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

Expert Review of First Order Draft

Specific Comments

Chapter 8

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**.

See extra comments at the end of the file

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-0	A	0				**Co-chair and TSU comments** Please use the recommended reduced-form subheadings. 1 should be "Introduction", but current content OK 2 should be "current sensitivity/vulnerability", but current content OK Exec Summary's comparison with TAR conclusions is informative Length: is now at its maximum, so any addition would require condensing elsewhere (see below) p.23 proposed summary table. This would be useful. I suggest more, that is, you follow The example of ch 4 in creating an even more effective summary of findings, thus: a) a table summarising impacts by increments of T change (table 4.5) b) a summary map of projected impacts, worldwide (fig 4.9) c) a burning embers digram for each FFF type to show key vulnerabilities (fig 4.10) Section 4 is still relatively brief (allowing for the tables which are a valuable part of it). Other chapters, I think quite rightly, allocate about half the total \page length to this section. You do not give enough information about: amount of projected impact (and where) under a) different scenarios (eg 1% forcing, AND different SRES futures, AND different stabilisation scenarios) and b) at different times. And could you not illustrate these with some small tables of data and some diagrams/maps? I suggest expanding section 4 by 4 pp and reducing sections 2 and 6 by 4 pages.	Addressed Addressed Not addressed Not addressed

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						5 should be "Costs and other socio-economic aspects". I suggest that food and nutrition come here (transferred from rural in 4), and also demographic aspects. NB the millions at risk by Rosensweig et al post TAR publications for various SRES futures. I think 6 could be condensed. This is more discursive than the rest, less source based, and could be more brief. 7 should be "Conclusions: Implications for sudtainable development". This should contain conclusions (but not a repitition of the ES). There should be here a summary of projected impacts under: 1% forcing at different time scales, under SRES, under stabilisation. NB there is v. little, yet, about impacts avoided by stabilisation; but there is some research on this (using the Hadley 550 and 750 scenarios) 8 should be "Key uncertainties and research priorities"; and should definitely cover the latter Needs some figures to relieve the unremitting text Below are copies of comments ON THE ZERO-ORDER DRAFT by Martin Parry in Jan 2003, [with comments by MP in square brackets regarding whether FOD has responded to these comments]: General comments: 1) Assuming max page length ZoD draft is 45 pages (equivalent to 30 of printed page in final report), then this draft is already 30% over-length. [now approx at the max length] 2) Sections which could be reduced are sections 1,2, and 3; these might be halved and the main focus (and space) given to section 4 which is on the projected effects. Much in the current section 3 seems to refer to projected impacts and might be more	Not addressed Not addressed Addressed, by not using burning ember but different type of graphs Addressed Addressed Addressed Partially addressed

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						appropriate in Section 4. But section 3 needs more concrete inofmation (eg in a table) about assumed: pop, income, tech levels (eg in the varous SRES scenarios) NB variations in these assumptuions these hugely affect the projected impacts that follow in Section 4 [now revised in FOD]	
						3) Section 4 should be the core of the assessment. At present is covers 8 pages. In other chapters it comprises (we think correctly) up to half the chapter. [expanded in FOD but still could be substantially expanded, with corresponding condensing of 2 and 6]	Partially addressed
						4) section 4 needs to cover the aspects in the outline, and might best do this in separate subsections: thermal, disease, etc. [FOD does this, now]	Addressed
						5) Suggest use of figures and maps to relieve unrelenting text eg maps of extended range of some diseases [FOD still missing these]	
						6). Would not (more) regional case studies be valuable? [FOD has Europe 2003; but would benefit from more illustrative material eg in boxes and figures]	
						7) Tables to summarise conclusions might be useful eg with various metrics: millions at risk, areas of disease potential, probabilities of outbreak etc [Not in FOD]	
						8) Can section 4 identify thresholds that might be used in ch 19? [if FOD included a table of impacts projected for increments of T, as recommended above, this would be v. valuable]	Addressed
						9) You are not always clear about what mean climate changes you are assuming, and for what timeframe: 2030s, 2050s or 2080s? [and still not at all clear]	Addressed
						10) And could you not extend the assessment to include the new info available about effects under a) various stabilisation scenarios and b) different SRES development pathways. There are publications on these. [FOD still has little on these] [FOD covers this in ES, but not in concluding section 8]	
						12) And an addendum, see p 31 green book with Plenary's requested aditons: these include psychological aspects of effects; and gender aspects [gender now in a box; psychological aspect currently only has a sentence or 2; NB if it is not a relevant issue then say so. I suspect the govt who made this recommended addition meant 'perception of risk, etc leading to (eg) migration, etc'), and this is relevant]. **(Martin Parry)**	Addressed

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8-1	A	0				The chapter is a comprehensive treatment of the topic. I have a few thoughts on the material, which I will list below. There is no mention of the movement of West Nile Virus north on the North American continent, with temperature being the only limit to further northward spread. The marked warming trend of the past 40 years in the McKenzie River Valley and central Alaska very likely outlines the general route of spread, as both vectors and hosts are present in the region. The chapter clearly represents a great deal of hard work. Congratulations to all the authors and contributing authors on a nice job (James Berner, Alaska Native Tribal Health Consortium)	Addressed in table 8.2
8-2	A	0				I find the chapter interesting and think that it works as a good guide for the subjects It covers. Concerning my specialities I found dengue well covered as were geographic models; there were some hantavirus issues missing, maybe because specialized literature is more untraceable, or very local, but that is excactly what expert reviewers are for. As I said in point 3, I find the general view of the chapter excellent. (Anibal E. Carbajo, Universidad de Buenos Aires)	Addressed in table 8.2
8-3	A	0				This chapter is reads well and in terms of content and completeness is a significant improvement from the ZOD version. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Thanks
8-4	A	0				Overall a comprehensive review which could benefit of some prunning. A considerable progress since ZOD. (Carlos Corvalan, WHO)	Thanks
8-5	A	0				It thus remains to find a logical concluding section to the chapter on health. Perhaps by linking back to the introductory sections, and by spelling out the way forward, referring to major research gaps. Or perhaps discuss the different scearios in concluding statement (Section 8.3.1) (Marlies Craig, Medical Research Council of South Africa)	Addressed √
8-6	A	0				Overall Comments: The chapter is very well documented with all available literature	Thanks

