missing in this list is an important fourth issue, namely that in this country (more so in Canada) we have not even begun to have a decent public discourse on adaptation. This is a major hurdle! (Susanne Moser, National Center for Atmospheric Research) | 3 – agree, will discuss at Merida |
| 14-1160 | A | 51 | 3 | | | This should be "Blaikie," not "Blaiklie." Moreover, there is a new version of this book out, which would be more appropriate to cite: B. Wisner, P. Blaikie, T. Cannon, I. Davis (2004). At Risk: Natural Hazards, People's Vulnerability and Disasters. Routledge. (Brent Yarnal, The Pennsylvania State University) | 2 – agree, thank you |
| 14-1161 | A | 51 | 6 | 51 | 7 | O'Connor et al. (2005; Risk Analysis, vol 25, 1265-1275) demonstrate that water managers' willingness to use climate forecasts is strongly and directly related to their recent experience with adverse weather and climate. (Brent Yarnal, The Pennsylvania State University) | 2 – agree, reading texts to further strengthen text |
| 14- | A | 51 | 7 | | 9 | Another example is that setback policies in coastal areas often take historical | 2 – agree, reading references to strengthen text |

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|---------|---|----|----|----|----|---|---|
| 1162 | | | | | | erosion rates into account, (based on historical sea level rise), but are not required to look forward and how that rate may increase as sea level rises faster. Thus underestimating the safety of the new construction over the project's design life. (Susanne Moser, National Center for Atmospheric Research) | |
| 14-1163 | A | 51 | 11 | | 17 | Another example is described in Moser, Susanne. "Impacts Assessments and Policy Responses to Sea-Level Rise in Three U.S. States: An Exploration of Human Dimension Uncertainties." Global Environmental Change, in press. -- Maine's coastal laws. (Susanne Moser, National Center for Atmospheric Research) | 2 – thank you |
| 14-1164 | A | 51 | 11 | | | There have been some work done in grey literature (governmental reports). See CEAE reports and ClimAdapt report in Nova Scotia (re. Norval Collins) (Liette Vasseur, Laurentian University) | 2 – thank you, will locate references |
| 14-1165 | A | 51 | 12 | 51 | 12 | This is not correct -- the Philadelphia system was put into place in response to heatwaves in the previous two years. (Kristie Ebi, Exponent) | 2 – will try for greater clarity |
| 14-1166 | A | 51 | 14 | | | more cities adopted the Kalkstein warning system in the last year. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 – agree, thank you, will try to add references in |
| 14-1167 | A | 51 | 17 | 51 | 17 | As mentioned above, projected impacts were not considered when implementing the Philadelphia system. (Kristie Ebi, Exponent) | 2 – will edit text for greater clarity |
| 14-1168 | A | 51 | 25 | 51 | 32 | And just because plans exist does not mean that they are used. Bernard and McGeehin 2003 or 2004 evaluated heatwave early warning systems in the U.S. and found that most existed on paper only. (Kristie Ebi, Exponent) | 2 – thank you for reference. If possible, will add as policy gap. |
| 14-1169 | A | 51 | 40 | 51 | 40 | "one more factor competing..." yes, but so what? This is a chapter of a book on climate change. The interesting issues about climate change impacts compared to socio-economic pressures could rather be: do they matter? If so, by how much? Where would it matter most? Etc. (Francesco Nicola Tubiello, Columbia University) | 3 – there are many factors competing for attention. This point demonstrates the barriers for adaptation to be noticed |
| 14-1170 | A | 51 | 43 | 51 | 46 | also very general statement, not only true for North America. (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1171 | A | 52 | 1 | 52 | 4 | This brings the New Orleans events to mind once again. (Hank Margolis, Université Laval) | 2 – agree, looking for literature to include Katrina |
| 14-1172 | A | 52 | 1 | 52 | 4 | also very general statement, not only true for North America. (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1173 | A | 52 | 1 | | 2 | case in point New Orleans 2005 (Robert Taylor, Bedford Institute of Oceanography) | 2 - agree, looking for literature to include Katrina |
| 14-1174 | A | 52 | 2 | 52 | 3 | Expand on this idea for a sentence or two -- important to emphasize the regional and socio-economic disparity within North America, and the therefore, wide range in adaptive capacity between e.g. New Orleans and New York or Vancouver and Bella Coola. | 2 – agree, will expand idea to include this. |

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| | | | | | | (Robin Sydneysmith, University of British Columbia) | |
| 14-1175 | A | 52 | 4 | 52 | 4 | Preduct? (Kristie Ebi, Exponent) | 1 – agree, will change |
| 14-1176 | A | 52 | 4 | 52 | 4 | "preduct". I do not understand this word. Is it a typo? (Francesco Nicola Tubiello, Columbia University) | 1 – agree, will change |
| 14-1177 | A | 52 | 6 | 52 | 14 | again, these statements are about current climate variability, which we know. Where is a discussion of how these issues may change under future climates? (Francesco Nicola Tubiello, Columbia University) | 2 – the definition in ch. 17 states that adaptation to future change and current variability |
| 14-1178 | A | 52 | 17 | 52 | 18 | I don't think this statement applies to Canada. Canadians look to their governments to take action in the event of a disaster. (Peter Victor, York University) | 2 – partially agree, initially after a disaster, it is up to the individual to look after one's self. In the long run, this statement is true. |
| 14-1179 | A | 52 | 23 | 52 | 40 | again very general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1180 | A | 52 | 23 | 52 | 31 | statements here seem at odd with those just a bit lower, lines 42-48. (Francesco Nicola Tubiello, Columbia University) | 2 – will try to add clarity to the text |
| 14-1181 | A | 52 | 33 | | | First sentence not always true. (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 – agree, will add "in general" |
| 14-1182 | A | 52 | 37 | 52 | 40 | Paragraph is too vague. Expand on the point or strike the para. (Robin Sydneysmith, University of British Columbia) | 2 – agree, will combine will other paragraph to strengthen |
| 14-1183 | A | 52 | 44 | 52 | 46 | There is something wrong with this sentence. (Kristie Ebi, Exponent) | 2 – agree, will change "American" to "America", as well try to put in two sentences |
| 14-1184 | A | 53 | 0 | 54 | | For another paper that should inform this paper - see Moser, Susanne. "Impacts Assessments and Policy Responses to Sea-Level Rise in Three U.S. States: An Exploration of Human Dimension Uncertainties." Global Environmental Change, in press. (Susanne Moser, National Center for Atmospheric Research) | 2 – thank you |
| 14-1185 | A | 53 | 1 | 54 | 40 | There isnt enough discussion of the economics of adaptation. At the community level, adaptation strategies may be identified but never brought to fruition due to budgetary constraints. This is the most important limiting factor in adpatation. Not even the loss of life can outweigh it. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 3 – agree, will add some economics in |
| 14-1186 | A | 53 | 1 | | | This section should at least mention political constrains. This section is quite rosy. (Kristie Ebi, Exponent) | 2 – agree, will add in some political barriers. This concurs with earlier comment by Yarnal |
| 14-1187 | A | 53 | 1 | | | Why are constraints discussed and not opportunities? (Elaine Wheaton, Saskatchewan Research Council) | 2 – there will be clarity added. Above comment make the counter argument |
| 14-1188 | A | 53 | 1 | 54 | 40 | 14.16.3. Constraints. Nowhere in this section is there a discussion of the fact that unless climate information fits into the decision-making context of the decision-maker, it is likely that he/she will not use that information. For example, Dow et al. (Dow, K., O'Connor, R.E., Yarnal, B., Carbone, G.J., and Jocoy, C.L., submitted. Managers' Views of Vulnerability: The case of Community Water System | 3 – agree, will use texts to make this distinction |