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Ramesh Dhiman, Malaria Research Centre)	
8-7	A	0				My main concern on the health chapter is that it continues to pay only minor attention to the health implications of ecosystem change. Ecosystem goods and services include control of infectious disease, abundant and safe food, air and water -- that are fundamental to public health. The threats of climate change and emerging diseases on livestock, wildlife, agriculture, forests and coastal marine life demand much more attention -- or greater mention, at least. See www.climatechangfutures.org and Epstein PR, Chivian E, Frith K. Emerging diseases threaten conservation. Environmental Health Perspectives Volume 111, Number 10, August 2003: A506-A507. On one issue -- observed changes in the range of infectious diseases and vectors -- my remarks are not intended to be self-serving; I simply do not understand why the paper I co-authored with representatives from multiple disciplines is not referenced. Epstein PR, Diaz HF, Elias S, Grabherr G, Graham NE, Martens WJM, Mosley-Thompson E, Susskind J. 1998: Biological and physical signs of climate change: focus on mosquito-borne disease. Bull American Meteorological Society, 78:409-417. This article depicts a pattern consistent with model projections (thus a biological 'fingerprint') AND the consitent data re glacial retreat, upward plant community migration, rising temperatures and mosquitoes at elevated altitudes -- i.e., the internally consistent findings among physical, botanical and zoological data. (Paul Epstein, Harvard Medical School)	More addressed, but due to space limitations still little. Already referenced in TAR
8-8	A	0				In a recent review of floods/health we have brought together a lot of useful references and points to back up some of the statements made in this chapter - it could be useful to consult that (Tyndall Centre Working Paper 63 + book due early 2006 'Flood Hazards and Health' edited by Few and Matthies (Earthscan)) (Roger Few, University of East Anglia)	Addressed
8-9	A	0				The chapter appears to have excluded discussion on massive movement of persons across national borders from the tropics to temperate regions, transporting infectious and/or tropical diseases. The impacts of climate change on the transported new diseases in temperate regions, coping strategies, etc are not discussed....this is a general	Not Addressed

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						comment. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	
8-10	A	0				There is no information, nor references to any health problems related to solar UV exposure. In my view, a section could be included in 8.2 and 8.3 (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed
8-11	A	0				One of the best chapters of the report which finalizes the implications of climate change, and so the consequent vulnerabilities and necessary adaptations. The sections related to air pollutants is very well documented underlying the necessity to further collect data and evidence so that relationship between climate change and human health could be better understood. The predictive modeling of global and regional estimates of the burdens of disease should be considered however with caution. (Savitri Garivait, The Joint Graduate School of Energy and Environment (JGSEE))	Addressed
8-12	A	0				Would be useful to include a summary of the likely change in heat wave/cold wave/drought/flood/wind storm occurrence/intensity/duration for the developed and developing worlds for the three 30 year time slices and for the range of SRES scenarios. There are no figures in this chapter. (Claire Hanson, University of East Anglia)	Not addressed, only what has been published so far
8-13	A	0				I want to make a general comments that it is important, as a basic framework as one of the health risk assessment, to strengthen more scientific-based risk assessment and science-evidence based literacy. For example, as a basic question, there must be a dissociation between ambient Tmax (a most frequently used surrogate) and personal temperature exposure. Personal exposure must reflect use of air conditioner to attenuate the heat exposure as indicated by ambient temperature. Personal exposure could measure the effects of direct sunshine exposure for outdoor workers as well as people spending time outdoor., while Tmax is basically measured with shutting-off from sunshine. Moreover, it is recommended to describe the capacity of acclimatization limit (it's in the range from 25□ to 35 □ at most in more detail and also strengthen that , however, the heat related mortality risk would increase above the optimum temperature exponentially. The ambient temperature in the range up to Tmax of 40□ is commonly	Addressed. .

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						observed in most of the regions including temperate, sub-tropical as well as tropical regions. The total mortality risk is determined by temperature distribution above the optimum level as well as the difference in both of the mortality rate at optimum temperature and the actual maximum temperature in the region. The optimum temperature in each of the region, therefore, seems essential to determine for risk assessment for the present as well as for the future. Our knowledge is limited in relation to the detailed implications of optimum temperature (as shown from the daily Tmax and daily mortality relationship) should be clarified in more detail. Mortality of cerebrovascular diseases especially ischemic type is expected to decline with increase of temperature, while in other disease state are generally heat sensitive, although the strength of sensitivity may be different so that their relative strength should be indicated according to type of diseases. The author is now preparing some papers in relation to the above points on the basis of studies in China. A result of personal exposure study has already been published in the Japanese Journal of Public Health (although, in Japanese with an English abstract. Some comments are listed as follows; for more reliable understanding, more explanations of the already written points should be made. Moreover, more items which may facilitate easier understandings, for example: acclimatization as a buffer to projected temperature increase could be added independent item and explained . more explanations are hoped to be added regarding rural populations especially in developing countries as one of the vulnerable regions but hard to examine. The following points or are recommended to be added to the parts related to mortality. Acclimatization or biological adaptation could be expected for the Tmax range of approximately in-between 25 and 35 □ so that the excess mortality could be buffered. Or it is just noted " Implications of acclimatization are to be clarified in more detail. Some related paper would be published and sent to IPCC to be cited in the document. (Michinori Kabuto, NIES)	
8-14	A	0				Overall, this is an excellent draft that covers a broad and growing literature with appropriate emphasis and interpretation (Patrick Kinney, Mailman School of Public Health at Columbia University)	thanks
8-15	A	0				Overall a good summary of the evidence in this field, but does not give enough comments about the effects of a hotter environment on working populations, both	Addressed. He has become contributing author.