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| | | | | | | Management and Climate. Global Environmental Change) and Yarnal et al. (Yarnal, B., Heasley, A.L., O'Connor, R.E., Dow, K., and Jocoy, C.L., submitted. The Potential Use of Climate Forecasts by Community Water System Managers. Land Use and Water Resources Research) demonstrated that even when they recognized their vulnerability, water managers were unlikely to use climate forecasts if they did not see how it related to their everyday management decisions. (Brent Yarnal, The Pennsylvania State University) | |
| 14-1189 | A | 53 | 2 | 55 | | Where's the section on institutional constraints/opportunities? P. 53 line 31-33 makes it sound all personal or local. Federal regs have a lot to do with it. Flood insurance to rebuild in vulnerable areas keeps the coastal regions rebuilding after storms. Water allocation laws in the US--especially the West are a big constraint to wise adaptation. Farm subsidies, likewise. CRP provisions and other conservation provisions in the Farm Bill can be a big help. USFS is required to think about forests for 100 years--that's helpful to adaptation. Anything that requires us to think about larger spatial and longer temporal management can be adaptive. Guidance on preserving wetlands that are most likely to persist, e.g. (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 3 – will use edits to tighten the writing |
| 14-1190 | A | 53 | 3 | 53 | 5 | again very general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1191 | A | 53 | 3 | 53 | 3 | "adaptive capacity" ...defined as?... (Francesco Nicola Tubiello, Columbia University) | 2 – definition provided earlier, will edit to add clarity |
| 14-1192 | A | 53 | 7 | 53 | 12 | Some specific examples of cultural and/or social barriers to adaptation would help. (Robin Sydneysmith, University of British Columbia) | 2 – agree, will add in practical examples |
| 14-1193 | A | 53 | 8 | 53 | 9 | These sentences are repeated. (Kristie Ebi, Exponent) | 2 – don't agree, don't see the repeat |
| 14-1194 | A | 53 | 8 | | | This sentence marks at least the fourth time the reader has been told that North Americas adaptive capacity is high. (Thomas Graedel, Yale University) | 2 – agree, will reword |
| 14-1195 | A | 53 | 8 | | 28 | text does not fit the subheading except for maybe line 12-lines 8-10 similar to previous sections-omit or change (Robert Taylor, Bedford Institute of Oceanography) | 2 – don't agree, this section illustrates social barriers. It will be strengthened though |
| 14-1196 | A | 53 | 8 | 53 | 12 | this sounds like a repeat of what was written earlier in this same section (Francesco Nicola Tubiello, Columbia University) | 2 – agree, will reword |
| 14-1197 | A | 53 | 14 | 53 | 18 | again very general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1198 | A | 53 | 14 | 53 | 14 | EDIT. Information about climate is CURRENTLY? Often a small part... (Francesco Nicola Tubiello, Columbia University) | 2 – agree |
| 14-1199 | A | 53 | 18 | | | add the following: Government policies are sometimes hampered by political differences, as shown by the major debate and disagreements over proposals to increase the diversion of Great Lakes waters to enhance river flows during the 1988 | 2 – agree |

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| | | | | | | drought (Changnon 1989). (David Changnon, Northern Illinois University) | |
| 14-1200 | A | 53 | 21 | 53 | 21 | EDIT ..made to building codes..... (Francesco Nicola Tubiello, Columbia University) | 2 – agree |
| 14-1201 | A | 53 | 27 | 53 | 27 | Yes they are! Except, considerations might include current climate patterns only (experience), not future ones... (Francesco Nicola Tubiello, Columbia University) | 2 – agree, will strengthen the argument |
| 14-1202 | A | 53 | 30 | 53 | 38 | again very general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1203 | A | 53 | 40 | 53 | 47 | this is about adaptation investments, not constraints. Should be placed in an earlier section (Rosina Bierbaum, School of Natural Resources and Environment, The University of Michigan) | 2 – agree, will rearrange text |
| 14-1204 | A | 53 | 40 | 53 | 47 | again, this is adaptation to current climate. (Francesco Nicola Tubiello, Columbia University) | 2 –agree, this is still adaptation |
| 14-1205 | A | 53 | 46 | | 47 | Is this ratio adjusted for inflation? (Thomas Moore, Stanford University) | 2 – yes |
| 14-1206 | A | 53 | 47 | 53 | 47 | ten times the original cost...the original cost was in 1968. are these constant US \$, adjusted for inflation? (Francesco Nicola Tubiello, Columbia University) | 2 – agree, will clarify CAD |
| 14-1207 | A | 53 | 47 | 53 | 47 | Cost comparisons over time should be made in terms of constant dollars. Please clarify in this instance. (Peter Victor, York University) | 2 – agree, will clarify |
| 14-1208 | A | 53 | 49 | 54 | 2 | again very general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14-1209 | A | 53 | | | | section 14.6.3 Constraints: Need to consider the size of the forested landbase over which going to do adaptation. Intervention to assist only likley to take place on the harvested land base. There is a large are we do not manage intensively. For example in BC, Canada 24Mha is considered operable at about 0.2 Mha per year, the remaining 38Mha is subject to some fire protection but we will have to adjust to whatever autonomous adaptations occur "naturally". In areas where we think we can do something there is still the question of what is the right time to act and what future time period do you target in terms of selecting the climate capabilities of the planted trees. Lacking in our knowledge of the climatic limits of many forest species, this includes the major timber species. Intervention is likely to focus on major species and most forest species will have to adjust as best the can even in the managed forest. There are institutional and policy barriers to responding to climate change in forestry. For example, seed planning zones, reforestation standards and hydrologic and wildlife management guidelines are designed for the current climate regime. There are no requirements for adaptation strategies in forest management plans, nor are there guidelines and sufficient experienced personnel to aid such activities. | 2 – agree, there are many types of institutional barriers, this will be considered in following edits |

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|---------|---|----|----|----|----|---|--|
| | | | | | | There are many stakeholders whose different needs are supplied by forests and therefore have different vulnerabilities to climate change. Most of Canada's forests are on crown land; therefore government agencies must take the lead on applying adaptation in forest management. The agencies are responsible for setting policies, developing management objectives and approving forest company stewardship plans. Governments set standards for species selection, seed transfer, stocking, and biodiversity and allocate land to parks and wilderness areas. They are also responsible for maintaining forest health and growth monitoring plots and provenance trials. Resulting forest policy changes and social considerations will need to take regional disparities of impacts into account. (David Spittlehouse, BC Ministry of Forests) | |
| 14-1210 | A | 54 | 1 | 54 | 17 | a lot of repeat from earlier in this section (Francesco Nicola Tubiello, Columbia University) | 2 – will seek more clarity in upcoming edits |
| 14-1211 | A | 54 | 4 | 54 | 7 | "...even though inexpensive adaptations are available" ... such as? This is what should be discussed here more at length, with attention focused on which of the strategies that work today might work under specific climate changes, and which would not. (Francesco Nicola Tubiello, Columbia University) | 2 – agree, will add for clarification |
| 14-1212 | A | 54 | 9 | 54 | 40 | One potential tool for increasing awareness, decreasing uncertainty and adapting to climate changes is the development of specific indicators or performance measures that can be monitored by local governments or communities. The uncertainty issue looms very large when discussing climate change with stakeholders. It is very hard to arrive at consensus about adaptation strategies that negatively effect particular sectors or individual stakeholders involved in the discussion. Given a fair process of dialogue and deliberation, it is however feasible to get a group to make a decision about the need to monitor some key indicators that will decrease the uncertainty over time and even trigger action if a certain level is reached. I think WG2 could use AR4 to issue a call for the development of key indicators of climate change at all levels from national to local. The indicators should not be just physical or scientific indicators, but should include social and economic indicators. I have suggested in my review of Chapter 15 that some candidate indicators might even be developed as part of the report. (Philip Hill, Geological Survey of Canada) | 3 – agree, will discuss in Merida |
| 14-1213 | A | 54 | 15 | | | The phrase, "daily and seasonal weather forecasts," should read, "daily weather and seasonal climate forecasts." (Brent Yarnal, The Pennsylvania State University) | 1 – agree |
| 14-1214 | A | 54 | 19 | 54 | 26 | how does this apply to climate change? (Francesco Nicola Tubiello, Columbia University) | 2 – don't agree, if we don't have the human capital to conduct the research, it is hard to adapt |
| 14-1215 | A | 54 | 28 | 54 | 32 | again very general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 – don't agree, it is true for more than N.A., but is still important for North Americans |
| 14- | A | 54 | 28 | 54 | 29 | "...justification for inaction..." unless it is clearly shown that some adaptation | 2 – agree, this is justification for inaction |

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| 1216 | | | | | | strategies provide win-win cases, where communities are made better off whether climate change happens or not in the future. (Francesco Nicola Tubiello, Columbia University) | |
| 14-1217 | A | 54 | 34 | 54 | 34 | Interesting observation. (Hank Margolis, Université Laval) | Thanks |
| 14-1218 | A | 54 | 34 | 54 | 40 | I'm not sure of the point of this example, it seems somewhat superfluous. (Robin Sydneysmith, University of British Columbia) | 2 – don't agree, it is to emphasize the importance of knowledge and promotion of adaptation techniques |
| 14-1219 | A | 54 | 34 | 54 | 40 | this is current climate change. Where is future climate change discussed? (Francesco Nicola Tubiello, Columbia University) | 2 – don't agree, while we are adapting to current trends this will also include future trends. |
| 14-1220 | A | 54 | 43 | 54 | 43 | Section 14.6.4 is titled Conclusion. This is somewhat confusing as it is the conclusion for this section only not the whole chapter as some people may infer. I would reword this title for clarity. (Jaime Dawson, The University of Western Ontario) | 1 ok – fix in SOD |
| 14-1221 | A | 54 | 43 | | | "Conclusion" should be "Conclusions." (Brent Yarnal, The Pennsylvania State University) | 1 clarify in SOD |
| 14-1222 | A | 54 | 50 | | | Add after "Uncertainty", "Risk Management techniques provide one set of tools increasingly used for adaptation to climate change variability and change." (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 good point |
| 14-1223 | A | 55 | 3 | 55 | 5 | Increasingly reactive adaptaton is being masked as "adaptive management". Often proponents of developments say that they will resolve any future projects through Adaptive management. The problem is that they are often loath to define proactively what would trigger the need to begin to implement adaptive mitigation and what that mitigation would be. Often the technology may not exist; in other cases they may not want to be bound to commit to take a particular action - especially if they would be asked to post security or a bond. In future adaptive management will probably be increasingly used to mitigate true unknowns but proactively proponents and regulators need to pre- plan what actions would be taken- recognizing that in future those strategies may change if better technologies are developed. (Ian Church, Yukon Government) | 3 good but sophisticated point – will try to address in SOD |
| 14-1224 | A | 55 | 8 | | | Perhaps a more proper, informative title such as Case Studies of Climate Change Impacts and Potential Adaptation in North America (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 guidance from TSU? |
| 14-1225 | A | 55 | 8 | 61 | 41 | Why are the case studies stuck out in the "backyard" and not permitted entry into the "house"? I think the chapter as a whole needs a better balance between "abstracting up" to continental scale vs. mapping significant sub-regional variations. This point is particularly germane to discussions of vulnerability. Up to a point, which often varies subregionally, vulnerability is socially constructed, so that the physical and biological dimensions of the problem have to be put into a | 1 for formatting 3 for regional versus continental |

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| | | | | | | specific sociocultural, economic, and political context. (Miles Edward, School of Marine Affairs) | |
| 14-1226 | A | 55 | 8 | 61 | 40 | Case studies are excellent (Katharine Jacobs, University of Arizona) | thanks |
| 14-1227 | A | 55 | 8 | 61 | 40 | I was excited to read the case studies because they typically put the more general material into clearer focus by providing geographical particulars. I was disappointed with these case studies. None tell a compelling or coherent study. Instead, they present scattered facts in a choppy matter. None draw conclusions; all end abruptly. Only the cities and coastal sea-level rise case study offers adaptation strategies, and the latter reads like a general primer on the subject and not a case study steeped in detail and nuance. In the end, I actually think the chapter is better without these case studies because they add no value (and perhaps distract because they are not done well). A good way to reduce the length of the chapter without diminishing the content, therefore, is to eliminate these case studies. If the authors do not eliminate them, then they need to significantly improve them so that they do add value to the chapter. To improve them, they need to be more reader friendly, include more context-specific detail and nuance, offer meaningful adaptation strategies, and present conclusions (i.e., not end so abruptly). (Brent Yarnal, The Pennsylvania State University) | 3 Direct opposite of previous comment |
| 14-1228 | A | 55 | 9 | 61 | | CASE STUDIES...I would remove these to shorten the chapter. (David Changnon, Northern Illinois University) | 3 Same as previous comment |
| 14-1229 | A | 55 | 10 | 56 | 38 | Salmon are an extremely important component of the Columbia River system, and should be added to this text. (Franklin Schwing, NOAA Fisheries Service) | 2 Add restoration of salmon and steelhead runs as part of the discussion. |
| 14-1230 | A | 55 | 10 | 55 | 14 | ..projected radical decline in snowpack. References should be given. For readers not familiar with N American maps, could a brief sentence state at the beginning where the columbia river basin actually is? Finally, some of the language is too technical (i.e, junior water users; reliability; etc). please consider readers may not be water specialists. (Francesco Nicola Tubiello, Columbia University) | 2 Provide references. Projected decline can come from Leung or Lettenmaier/Hamlet |
| 14-1231 | A | 55 | 17 | 55 | 20 | The lack of formal treaties in BC between First Nations and the government of Canada adds another layer of complexity to this already highly complex situation. (Robin Sydneysmith, University of British Columbia) | 2 Include |
| 14-1232 | A | 55 | 29 | 55 | 32 | Delete if some of the complexities are not going to be described. (Kristie Ebi, Exponent) | 2 Will attempt to describe |
| 14-1233 | A | 55 | 32 | 55 | 32 | "..some of the tradeoffs ..." such as? (Francesco Nicola Tubiello, Columbia University) | 2 Describe |
| 14-1234 | A | 56 | 1 | | | Table 1: Is "Hadley" - "Hadley Centre 2" A notoriously wet, cool model, or "Had3" ? (James Bruce, Canadian Policy Representative, Soil and Water Conservation Society) | 2 HADCM2. CGCM1(the other model) is "dry" for the Pacific Northwest. |
| 14- | A | 56 | 1 | | | Describe the base case in this table as well as the version and emission scenarios for | 2 We are providing the requested data. |