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						outdoor work and work in factories and offies that do not have air conditioning (hot indoor working environments is a common situation in many countries, particularly developing countries). Parts of a paper being prepared has been attached to this email to show the type of discussion that needs to be included. This issue was not dealt with sufficiently in the TAR and older references are therefore needed to describe the issues. It is important to check how the issue of worker productivity in relation to heat effects is dealt with in the other chapters here effects of climate change on agriculture and industry is discussed. All of these economic activities need the input of people and their climatic comfort is an important aspect of economic productivity. (Tord Kjellstrom, Australian National University)	
8-16	A	0				Human health chapter structure is excellent; placing "Key uncertainties" last emphasizes its importance as a consideration that modifies the quality of all the preceding analyses, but at the same time listing it last (as Sec. 8.8) allows the preceding sections to flow as a cohesive through-line without interruption by constant caveats about uncertainties. Throughout Chapter 8, the term "disease" appears to be used to apply to both infectious and non-infectious illnesses which can be climate-related. Yet the term "disease" may sound (esp. to a broad audience) like it applies solely to infectious conditions i.e., malaria, dengue, etc. WGII may wish to consider adding "illness" to broaden the context as appropraite. Specific instances to follow. As per specific comment above, be consistent throughout the chapter in the manner of citing other sections & chapters. That is, choose whether you wish to use parentheses, initial capital on Chapter, and "see" throughout, then apply globally in chapter. Be consistent in notation of Campylobacter, whether to use initial capital "C" and whether to italicize. Make word format consistent for "water-borne" or "waterborne" throughout chapter. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not applicable: Illness= subjective state of a person with disease Disease= physiological/psychological dysfunction Addressed Addressed Addressed
8-17	A	0				Overall, I would say that the draft is quite well advanced and carefully written in a scholarly way. At the same time, it appears to me that there is a bias to seeing the negative effects of climate change rather than the neutral or positive effects, and to not attempt to prioritize. There is too much discussion of second-order (or higher order) effects, for instance. There is also a tendency to develop arguments and directions	Addressed, partly. There is very few literature on benefits of climate change for human health.

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						based on unstated assumptions. I have tried to ferret them out. (Alan Krupnick, Resources for the Future)	
8-18	A	0				In general, I thought this was a very well crafted draft on the research regarding the effects of climate on human heath since the Third Assessment Report. The authors have done a commendable job of integrating new information and highlighting areas where there is a lack of research. The structure of the chapter conforms to the Fourth Assessment guidelines and is within the target page length (it is currently slightly over 60 pages but there are ~20 pages of references). After reading this draft I was surprised at how few comments I had; it is an excellent draft. However, I will make specific comments below but the authors should consider adding information about events this year that fit nicely into this framework, namely the effects of Hurricane Katrina in the US Gulf Coast and the current issues regarding highly pathogenic avian influenza. (Erin Lipp, University of Georgia)	Addressed
8-19	A	0				Chapter is somewhat repetitive and a little instructed. The sequence of the various subheadings is not always obvious.I expected an 'assessment' of the impacts, not only a summary of the available literature. (Pim Martens, University of Maastricht)	
8-20	A	0				There is still some considerable work required to get this chapter into final shape - although it is appreciated that the authors have had to follow a structured formuale - in some places it seems little has been done apart from filling the gaps between the titles. That is there is little synthesis or reflection in many places and it read far too much as a list of diseases and issues. This is again partly the nature of the report like structure but it needs some synthesising summaries or more focus boxes. There remains a real need to add value to the material that is here at this draft stage. For the sections where I have some knowledge there are no major gaps - for other areas it is difficult to judge. I would suggest the removal of some of the weaker areas or conversion to short summary tables. The remit is so wide it is difficult to write a well focussed chapter but some of the breadth needs to be cut where it has not come up to standard. (Andy Morse, University of Liverpool)	Addressed as much as possible
8-21	A	0				The depth of information is uneven. Some subsections have little information as 8.2.8	Addressed

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						Occupational Health, whereas heat is repesented in more than one. (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	
8-22	A	0				The chapter seeks to address current and potential impacts of climate change on health. Though it is clear that a considerable effort has been devoted to synthethize the State-of-the-Art knowledge on the subject, the chapter is sometimes speculative and suffers from some problems that may undermine its relevance when the report is released to public consideration. I list them underneath. 1.Namely, the chapter is seriously biased to what it is known on the basis of an (not always fully) updated body of literature and not so much on the actual importance/weight of individual health impacts. Thus, a lot is said on one or two main health effects (e.g. malaria and hot spells) as there is a growing body of knowledge on these topics, and not so much on others, which may be also equally important (diarrhoeal –water-borne, WB- diseases, food-borne (FB) diseases, other vector-borne (VB) diseases and/or asthma and adverse respiratory effects). The reader/stakeholder may have the impression that the chapter aims at convincing the reader there where there is a certainty of a climate effect, rather than giving an objective overview of what is known and what is not on current and potential climate impacts. The problem is still the limited number of studies on some relevant topics, for instance for WB and FB diseases, where there is a large environmental and climatic impact, but the studies devoted to these topics are rather scarce. Take for instance, diarrhoeal diseases, the main ones in T. 8.1 in terms of current disease burden, which linkages with climate are poorly discussed. 2. The structure of the chapter is confusing sometimes, with regard to current and projected climate effects on specific health variables. The presentation of results on the basis of selected topics, rather than on specific/individual diseases/health outcomes, makes it difficult to get a clear idea of the overall resulting climate impact. For instance, if the reader is interested in dengue, the relevant info is dispersed within subchapters, sometimes in a single sentence, whereas some subchapters only deal with a single disease or health effect. Perhaps, reorganizing the chapter according to relationships between climate variability and disease prior to attempting climate change impacts is needed as the reader does not obtain a clear picture of what it is known and what it is not. Later, a list of diseases outcomes would clarify the impacts and also show where	1. Unfortunately this is what is in the literature

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						more info is needed. If strict length limitation is a constraint, perhaps a summarizing subchapter dealing with individual diseases would be more useful than some topics raised more extensively in 8.6 and 8.7. 3. Some relevant topics are not updated. Namely, though perhaps still incomplete, there is a bulk of neglected info on WB and FB diseases that should be incorporated. 4.Health chapter should state/highlight more clearly those relevant issues where there is a lack of knowledge. Climate impacts are possibly very important in some of those, and therefore also will climate change effects be, but more studies are needed to assess those with accuracy/more confidence. Not much, if nothing, is said on other likely climate-sensitive diseases or adverse health effects. (Xavier Rodo, University of Barcelona)	2. Not addressed, as given by TSU
8-23	A	0				This is a very good first draft and the authors are to be commended. The decision that some diseases are discussed because they are of global importance whilst others of regional importance are included in other chapters should be reconsidered. These "other" diseases illustrate important health aspects of climate change and it is important that they are referred to in the health chapter and their health aspects explained. The chapter should be comprehensive for health professionals. (David Shearman, Univeristy of Adelaide)	Addressed in table 8.3
8-24	A	0				General comments - The authors have succeeded in bringing together the results of over 400 studies into a coherent chapter that lays out very succintly the latest findings in this field. The document is well structured and easy to follow. I have only minor comments. (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	thanks
8-25	A	0				General: only sent this chapter to review Oct 28th, so have looked at sections dealing wioth vector borne disease only. These sections seem to me well balanced, given the caveats abovr, and a good reflection of the current state of play. (Christopher Thomas, Durham University)	thanks
8-26	A	0				The IPCC WGII Fourth Assessment Report - Chapter 8: Human Health, which is written by leading experts, examines the health impacts of climate variability and change, modelling methodologies used to assess them, assumptions about future trends, vulnerabilities, and adaptation strategies. As climate change is predicted to	thanks