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| 1235 | | | | | | the GCMs (Elaine Wheaton, Saskatchewan Research Council) | |
| 14-1236 | A | 56 | 4 | 56 | 50 | box 1 is all about socio-economic pressures, almost no climate change; box 2 seems the opposite. Is there not any role of humans and trends in human activities (recreation, settlements, etc.) in these fire dynamics? Also, what about giving some projections, with a summary of what's more at risk where, by when, etc.? (Francesco Nicola Tubiello, Columbia University) | 3 Reword to make the role of climate clearer in Box 1 |
| 14-1237 | A | 56 | 14 | 56 | | A useful group of references may be the various products that were developed as part of the Columbia Basin Environmental Impact Statement exercise (Ian Church, Yukon Government) | 2 Obtain these references and include if appropriate |
| 14-1238 | A | 56 | 15 | 56 | 15 | Delete sentence. (Kristie Ebi, Exponent) | 1 Dropped |
| 14-1239 | A | 56 | 15 | | | figure 9 is 14.9 (Robert Taylor, Bedford Institute of Oceanography) | 1 Changed to 14.9 |
| 14-1240 | A | 56 | 15 | 56 | 17 | ... "only one part of which is climate change.." yes, but what does that mean really, in the context of this chapter? If the authors think climate change is unimportant compared to other issues, please say so. In fact, where is climate change at all in this diagram? (Francesco Nicola Tubiello, Columbia University) | 2 Reword to make it clear that Table 1 is all climate |
| 14-1241 | A | 56 | 17 | 56 | 17 | "relating climatic trend to fire activity is complicated by regional differences ..." how so? Regional climatic trends should still correlate with regional fire activity. (Francesco Nicola Tubiello, Columbia University) | 2 This is actually box 2 on P. 57 |
| 14-1242 | A | 56 | 37 | | | while this diagram looks interesting , you could explain it easier in words and be more understandable (Robert Taylor, Bedford Institute of Oceanography) | 2 Will try to do this in one sentence. If that is not possible, may have to drop the figure. |
| 14-1243 | A | 57 | 0 | 58 | | box 2 very good regional discussion and very clear well written, good example good case study (Robert Taylor, Bedford Institute of Oceanography) | Thanks |
| 14-1244 | A | 57 | 1 | 58 | 14 | See comments in number 4 above -There are four factors that influence fire activity - fuel, weather/climate, ignitions and people (try to manage fire, fragment the landscape, start fires - accidental and intentional). Weather and climate is the most important factor(Flannigan and Harrington 1988. J. Applied Meteor. 27:441-452; Flannigan et al. 2005 Climatic Change 72:1-16;Flannigan and Wotton 2001 pp. 335-357 - in Forest fires: Behaviour and Ecological effects (eds Johnson and Miyanishi Academic Press; Swetnam Science 262:885-889) and it also influences fuel(vegetation) type and moisture and ignitions through lightning activity (Mike Flannigan, Canadian Forest Service) | 2 good refs – fire box revised |
| 14-1245 | A | 57 | 1 | 58 | 14 | Please refer to comments submitted by Pierre Bernier. (Hank Margolis, Université Laval) | 2 thanks |
| 14-1246 | A | 57 | 22 | | | Add section on future area burned. Example "A changing climate is also expected to approximately double the area burned in Canada by the year 2100 compared to that of the last few decades (Flannigan et al. 2005). However, landscape feedbacks | 2 good point and good references |

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| | | | | | | and human intervention may ameliorate the increased area burned, although ignitions are also likely to increase (Wotton et al 2003)." References: Wotton BM, Martell DL, Logan KA(2003) Climate Change and People-Caused Forest Fire Occurrence in Ontario. Climatic Change 60 275-295. Flannigan, MD, KA Logan, BD Amiro, WR Skinner and BJ Stocks. 2005. Future area burned in Canada. Climatic Change 72:1-16. (Brian Amiro, University of Manitoba) | |
| 14-1247 | A | 57 | 45 | | 45 | box 4 (and box5) are well organized in my view, in the sense that they provide a good model of what should go into any North American climate change subsection. There are facts from current trends, projections, numbers, as well as socio-economic considerations. Also, good mix of discussion of future changes in both mean climate and its variability. (Francesco Nicola Tubiello, Columbia University) | thanks |
| 14-1248 | A | 57 | 48 | 57 | 48 | EDIT... illustrated by example in the metropolitan ... (Francesco Nicola Tubiello, Columbia University) | 1 ok |
| 14-1249 | A | 58 | 0 | | | Box 2; natural disturbances are essential events to maintain many ecosystem types, communities, species populations in many systems such as the boreal forest or mediteranean systems where fire is a natural disturbance. For instance Jack Pine Pinus banksiana requires that fire occurs on a semi-regular basis to be maintained in the system (Gauthier et al. 1996 J.Ecol). (Sylvie Gauthier, Laurentian Forestry Center, Canadian Forestry Service) | 2 we have tried to raise this point throughtout the chapter |
| 14-1250 | A | 58 | 7 | 58 | 7 | Add "Han and Bauce (2000) reported eastern spruce budworm larvae had lower survival under dry conditions in late summer suggesting a possible impact of changing precipitation regimes in the boreal forest on the population dynamics of this economically important forest insect." (Hank Margolis, Université Laval) | 2 relevant sounding ref -- check |
| 14-1251 | A | 58 | 7 | 58 | 8 | Given the scale and severity of the MPB outbreak and the relatively clear connection with climate change this issue seems under represented in this box and indeed throughout the chapter. (Robin Sydneysmith, University of British Columbia) | 2 good point – add more on Mountin Pine Beetle |
| 14-1252 | A | 58 | 7 | 58 | 7 | occurs...seems to be an inappropriate verb for a prediction. First of all it should be "occurred" or would occur", i.e., not in present tense. Secondly, more appropriate verbs to simulation results (not facts) should be used throughout, such as predict, compute, project, etc. (Francesco Nicola Tubiello, Columbia University) | 2 ok |
| 14-1253 | A | 58 | 15 | 58 | 15 | LULU. Interesting acronym. No use in following lines. Should be omitted. (Francesco Nicola Tubiello, Columbia University) | 1 ok |
| 14-1254 | A | 58 | 17 | 58 | 40 | This box is too detailed. (Kristie Ebi, Exponent) | 3 box removed |
| 14-1255 | A | 58 | 18 | 58 | 40 | It's a little redondant with text in pages 17-18. (Encinas Carla , IPCC WG2 TSU) | 2 box removed |
| 14- | A | 58 | 21 | 58 | 21 | same as above. "Is vulnerable" ... should be ... "may be vulnerable" ...etc. | 1 box removed |