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						accelerae in much of this century, the assessment of its effects on human health is becoming increasingly important. This chapter highlights the need to place human health at the forefront in the assessment of climate impact. (Shilu Tong, queensland university of technology)	
8-27	A	0				This is an excellent chapter with an impressive list of recent references (p. 43-64). At various places (which I've indicated) health aspects are treated which are not directly related to climate change. A clear distinction could be made and the text adapted accordingly. This is particularly the case with malnutrition which involves a complexity of multicausal relationships not directly dependent on climate. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Partly addressed
8-28	A	0				General comments: Need for more recent data; distinguish between cilmate sensitive diseases and climate sensitive health determinants; insist in preventive and on mitigation measures; include mountain ecosystems as most vulnerable ; include remote self sufficient and natural ressources dependent groups in the main focus; mention potential cultural and religious losses due to loss/ destruction of environmental balance. Relation to BBC report: "From the Heart of the Earth", 1997 (Alexander von Hildebrand, World Health Organisation)	Not addressed
8-29	A	0				Executive Summary. While there is discussion in the executive summary of extreme events in terms of floods and droughts, there is not discussion of the health effects associated directly with severe storms such as hurricanes. (J. Jason West, Princeton University)	Addressed
8-30	A	1	0			Following are the references alluded to in the comments: 1. Goklany, IM. 1995. "Strategies to Enhance Adaptability: Technological Change, Economic Growth and Free Trade." Climatic Change 30: 427-449. 2. Goklany, IM. 1998. "Saving Habitat and Conserving Biodiversity on a Crowded Planet." BioScience 48 : 941-953. 3. Goklany, IM. 1999a. "The Future of the Industrial System." Invited Paper. International Conference on Industrial Ecology and Sustainability, University of Technology of Troyes, Troyes, France, September 22-25, 1999. Also available in: D. Bourg and S. Erkman (eds). 2003. Perspectives on Industrial Ecology (Sheffield, UK: Greenleaf Publishing), pp. 194-222.	Addressed , in 8.3 5. Goklany, IM. 2002. "The Globalization of Human Well-being." Policy Analysis, No. 447 (Washington, DC: Cato Institute, August 22, 2002).

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						4. Goklany, IM. 2000. "Potential Consequences of Increasing Atmospheric CO2 Concentration Compared to Other Environmental Problems." Technology 7S: 189-213. 5. Goklany, IM. 2002. "The Globalization of Human Well-being." Policy Analysis, No. 447 (Washington, DC: Cato Institute, August 22, 2002). 6. Goklany, IM. 2003. "Relative Contributions of Global Warming to Various Climate Sensitive Risks, and Their Implications for Adaptation and Mitigation," Energy & Environment 14: 797-822. 7. Goklany, IM. 2005. "A Climate Policy for the Short and Medium Term: Stabilization or Adaptation?" Energy & Environment 16: 667-680. 8. Goklany, IM. 2005a. "Is a Richer-but-warmer World Better than Poorer-but-cooler Worlds?" 25th Annual North American Conference of the US Association for Energy Economics/International Association of Energy Economics, September 21-23, 2005. 9. Goklany, IM. 2005b. "Integrated Strategies to Reduce Vulnerability and Advance Adaptation, Mitigation, and Sustainable Development," accepted by Mitigation and Adaptation Strategies for Global Change. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-31	A	1	10	1	16	In 3 cases, "USA" abbreviation is used to refer to authors' country instead of "US" which is used thruout chapter, consider changing to "US" to be consistent (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-32	A	1	28	1	28	Delete period after "8.1.1" to read "8.1.1 State of health in the world" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-33	A	1	35	1	35	Wind storms are not discused in that section so it will have to be modified, see below (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Addressed
8-34	A	1	50	1	50	Suggest substituting "illness" for "disease" under heading for 8.4.1, to braoden the meaning to cover all the material described in 8.4.1, which goes beyond just infectious diseases (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not Addressed
8-35	A	1				The arrangement of contents is simple, transparent, and eugenic. (Akihiko SASAKI, Fukushima Pref. Authority)	Thanks
8-36	A	3	0			Need to differentiate between impacts on developed and developing countries in the executive summary.	Addressed

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						Need to discuss impacts in the context of vulnerability in the executive summary. Impacts only occur if communities do not have, or do not use, the capacity to take actions to protect populations. (Peter Berry, Health Canada)	
8-37	A	3	0	5		executive summary is unstructured and squanders the opportunity to get a focused message across. Also the meaning of climate-sensitive is not explained, leading to confusion about causation and risk. (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-38	A	3	0	5		Executive Summary: It does not make justice to the chapter. The order doesn't follow the chapter flow. Needs to be presented in a more appealing way. (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Addressed
8-39	A	3	0			Executive summary: The unbalance stated above for the general text is also apparent in this summary and should be corrected. A better and weighed representation on disease/health effects according to their societal importance is needed. Also, level of confidence is stated for some conclusions only, but not for others. Conclusion number 8 can be judged as too risky, possibly. (Xavier Rodo, University of Barcelona)	Addressed
8-40	A	3	0			Executive summary 24 paragraphs are too many. Paragraph□ and □ could be reduced to one word. Discussion on priority and options are not indicated. The comparison with TAR should be limited to once. High confidence should be put earlier and low confidence later. You need not indicate each issue separately. Do you have future image that population increase would reduce the social activity and health level, but increase social load and terrorism? It is important to direct people's concern to information and technology according to their relationship, position, and roles, so that they keep network and integrity. This view will clarify the meaning of health risk not as increase in death and prevalence of infection but as social and future (generation) living environment including comfort and safety. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed.
8-41	A	3	1			Comments on Confidence Levels. [1] Each para in the Executive Summary has a confidence level attached to it. Since I do not know exactly how the levels were arrived in each case, I certainly can't endorse them lock, stock and barrel. To avoid any	Addressed in the beginning of the 4AR

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						confusion regarding whether or not these levels were endorsed by reviewers it should be noted that "these confidence levels are based on the collective subjective judgement of the authors, and are not necessarily reflect the judgement of the reviewers." [2] It seems to me that one can, and should, place greater confidence on some sentences within each para, and lesser confidence in others. For example, one can have greater confidence in the statement that "all MDGs" will not be met in 2015, but I have less confidence in some of the other serntences. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-42	A	3	1			Comment on Item 1. I recommend the following rewording-- inserts are shown in UPPER CASE, deletions are not shown: "Mortality rates and related health indicators are improving for many countries, but other trends are not favourable PARTICULARLY IN AREAS WHERE ECONOMIC GROWTH HAS STALLED OR WHICH HAVE BEEN AFFLICTED WITH A HEAVY BURDEN OF HIV/AIDS, MALARIA AND TUBERCULOSIS WHICH will limit the ability of THEIR populations to cope with STRESSES OF ALL KINDS INCLUDING THOSE RELATED TO climate. Given present trends, it is unlikely that all health-related Millennium Development targets will be met IN 2015." I don't think this chapter needs to get into the issue of whether there is a growing or shrinking gap in socio-economic indicators between or within countries. That's a complex matter, which however doesn't need to be resolved here. For one view on the subject see: Goklany, IM. 2002. "The Globalization of Human Well-being." Policy Analysis, No. 447 (Washington, DC: Cato Institute). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not addressed.
8-43	A	3	1			The points as summarized in the ES are well-defined & it is helpful to see important points re:economic development and climate vulnerability summarized so concisely in the same section along with other health impacts. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Thanks
8-44	A	3	1			Not all of the 24 entries in the Executive Summary have confidence estimates noted in parentheses at the end of the paragraph (items 5,7,9,11-14,18-24 do not). It may be helpful to describe briefly the criteria for including/not including qualitative confidence estimates for points summarized in the ES. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-45	A	3	1			Section 'Executive summary': This section is very important (as most people will only read this). However, it is confusing. Sometimes, statements are made about effects, sometimes about methods, sometimes confidence levels are attached, sometimes not. Below some more detailed comments. (Pim Martens, University of Maastricht)	Addressed
8-46	A	3	3		9	Some countries in the developed world (e.g., Canada) also have persisting socio-economic inequalities that will significantly affect the ability of populations to cope with climate stresses. For example, some Arctic communities have very poor healthcare services. The inequalities within countries, including those in the developed world is an important point which should be captured in the Executive Summary (Peter Berry, Health Canada)	Addressed
8-47	A	3	3	37	44	I LIKED the chapter – it reads very well, and is convincing.... the Tables seem very good, but they're too complex (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Not addressed
8-48	A	3	3		9	Only the first sentence makes sense. The other lines are redundant (and address a 'general' health issue) -unless the relation with CC is made explicit in this statement. (Pim Martens, University of Maastricht)	Addressed
8-49	A	3	3	3	5	Use of the word trend is too vague too much a throw away comment for a summary (Andy Morse, University of Liverpool)	Not addressed
8-50	A	3	3	3	18	malaria and malnutrition should not be indicated in the same sentence. Malaria is not directly climate-dependent. The causal process of malnutrition is much more complex and influenced by non-climatic factors (such as governance, poverty, infrastructure etc.) (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-51	A	3	5			The question can be raised whether inequality as such is the cause of the inability of populations to cope with any stresses whatsoever. It is poverty. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	Addressed
8-52	A	3	11	3	14	Expert Review: On the Executive summary; The following description would be insert the text. 1) Since global warming and anthropogenic fuel burning should strongly link with population growth and economic activities, it will be necessary to promote family planning for maintaining the reasonable family size in sustainable communities. (Mitsuru ANDO, Toyama University of International Studies)	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-53	A	3	11		11	Why will population growth influence impacts? Due to increased exposure or due to increased use of GHGs which increase climate change, and thus impacts in the future? (Peter Berry, Health Canada)	Addressed
8-54	A	3	11	3	12	This sentence appears incomplete and needs restructuring: suggested eg - Population growth will have a major influence on the magnitude of climate change impacts in areas or regions such impacts may occur. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-55	A	3	11		14	This statement is obvious. Population growth will have an impact on all climate related effects. Here a 'direction' of change most be added (will population growth have a linear effect (more people affected mean more deaths/illness) or is there another implications of increasing numbers of people? (Pim Martens, University of Maastricht)	Addressed
8-56	A	3	11	3	14	It is proposed to translate the absolute increase of population also in the relative increase. (Klaus Radunsky, Umweltbundesamt GmbH)	Addressed
8-57	A	3	14	3	14	Use of the term injury is not used in a normal context as it tends to be used for accidental damiage as in an accident - please replace with a different word (Andy Morse, University of Liverpool)	Not addressed, as injuries include accidental, in houses, drowning, and numerous other damages
8-58	A	3	16			Poverty, health care and sanitation are key factors in the burden of disease. Climate change, of whatever origin, natural or anthropogenic, is probably of marginal importance. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	Addressed _
8-59	A	3	17	3	17	Is the term episode understood by the non expert reader? (Andy Morse, University of Liverpool)	Addressed
8-60	A	3	18			11.9 million. With a disease like malaria, this number gives the impression of being false accurate. (Pim Martens, University of Maastricht)	Addressed