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| 1256 | | | | | | (Francesco Nicola Tubiello, Columbia University) | |
| 14-1257 | A | 58 | 24 | | | Culex pipiens may be the only major mosquito vector for this area. Is it? Specify for this area as other mosquitos are main vectors in other areas. (Elaine Wheaton, Saskatchewan Research Council) | 2 box removed |
| 14-1258 | A | 58 | 44 | 60 | 35 | This box is too detailed and repeats information in the text. (Kristie Ebi, Exponent) | 3 We are eliminating the material in the text. Contradicts comment 14-247 |
| 14-1259 | A | 58 | 44 | 60 | 37 | box 4 very good examples of the complex interactions between regions and adaptation examples (Robert Taylor, Bedford Institute of Oceanography) | Thanks |
| 14-1260 | A | 58 | 45 | 60 | 36 | There is enough information to summarize in a table by sectors and impacts in mayor North American Cities. (Encinas Carla , IPCC WG2 TSU) | 3 Explore using a table. |
| 14-1261 | A | 58 | 45 | | | The Box 4 case study is really more a collecton of information than a case study, and much of it is discussed elsewhere in the report. It can be omitted here. (Thomas Graedel, Yale University) | 2 Agrees with comment 14-258. Do we need this to be just a box and not a “case study/” |
| 14-1262 | A | 59 | 30 | | | add the following: New York and five other large U.S. cities all made major adjustments for handling their future water supplies as a result of the major droughts during 1981-1997 (Changnon, 2000). (David Changnon, Northern Illinois University) | 2 Obtain the reference. Add the language and reference if we keep the box. |
| 14-1263 | A | 59 | 40 | 58 | 41 | Not sure of what is meant by "minority sections" and why, if as I suspect, this is reference to ethnic minorities, it is relevant to the discussion in this particular subsection. (Robin Sydneysmith, University of British Columbia) | 2 Ethnic minority neighbourhood is what is meant. It is relevant because the impacts in North America differentially affect social classes. This was very apparent in New Orleans. Revise wording slightly to clarify. |
| 14-1264 | A | 60 | 4 | | 7 | Warmer winters mean less deaths. The lives saved from less cold winters will exceed the lives lost from warmer summers. (Thomas Moore, Stanford University) | 2 Need sentence on this question from J. Patz. |
| 14-1265 | A | 60 | 12 | 60 | 12 | Listing these cities in this way implies that other cities have not committed to adaptation. The wording just seems funny, emphasis misplaced perhaps? (Robin Sydneysmith, University of British Columbia) | 2 I don't think the implication is there. Other cities certainly have committed to adaptation. |
| 14-1266 | A | 60 | 16 | 60 | 17 | some of these examples are of mitigation, not adaptation. Also line 31. (Francesco Nicola Tubiello, Columbia University) | 2 Disagree. Some of these activities have a mitigation aim but have adaptive value for health or environment in the context of climate change. That is the point of including it. |
| 14-1267 | A | 60 | 28 | | | cities plus. Is there a reference? Or one might simply say...a 100-year plan for vancouver known as cities plus (Francesco Nicola Tubiello, Columbia University) | 2 We will use the second alternative. The description of the plan is difficult to download. |
| 14-1268 | A | 60 | 30 | | | Vancouver is cool but unnecessary to qualify it as such here :-) (Dominique Bachelet, Oregon State University) | 2 “Cool Vancouver” is actually a program. Reword to make this clear. |
| 14-1269 | A | 60 | 41 | 60 | 41 | Use of "Maritimes" again - Atlantic Canada or Atlantic coast provinces is more inclusive and more accurate. | 2 – The ‘Maritimes’ or ‘Maritime Provinces’ are New Brunswick, PEI, and Nova Scotia, |

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| | | | | | | (Robin Sydneysmith, University of British Columbia) | excluding Newfoundland & Labrador, and this was the intention, but we have capitulated and used the more inclusive term. |
| 14-1270 | A | 60 | 44 | | | Eastern Quebec instead of Southern Quebec (Alain Bourque, Ouranos Consortium) | 2 – Agreed. |
| 14-1271 | A | 60 | 44 | 60 | 44 | Rewrite to "Atlantic coast provinces, southern Quebec, and coastal states from Maine to Florida are all ...". (Hank Margolis, Université Laval) | 2 – Revised with comment in mind. |
| 14-1272 | A | 61 | 1 | 61 | 25 | Figure 14.11b requires some additional explanation. (Hank Margolis, Université Laval) | 2 – Text added to caption. |
| 14-1273 | A | 61 | 25 | | | no reference in caption but there is one in the text , no explanation of different lines in b-not clear what the lines are (Robert Taylor, Bedford Institute of Oceanography) | 2 – Text added to caption. |
| 14-1274 | A | 61 | 27 | | 30 | too long winded -just say shorter duration of sea ice and greater potential for storm impacts in winter causing increased shoreline instability, beter on pg 32 (Robert Taylor, Bedford Institute of Oceanography) | 2 – Agreed and rewritten. |
| 14-1275 | A | 61 | 31 | | 32 | meaning of the sentence not clear -please explain significance with climate. Do you mean residences has been damaged, it is not a popular area any more or there has been large loss of shoreline?? (Robert Taylor, Bedford Institute of Oceanography) | 2 – Rewritten to clarify meaning. |
| 14-1276 | A | 61 | 34 | 61 | 40 | What are the relative costs of these various adaptation options? Even if you can only estimate the orders of magnitude by which they may differ it would help understanding. (Robin Sydneysmith, University of British Columbia) | 2 – Cannot be adequately treated in space available. |
| 14-1277 | A | 61 | 41 | | | box 5 -nothing about better legislative coastal management taking into account geomorphic character and vertical and horizontal set backs (Robert Taylor, Bedford Institute of Oceanography) | 2 – Reference added to regulatory management approaches. |
| 14-1278 | A | 61 | 44 | | | S 14.8 should be: Conclusions: Implications for sustainable development (Encinas Carla , IPCC WG2 TSU) | 3 numbering and topic selections fixed in SOD |
| 14-1279 | A | 61 | 44 | 62 | 27 | general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 But this is still true for NA |
| 14-1280 | A | 61 | 44 | 62 | | challenges , time scale and global comment okay buzz words, competing priorities okay rest is very weak in this section what about lifestyle changes , wind power there are many aspects. Not clear as a reader what the objective or meaning of this section is? -I am looking for answers, solutions a rap up after reading all the chapter -I do not see any (Robert Taylor, Bedford Institute of Oceanography) | 3 Section revised to emphasize summary of points in the raised in earlier sections |
| 14-1281 | A | 61 | 44 | 61 | 44 | could the title include the term "mitigation" as well, in addition to sustainability? There seems to be a significant discussion of mitigation in this section. (Francesco Nicola Tubiello, Columbia University) | 3 content changed to drop discussion mitigation |
| 14-1282 | A | 61 | | | | Figure 14.11 I hope that you can use colour to better represent the differences (Robin Sydneysmith, University of British Columbia) | 2 figure dropped from SOD |