8-61	A	3	18			Update the number of malaria episodes in South East Asia and consider that South East Asia does not include all Asian countries (Alexander von Hildebrand, World Health Organisation)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-62	A	3	19	3	21	Based on the previous comment, I would replace the sentences on these lines with the following: "Based on rough estimates, which need to be better evaluated, in 2000 the global burden of disease due to CC was less than 0.4% of the GBD due to all causes and less than 2% of the GBD for infectious and parasitic diseases. Unless adaptive measures are taken, unmitigated climate change could cause greater health effects." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed
8-63	A	3	19	3	21	[1] Just because the approach is "standardized" does not mean it inspires confidence. My understanding is that these sentences are ultimately beased on McMichael et al (2004). But in Chapter 20 of "Comparative Quantification of Health Risks", MacMichael et al. note on page 1547 that "Empirical observation of the health consequences of long-term climate change, followed by formulation, testing and then modification of hypotheses would therefore require long timeseries (probably several decades) of careful monitoring. While this process may accord with the canons of empirical science, it would not provide the timely information needed to inform current policy decisions on GHG emission abatement, so as to offset possible health consequences in the future. Nor would it allow early implementation of policies for adaptation to climate changes, which are inevitable …" So it seems these results were based on a scientific short cut. [2] The burden of disease ascribed to CC should, moreover, be placed in context of the total GBD. For 2000, it works out to about 0.4%. This should also be noted on page 24, where the Global Burden of Diseaes is addressed. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Partly addressed
8-64	A	3	20		21	Does this refer to the absence of adaptation or the absence of GHG reduction policies? If the latter, this is incorrect given that GHG mitigation measures, even if significantly ramped up would have little effect on health impacts occurring in the "near future". Even with achievement of Kyoto Protocol reductions, climate change is expected to proceed rapidly. (Peter Berry, Health Canada)	Addressed
8-65	A	3	20	3	21	Use of the word "unmitigated" is inappropriate in the context of the near future; there is very little chance that the present warming trend can be 'mitigated' in this time frame. (Paul Reiter, Pasteur Institute)	Not Addressed
8-66	A	3	23			Comment on Item 4. I recommend the following rewording for the first three sentences.	Not Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						-- inserts are shown in UPPER CASE, deletions are not shown: "ABSENT MEASURES TO SUCCESSFULLY ERADICATE OR LIMIT DISEASE-CARRYING VECTORS, temperature and precipitation are key determinants of their GEOGRAPHICAL AND TEMPORAL distribution. MORE IMPORTANT, THE ACTUAL BURDEN OF DISEASE DEPENDS ON A HOST OF non-climatic factors SUCH AS POVERTY, ACCESS TO TECHNOLOGY, AND THE ABILITY AND STATE OF THE PUBLIC HEALTH SYSTEM." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-67	A	3	23	3	24	By definition, vector species "carry" disease. (Paul Reiter, Pasteur Institute)	Addressed
8-68	A	3	24			"TAR": give whole expression once before abbreviating (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-69	A	3	24	3	24	There is no quote of significant "new evidence" since TAR in the text. There are many quotes of models, but models are not evidence. (Paul Reiter, Pasteur Institute)	Not Addressed
8-70	A	3	27	3	28	There is no quote of "research" that reinforces the conclusion. There are quotes of models, and analytic models, that suggest this, but the majority of these are criticised by specialists in the relevant fields. The best that can be said is that SOME STUDIES have indicated...MAY...but these are not accepted by many specialists... " or words to that effect. Scientific wording is a major problem in this chapter. (Paul Reiter, Pasteur Institute)	Addressed
8-71	A	3	29	3	29	As explained below, many of the misconceptions in this field originate from a lack of understanding of stable vs. unstable malaria. In many cases, the factors that precipitate epidemic transmission in unstable areas are poorly understood, often enigmatic. In the literature, the word "margins" is mainly discussed in the context of transmission at altitude. This is discussed below in several comments (see, for example, 19:14-25). It is inappropriate to state this with medium confidence, given that nearly all malaria specialists reject the notion. As for dengue, I know of no "marginal" studies on the subject, unless we are discussing Europe and North America. (Paul Reiter, Pasteur Institute)	Addressed
8-72	A	3	32	3	36	delete. Already covered in 4	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Elizabeth Casman, Carnegie Mellon University)	
8-73	A	3	32		36	Evidence supports but contributions of CC are contested. What is it? (Pim Martens, University of Maastricht)	Addressed
8-74	A	3	32	3	32	There is no quote of "research" that reinforces the conclusion. There are quotes of models, and analytic models, that suggest this, but the majority of these are criticised by specialists in the relevant fields. The best that can be said is that SOME STUDIES have indicated...MAY...but these are not accepted by many specialists... " or words to that effect. Scientific wording is a major problem in this chapter. (Paul Reiter, Pasteur Institute)	Addressed
8-75	A	3	32	3	36	It is clear that climate change affects the incidence and distribution of malaria although other other non-climate factors (eg, drug resistance and vector control activities) also play a role. Suggest to replace "the magnitude of the effect is smaller…" with "the magnitude of the effect needs to be fully assessed". (Shilu Tong, queensland university of technology)	Addressed
8-76	A	3	34	3	36	Which continents? Although there are "reports" of malaria at "higher" altitudes, nearly all malaria specialists dispute the evidence for such "reports". To my knowledge, there is only an article by Jean Mouchet (one of the great names in our field), published during a particularly dry period (part of a long term cycle), that reports a decline in transmission and a change of dominant species, which he suggested may have been attributable to climate change. However, the trend has now been reversed. Mouchet's paper is not mentioned in the text. (Paul Reiter, Pasteur Institute)	Addressed
8-77	A	3	38		39	What is the "high confidence" referring to? If it is the second part of the statement, do you really need to indicate a confidence level? If it is referring to the first part of the statement, the confidence level statement should be moved. (Peter Berry, Health Canada)	Addressed
8-78	A	3	38			name the emerging infectious diseases (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-79	A	3	38	3	39	it is not clear which emerging infectious diseases are related to climatic factors. It also does not appear appropriate to use the term 'high confidence' here, since it is not clear what the implications are.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Andrew Haines, London School of Hygiene & Tropical Medicine)	
8-80	A	3	38			It is stated with high confidence that something is unclear. This is weird. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	Addressed
8-81	A	3	38		39	Given all other things contant, we know (for some diseases) what CC means for infectious diseases in the future. So this statement cannot be given a 'high conficence'. (Pim Martens, University of Maastricht)	Addressed
8-82	A	3	38	3	39	Again, the certainty of this sentence is very questionable; there have been some claims, most of them contested by specialists in the relevant field. (Paul Reiter, Pasteur Institute)	Addressed
8-83	A	3	41		48	Why mentioning the missing elements in methods/information. Here, an assessment is expected (where the authors most interpret the missing elements and judge their influence on the results). (Pim Martens, University of Maastricht)	Addressed
8-84	A	3	41	3	42	Evidence does not "strengthen" and the relation has been known for many years. It is pertinent to ask why the text is so Eurocentric. The extensive publications of Larry Kalkstein, for example, give a much more professional study of the relationship, firstly in the Chicago heat wave of the 1990s (?) and later on mortality from Finland to "hot" countries. The authors should definitely consult and quote this literature, as it is based on sound data over many years for many places. I FIND IT HARD TO JUSTIFY THE EXCLUSION OF RELEVANT TEXTS JUST BECAUSE THEY WERE PUBLISHED BEFORE THE TAR TO 4AR PERIOD. SCIENCE DOES NOT PROCEED IN 3-YEAR BOUNDS! (BY 3 YEAR I POINT OUT THAT ARTICLES PUBLISHED IN 2005-2007 ARE OBVIOUSLY NOT INCLUDED! (Paul Reiter, Pasteur Institute)	Addressed in TAR
8-85	A	3	42	3	44	As the frequency and intensity of heat waves is increasing under the scenarios of climate change, the impact of heat waves is a significant public health issue, particularly for developing countries. Suggest to change "Estimates … are reduced …" into "Estimates … are liekly to increase even after acclimatization and adaptation are taken into account". (Shilu Tong, queensland university of technology)	Addressed
8-86	A	3	45	3	46	"Predictive models … Europe." sentence doesn't belong here. Future work.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Elizabeth Casman, Carnegie Mellon University)	
8-87	A	3	45			Insert the following after the period on this line: "While developed countries have the means to cope, it would be harder for developing countries where access to energy is more expensive (relative to disposable income)." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not Addressed
8-88	A	3	45			unclear expression: "from heat" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-89	A	3	45	3	45	repace size with proportion (Andy Morse, University of Liverpool)	Addressed
8-90	A	3	45	3	46	(notes on "predictive models" as in 23:9/12) It is inappropriate to use the term "predictive modelling". Models are not forecasts, they are tools for exploring the interaction of chosen parameters. The misconception (or mis-leading presentation) of models as "predictors" of events in the next 50 or 100 years lies at the heart of much of the climate of sensationalism and fear that is nurtured by the media. (Paul Reiter, Pasteur Institute)	Not Addressed
8-91	A	3	50	4	1	European heatwaves is used as an example that developed countries maay not be well-prepared to cope with an extreme event. The same could be said about hurricane Katrina in the US (Carlos Corvalan, WHO)	Addressed
8-92	A	3	50	3	50	It will be clearer to write out both figures in full, eg 27, 000 - 40, 000. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	
8-93	A	3	50			Make clear that these number refers to August 2003. For the whole hot summer excess mortality is probably above 50,000. Ref: Kosatsky, T., 2005: The 2003 European heat waves. Euro Surveill 2005;10(7) (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	Addressed
8-94	A	3	50	4	4	This likelihood associated with the number of statements included in paragraph 8 is unclear. Suggest that this statement be checked with the WG1 chapter 9 statement for consistency. Also that terms be stated clearly: what does it mean to have "medium confidence" that something "may" have occured, and what is the likelihood of "most unlikely"?	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Haroon Kheshgi, ExxonMobil Research and Engineering Company)	
8-95	A	3	50			a comma is missing after "notable" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-96	A	3	50	4	1	The Chicago heat wave of 1996 and the great heat waves of previous periods in the 19th an 20th centuries showed the same. (Paul Reiter, Pasteur Institute)	Addressed in TAR
8-97	A	4	1			This is highly controversial and probably just wrong. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	
8-98	A	4	2	4	3	How can this statement be justified, when eastern Europe and Russia had cooler summer, and the overall global temperatures measured by balloon and satellite were LOWER than the previous years, after the great ENSO event of 97-98? This is an indefensible statement (Paul Reiter, Pasteur Institute)	
8-99	A	4	2	4	4	Again, an indefensible statement. The current warming started at least 150 years ago. There is a clear bias in attributing the deaths as the "first that can be attributed directly to climate change". This is simply non-science. The epic heat/drought througout much of the tropics, and as far north as northern China, from 1870-1914—dubbed the greatest human tragedy since the black death—the devastating heat waves in the southern US in the 1930s, the European heat wave of 1976 (when the global climate was in a 40 year cooling mode, and the heat wave in the north-eastern US in 1996? See the comments below at 17:46-50 and 19:25-34 (Paul Reiter, Pasteur Institute)	Not Addressed
8-100	A	4	3	4	4	as mentioned the unpreparedness to cope with this heat wave contributed to the high number of deaths (the comparison between France and Belgium is clearly relevant). - 4: directly = principally - 16: one of the most = an important (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-101	A	4	4			Insert the following after the period on this line: "For the future, with meteorological forecasts, foreknowledge of the possible consequences, and access to adaptive technologies, developed countries have the ability to avoid a repeat of the 2003 situation, or at least substantially reduce associated losses." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed but not in ES