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| 14-1283 | A | 62 | 0 | 63 | | again very weak after a very well written chapter with lots of information and examples -multi-sector impacts assessments and positive feedback mechanisms are definitely key statements which reflect this chapter (Robert Taylor, Bedford Institute of Oceanography) | 3 extensively revised in SOD |
| 14-1284 | A | 62 | 8 | 62 | 19 | This paragraph is on mitigation, which of course is important to sustainability. However, by not focusing on adaptation, this paragraph ducks the focus of WGII and of the chapter. Thus, I strongly recommend that the author's say something like, "Mitigation is crucial to local, national, and regional sustainability, but so is adaptation." Then they should fill out the rest of the paragraph talking about adaptation and sustainability. (Brent Yarnal, The Pennsylvania State University) | 3 mitigation dropped from SOD |
| 14-1285 | A | 62 | 17 | 62 | 19 | For ethical reasons and to be truly "win-win" such incentives and other "messages" to encourage or facilitate transition from fossil fuels to alternatives would necessarily have to strengthen (or at very least have a neutral impact on) the economies of "other parts of the world". (Robin Sydneysmith, University of British Columbia) | 3 good point – but the underlying concept was dropped from the SOD |
| 14-1286 | A | 62 | 26 | 62 | 27 | Are the authors referring to Daily et al., 1997 here ? (Alain N. Rousseau, Institut national de la recherche scientifique) | 1 yes |
| 14-1287 | A | 62 | 30 | | | S 14.9 should be: Key uncertainties and research priorities (Encinas Carla , IPCC WG2 TSU) | 2 fixed in the SOD, thanks |
| 14-1288 | A | 62 | 30 | 63 | 8 | S 14.9 Needs to build up in a more direct message and proposals for future actions on research. (Encinas Carla , IPCC WG2 TSU) | Ok, fixed in SOD |
| 14-1289 | A | 62 | 30 | 63 | 8 | Should state the need for improved tools to deal with the uncertainty in GCM's and the need to convey key science to important groups i.e. stakeholders. It is especially important to convey the science to community leader who need this information to incorporate adaptation to climate change into their planning process. (Allan Douglas, Canadian Climate Impacts and Adaptation Research Network) | 2 fixed in SOD |
| 14-1290 | A | 62 | 39 | 62 | 40 | Play an increased stock of economic resources? (Kristie Ebi, Exponent) | 2 don't understand this comment |
| 14-1291 | A | 62 | 42 | 63 | 8 | general statement and not only true for North America (Antje Schwalb, Institut für Umweltgeologie) | 2 but still important |
| 14-1292 | A | 62 | 42 | 62 | 49 | specific examples at this point--basically a conclusion-- seem inappropriate. The last three pages prior to the boxes were substantially devoid of actual examples; why give some specifics here? Rather, these specifics could be moved to their respective sub-sections. (Francesco Nicola Tubiello, Columbia University) | 2 ok – these sections were revised in the SOD |
| 14-1293 | A | 63 | 1 | 63 | 2 | The federal, provincial and territorial Environmental Assessment managers in Canada developed an approach to factor Climate Change into Project Assessments. This would include synergistic effects and not just the impact a project would have on climate and how to mitigate it and the impact the changing climate would have on the project and appropriate mitigation. Access to this is from http://www.ceaa- | 2 thanks |

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| | | | | | | <p>acee.gc.ca/012/014/index_e.htm. In addition there were several research reports sponsored by CEAA on assessment of effects of climate change and these can be accessed at http://www.ceaa-acee.gc.ca/012/014/index_e.htm (Ian Church, Yukon Government)</p> | |
| 14-1294 | A | 63 | 4 | 63 | 8 | <p>In addition to the responsiveness of policy to scientific information, there is also concern of the capacity of the science community to provide policy relevant information. Also of concern is the capacity of policy communities to include assessments of the relative success/failures of adaptive responses and the ability to change directions in a timely manner when the assessments indicate the need for a change or alteration.. (Roger Brian Street, Meteorological Service of Canada, Environment Canada)</p> | 2 good point – discussed in the SOD |
| 14-1295 | A | 63 | 4 | 63 | 7 | <p>The same could be said of the responsiveness of society! (Robin Sydneysmith, University of British Columbia)</p> | 2 true |
| 14-1296 | A | 63 | 4 | 63 | 5 | <p>" the responsiveness of policy to scientific information.." it also goes the other way around: How can scientists more effectively communicate to policy makers? (Francesco Nicola Tubiello, Columbia University)</p> | 2 good point |
| 14-1297 | A | 64 | 0 | | | <p>Reference section is incomplete, as you likely know. (Elaine Wheaton, Saskatchewan Research Council)</p> | 2 Still more to do. |
| 14-1298 | A | 64 | 25 | 43 | 27 | <p>The reference from "Allen et al" is no near to be complete (Yves Michaud, Geological Survey of Canada - Québec Division)</p> | 2 Should be ok |
| 14-1299 | A | 64 | 34 | 64 | 34 | <p>Insert reference: Amiro, B.D., J.I. MacPherson, R.L. Desjardins, J.M. Chen, and J. Liu, 2003: Post-fire carbon dioxide fluxes in the western Canadian boreal forest: evidence from towers, aircraft and remote sensing. Agric. Forest Meteorol. 115: 91-107. (Hank Margolis, Université Laval)</p> | 2 not added – this isn't really a carbon flux chapter |
| 14-1300 | A | 64 | 34 | 64 | 34 | <p>Insert reference: Amiro, B.D., J.B. Todd, B.M. Wotton, K.A. Logan. M.D. Flannigan, B.J. Stocks, J.A. Mason, D.L. Martell, and K.G. Hirsch, 2001: Direct carbon emissions from Canadian forest fires, 1959-1999. Can. J. For. Res. 31: 512-525. (Hank Margolis, Université Laval)</p> | 2 not added – this isn't really a carbon flux chapter |
| 14-1301 | A | 65 | 25 | 64 | 25 | <p>Insert reference: Barford, C.C., S.C. Wofsy, M.L. Goulden, J.W. Munger, E.H. Pyle, S.P. Urbanski, L. Hutyrá, S.R. Saleska, D. Fitzjarrald, and K. Moore, 2001: Factors controlling long- and short-term sequestration of atmospheric CO₂ in a mid-latitude forest. Science, 294: 1688-1691. (Hank Margolis, Université Laval)</p> | 2 not added – this isn't really a carbon flux chapter |
| 14-1302 | A | 65 | 29 | 65 | 29 | <p>Insert reference: Barr, A.G., T.A. Black, E.H. Hogg, N. Kljun, K. Morgenstern, and Z. Nescic, 2004. Inter-annual variability in the leaf area index of a boreal aspen-hazelnut forest in relation to net ecosystem production. Agric. Forest Meteorol. 126: 237-255. (Hank Margolis, Université Laval)</p> | 2 not added – this isn't really a carbon flux chapter |
| 14-1303 | A | 66 | 6 | 66 | 6 | <p>Insert reference: Bond-Lamberty, B., C. Wang, and S.T. Gower, 2004: Net primary production and net ecosystem production of a boreal black spruce wildfire</p> | 2 not added – this isn't really a carbon flux chapter |

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|---------|---|----|----|----|----|--|---|
| | | | | | | chronosequence. <i>Global Change Biol.</i> 10: 473-487. (Hank Margolis, Université Laval) | |
| 14-1304 | A | 67 | 47 | | | add the following reference: Changnon, D., M. Sandstrom, and C. Schaffer, 2003: Relating changes in agricultural practices to increasing dew points in extreme Chicago heat waves. <i>Climate Research</i> , 24, 243-254. (David Changnon, Northern Illinois University) | 2 added |
| 14-1305 | A | 68 | 1 | 68 | 16 | add the following references: Changnon, S.A., S. Leffler, and R. Shealy, 1989: Effects of Past Low levels and Future Climate-related Low Levels on Lake Michigan, Chicago, and Illinois Shoreline. Report of Investigation 110, Illinois State Water Survey, Champaign, IL, 46pp. Changnon, S.A., Kunkel, K., and B. Reinke, 1996: Impacts and responses to the 1995 heat wave: A call to action. <i>Bulletin American Meteorological Society</i> , 77, 1497-1506. Changnon, S.A., 2000: Reactions and responses to recent urban droughts. <i>Physical Geography</i> , 21, 1-20. Changnon, S.A., and D. Easterling, 2000: U.S. policies pertaining to weather and climate extremes. <i>Science</i> , 289, 2053-2055. Changnon, S.A., 2003b: Effects of future rainfall increases on the hydrologic cycle of an Illinois basin. <i>Transactions Illinois Academy of Science</i> , 96, 4-19. Changnon, S.A., and S. Hollinger, 2004: Weather-caused unexpected record high corn yields in Illinois. <i>Transactions Illinois Academy of Science</i> , 97, 1-15. Changnon, S.A., and D. Changnon, 2005a: Importance of sky conditions on the record 2004. Midwestern crop yields. <i>Physical Geography</i> , 26, 99-111. Changnon, S.A., and D. Changnon, 2005b: Lessons learned from the unusual impacts of an abnormal winter. <i>Meteorological Applications</i> , 12, 1-5. (David Changnon, Northern Illinois University) | 2 These still need to be considered |
| 14-1306 | A | 68 | 5 | | | add the following reference: Changnon, S.A., and D. Winstanley, 2000: Temporal changes in corn-weather seasons in Illinois. <i>Climatic Change</i> , 47, 353-372. (David Changnon, Northern Illinois University) | 2 still to be considered |
| 14-1307 | A | 68 | 13 | | | Change as follows: Changnon, S.A., 2003a: (David Changnon, Northern Illinois University) | 2 End Note issue – should be ok now |
| 14-1308 | A | 68 | 17 | | | add the following reference: Changnon, S.A., and D. Changnon, 2005: Lessons from the unusual impacts of an abnormal winter in the USA. <i>Meteorological Applications</i> , 12, 187-191. (David Changnon, Northern Illinois University) | 2 still be be considered |
| 14-1309 | A | 68 | 21 | 68 | 21 | Insert reference: Chen, J.M., W. Ju, J. Cihlar, D. Price, J. Liu, W. Chen, J. Pan, A. Black, and A. Barr, 2003: Spatial distribution of carbon sources and sinks in Canada's forests. <i>Tellus</i> , 55B: 622-641. (Hank Margolis, Université Laval) | 2 not added – this isn't really a carbon flux chapter |
| 14-1310 | A | 68 | 21 | 68 | 21 | Insert reference: Chen, J.M., W. Chen, J. Liu, and J. Cihlar, 2000: Annual carbon balance of Canada's forests during 1985-1996. <i>Global Biogeochem. Cycles</i> , 14: 839-850. (Hank Margolis, Université Laval) | 2 not added – this isn't really a carbon flux chapter |

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|---------|---|----|----|----|----|--|--|
| 14-1311 | A | 69 | 3 | 69 | 3 | Insert reference: Coursolle, C., H.A. Margolis, A.G. Barr, T.A. Black, B.D. Amiro, J.H. McCaughey, L.B. Flanagan, P.M. Lafleur, N.T. Roulet, C.P.-A. Bourque, M.A. Arain, S.C. Wofsy, A. Dunn, K. Morgenstern, A.L. Orchansky, P.-Y. Bernier, J.M. Chen, J. Kidston, N. Saigusa, and N. Hedstrom, 2006: Late-summer carbon fluxes from Canadian forests and peatlands along an east-west continental transect. <i>Can. J. For. Res.</i> (in press). (Hank Margolis, Université Laval) | 2 not added – this isn't really a carbon flux chapter |
| 14-1312 | A | 70 | 7 | 70 | 7 | Insert reference: Dunn, A.L., C.C. Barford, S.C. Wofsy, M.L. Goulden, and B.C. Daube, 2006: A long-term record of carbon exchange in a boreal black spruce forest: means, responses to interannual variability, and decadal trends. <i>Global Change Biol.</i> (in press). (Hank Margolis, Université Laval) | 2 not added – this isn't really a carbon flux chapter |
| 14-1313 | A | 70 | 9 | | | add the following reference: Dutton, J.A., 2002: Opportunities and priorities in a new era for weather and climate services. <i>Bulletin of the American Meteorological Society</i> , 83, 1303-1311. (David Changnon, Northern Illinois University) | 2 still to be considered |
| 14-1314 | A | 72 | 37 | 72 | 37 | Insert reference: Giasson, M.-A., C. Coursolle, H.A. Margolis, 2006: Ecosystem-level carbon fluxes from a boreal cutover in eastern Canada before and after scarification. <i>Agric. For. Meteorol.</i> (in press). (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1315 | A | 72 | 44 | 72 | 44 | Insert reference: Goetz, S.J., A.G. Bunn, G.J. Fiske, and R.A. Houghton, 2005: Satellite-observed photosynthetic trends across boreal North America associated with climate and fire disturbance. <i>Proc. Natl. Acad. Sci.</i> 102: 13521-13525. (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1316 | A | 73 | 26 | 73 | 26 | Insert reference: Gurney, K.B., R.M. Law, A.S. Denning, P.J. Rayner, D. Baker, P. Bousquet, L. Bruhwiler, Y.-H. Chen, P. Ciais, S. Fan, I.Y. Fung, M. Gloor, M. Heimann, K. Higuchi, J. John, T. Maki, S. Maksyutov, K. Masarie, P. Peylin, M. Prather, B.C. Pak, J. Randerson, J. Sarmiento, S. Taguchi, T. Takahashi, and C.W. Yuen, 2002: Towards robust regional estimates of CO ₂ sources and sinks using atmospheric transport models. <i>Nature</i> , 415: 626-630. (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1317 | A | 73 | 38 | 73 | 38 | Insert reference: Han, E. and E. Bauce, 2000: Dormancy in the life cycle of the spruce budworm: physiological mechanisms and ecological implications. <i>Recent Research Developments in Entomology</i> , 3: 43-54. (Hank Margolis, Université Laval) | 2 check reference – sounds appropriate |
| 14-1318 | A | 74 | 43 | 74 | 43 | Insert reference: Humphreys, E.R., T.A. Black, K. Morgenstern, L. Zhong, and Z. Nestic, 2005: Net ecosystem production of a Douglas-fir stand for 3 years following clearcut harvesting. <i>Global Change Biol.</i> 11: 450-464. (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1319 | A | 76 | 33 | 76 | 33 | Insert reference: Kurz, W.A. and M.J. Apps, 1999: A 70-year retrospective analysis of carbon fluxes in the Canadian forest sector. <i>Ecol. Applic.</i> 9: 526-547 (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |

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|---------|---|----|----|----|----|---|--|
| 14-1320 | A | 76 | 35 | 76 | 35 | Insert reference: Lafleur P.M., N.T. Roulet, J.L. Bubier, S. Frolking, and T.R. Moore, 2003: Interannual variability in the peatland-atmosphere carbon dioxide exchange at an ombrotrophic bog. <i>Global Biogeochem. Cycles</i> , 17:doi:10.1029/2002GB001983 (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1321 | A | 77 | 37 | 77 | 37 | Insert reference: Marshall, C.H., R.A. Pielke Sr, L.T. Steyaert, 2003: Crop freezes and land-use change in Florida. <i>Nature</i> , 426: 29-30. (Hank Margolis, Université Laval) | 2 check reference – sounds appropriate |
| 14-1322 | A | 78 | 23 | | | add the following: Mills, E., Roth, R., Jr., and E. Lecomte, 2005: Availability and Affordability of Insurance Under Climate Change. CERES, New York, 40pp.: (David Changnon, Northern Illinois University) | 2 check reference – sounds appropriate |
| 14-1323 | A | 78 | 36 | 78 | 36 | Insert reference: Morgenstern, K., T.A. Black, E.R. Humphreys, T.J. Griffis, G.B. Drewitt, T. Cai, Z. Nestic, D.L. Spittlehouse, and N.J. Livingston, 2004: Sensitivity and uncertainty of the carbon balance of a Pacific Northwest Douglas-fir forest during an El Niño/La Niña cycle. <i>Agric. For. Meteorol.</i> 123: 201-219 (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1324 | A | 80 | 43 | | | add the following: Palecki, M., Changnon, S.A., and K. Kunkel, 2001: The nature and impacts of the July 1999 heat wave in Midwestern U.S.: Learning the lessons of 1995. <i>Bulletin American Meteorological Society</i> , 82, 1925-1940. (David Changnon, Northern Illinois University) | 2 check reference – sounds appropriate |
| 14-1325 | A | 80 | 43 | | | add the following reference: Palecki, M.A., S.A. Changnon, and K.E. Kunkel, 2001: The nature and impacts of the July 1999 heat wave in the Midwestern United States: Learning from the lessons of 1995. <i>Bulletin of the American Meteorological Society</i> , 82, 1353-1367. (David Changnon, Northern Illinois University) | 2 check reference – sounds appropriate |
| 14-1326 | A | 82 | 18 | | | add the following reference: Robinson, P.J., 2000: Temporal trends in United States dew point temperatures. <i>International Journal of Climatology</i> , 20, 985-1002. (David Changnon, Northern Illinois University) | 2 check reference – sounds somewhat climatological for WG2 |
| 14-1327 | A | 83 | 9 | | | add the following reference: Sandstrom, M.A., R.G. Lauritsen, and D. Changnon, 2004: A central U.S. summer extreme dew point climatology. <i>Physical Geography</i> , 25, 191-207. (David Changnon, Northern Illinois University) | 2 check reference – sounds somewhat climatological for WG2 |
| 14-1328 | A | 86 | 25 | 86 | 25 | Insert reference: Thornton, P.E., B.E. Law, H.L. Gholz, K.L. Clark, E. Falge, D.S. Ellsworth, A.H. Goldstein, R.K. Monson, D. Hollinger, M. Falk, J. Chen, and J.P. Sparks, 2002, Modeling and measuring the effects of disturbance history and climate on carbon and water budgets in evergreen needleleaf forests. <i>Agric. Forest Meteorol.</i> 113: 185-222. (Hank Margolis, Université Laval) | 2 check reference – may be incompatible with decreased emphasis on carbon budget |
| 14-1329 | A | 88 | 20 | 88 | 20 | Insert reference: Yuen, C.-W., K. Higuchi, D. Baker, P. Bousquet, L. Bruhwiler, Y.-H. Chen, P. Ciais, A.S. Denning, S. Fan, I. Fung, M. Gloor, K.R. Gurney, M. Heimann, J. John, R.M. Law, T. Maki, S. Maksyutov, B. Pak, P. Peylin, M. Prather, P. Rayner, J. Sarmiento, S. Taguchi, and T. Takahashi, 2005: Impact of Fraserdale | 2 check reference – may be incompatible with decreased emphasis on carbon budget |

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| | | | | | | CO2 observations on annual flux inversion of the North American boreal region. Tellus, 57B: 203-209. (Hank Margolis, Université Laval) | |
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Late comments

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| 14 | 3 | 1 | 3 | 2 | p. 3. L. 1 and 2. The introductory sentence sets a particular tone. If this sentence is shared by all, it should apply in principles to all regional reports. However, as it is written in a particular chapter on regional impacts it could be interpreted as a finding that is specific to that region. Is that really the case? (Philippe Tulkens, TERI) | Dropped from SOD |
| 14 | 4 | 27 | 4 | 32 | p. 4. L 27 to 32. The findings on implications for sustainable development are particularly weak. (Philippe Tulkens, TERI) | Fixed in SOD |
| 14 | 61 | | | | p. 61. Section 14.8. The section on implications for sustainable development is relatively weak and does not seem to reflect the vast literature on the implications of climate change for the future sustainable development of industrialized countries (Philippe Tulkens, TERI) | As above |