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-102	A	4	6		7	Sentence is unclear. Does this mean that climate change is providing more extreme cold episodes and populations are acclimatizing or adapting well or that populations are simply adapting better to regular winter conditions? Also, does "less affected" mean mortality is decreasing? (Peter Berry, Health Canada)	Addressed
8-103	A	4	6			cold related deaths are probably reducing but they are still higher than heat related deaths if this is what is meant by affected. (Geoffrey Levermore, Manchester University)	Addressed
8-104	A	4	6	4	7	Why "now"?. And tolerance to heat is very well documented (mortality in Fiinland starts to increase above 17degC, in the high 30s in France, and in the 40s in southern Spain. (Paul Reiter, Pasteur Institute)	Not Addressed
8-105	A	4	7	4	13	"cold-related mortality" is confusingly or at least unspecificly used. On p. 9, line 17-25 "cold waves" are considered. The causal effect of cold conditions in winter is completely different to the direct impact of heat load: Cold conditions forward influenza and other infectious diseases. (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	Addressed
8-106	A	4	7	4	7	Change "...less consistent …" into "…stronger evidence that heat waves have a signifcant impact on public health". (Shilu Tong, queensland university of technology)	Addressed
8-107	A	4	9	4	13	In general there are too many short sentences affecting the flow of the prose. This chapter would benefit from English language editing to improve grammar, and ensure the consistent use of punctuation (e.g. ; and . after bulleted statements) and terminology (e.g. mid-range confidence or medium confidence p4 point 10). (Claire Hanson, University of East Anglia)	Addressed
8-108	A	4	10	4	11	See 23:14/16 (Paul Reiter, Pasteur Institute)	
8-109	A	4	11			Further explanation of statements would be useful e.g.: p4 line 11 “upper thresholds”. Of what? comfort? (Claire Hanson, University of East Anglia)	Addressed
8-110	A	4	11	4	11	rainfall exceed upper thesholds for vectors .. Does not make sense and need re-phrasing	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Andy Morse, University of Liverpool)	
8-111	A	4	13			it is likely that the balance will be more negative at higher overall temperatures. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-112	A	4	18		20	I am uncomfortable with the statement that "although predictive models suggest global crop yields will increase with climate change …" only because those studies rarely look beyond one century, and usually only consider modest climate changes. That statement very well may not hold for the extreme end of the uncertainty range for this century, nor over longer time periods. I think it appropriate to add "for expected climate changes over the next century." (J. Jason West, Princeton University)	Addressed
8-113	A	4	19	4	20	[1] There is much more to food security than crop yields (Goklany 1998, 2005b). It depends, among other things, on income, trade, safety nets, as well as reductions in post-harvest and pre (Goklany 1995). [2] According to Parry et al. (2004) if the future unfolds per the SRES scenarios, in the "no climate change" case, global population suffering from hunger would drop between 1990 and 2085 (although conceivably the numbers for Sub-Saharan Africa might be higher). With climate change, the numbers may or may not rise -- depending on the scenario. In terms of the total population suffering from hunger in 2085, the warmest scenario does not result in the worst situation; the worst situation seems to be the scenario with the highest population and lowest wealth (Goklany 2005a). Accordingly, I would replace the last sentence with the following: "Future food security will depend as much on the level of economic development, trade and technological change as on crop yields." [References not provided within a comment are provided at the end.] (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed
8-114	A	4	19			Alternative expert assessments are very optimistic, also against the background of progress in agricultural technology. (Hans H.J. Labohm, Netherlands Institute of International Relations 'Clingendael')	Addressed
8-115	A	4	19	4	20	Not sure where in the text this appears. And what does "generally pessimistic" really mean? (Paul Reiter, Pasteur Institute)	Addressed
8-116	A	4	20		20	Why are the prospects for food security pessimistic - because of other impacts of	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						climate change or for other reasons? This should be made clear. (Peter Berry, Health Canada)	
8-117	A	4	20			the pessimistic assessment of prospects for food security depends very much on the level of poverty within the population, since it is often inability to pay for food rather than global absolute deficiency in the availability of food which is important. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-118	A	4	24			Append the following at the end of the sentence: " …unless refrigeration and improved technologies for food preservation are used." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not addressed
8-119	A	4	26	4	29	Expert Review: On the Executive summary; Expert Reviewer strongly suggests that the following description would be inserted the text. 1) Extreme weather disasters such as hurricane "Katerina" might show the importance of preventive activities in vulnerable communities of industrialized countries, developing countries and countries with economies in transition. (Mitsuru ANDO, Toyama University of International Studies)	Addressed
8-120	A	4	26			Homeless people have been highlighted as a key vulnerable population to the health impacts of climate change. However, much evidence exists to demonstrate the sensitivity of other populations such as children and the elderly to such impacts (e.g., sensitivity to air pollution, infectious diseases etc). The discussion of vulnerable populations should therefore be expanded. This is particularly important from a developed world perspective, given that these will be the key vulnerable populations that could suffer significant impacts even with relatively higher adaptive capacity in these countries. (Peter Berry, Health Canada)	Addressed
8-121	A	4	27		29	Need to also indicate that the impacts of flooding are severe for people that are not able to take protective actions, such as the poor and destitute in developed countries. Hurricane Katrina demonstrated this quite well. (Peter Berry, Health Canada)	Addressed
8-122	A	4	29			perhaps it would be appropriate to add a line here about hurricanes, given the recent event in New Orleans which has lead to widespread flooding. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-123	A	4	34		37	I agree with this statement, but it leaves the health effect of air pollution as implicit. The statement would be stronger if it mentioned the types of health effects associated with air pollution, and said that there is now new and stronger eivdence that air pollution causes these effects. (J. Jason West, Princeton University)	Addressed in 8.2
8-124	A	4	39		40	Medium confidence in what? The documentation? The 'further evaluation of the health impacts'? (Pim Martens, University of Maastricht)	Addressed
8-125	A	4	40			"(medium confidence)" ??? Presence of aeroallergens in the air implies humans being exposed to these allergens. Then prolonged pollen season means higher, longer risk for allergies. In particular when new aeroallergens are introduced in an area (p15 l31). (Bernard Clot, MeteoSwiss)	Addressed
8-126	A	4	42			Comment on Item 17. [1] It's not obvious that CC may not ameliorate water shortage for more people than it would place more people at risk. In fact, Arnell (2004) and Arnell et al. (2002) show that fewer people could be living in water-stressed areas after CC than before CC (see Goklany 2005, 2005a.). [2] What's the basis for the claim that Arctic populations are extremely vulnerable to CC-related health impacts? There is nothing in this chapter that supports thiat. Accordingly, I would drop the phrasdes referring to these poulations. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed
8-127	A	4	42			Perhaps along with the comment about “populations in geographic regions that are particularly vulnerable to the health impacts of climate change” could also note that some indigenous communities are particularly vulnerable due to their cultural connections between their physical health and ecosystem health. Ref Greiner, R; S Larson; A Herr & V Bligh 2004 Wellbeing of Nywaigi Traditional Owners. The contribution of country to wellbeing and the role of natural resource management (CSIRO Sustainable Ecosystems). In addition to this point, the health impacts on these communities often come on top of already socially and economically disadvantaged communities which reduces their resilience. Ref Woodruff, R; S Hales; C Butler & A McMichael 2005 Climate Change Health Impacts in Australia: Effects of dramatic CO2 emission reductions (Australian Medical Association and the Australian	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Conservation Foundation) (Donna Green, CISRO)	
8-128	A	4	46			Include one para on population living in mountainous regions. Mountain ecosystems are particularly vulnerable to temperature changes. Latter can impact on agroecosystems and animal husbandry systems alike, threatening the livelihood of these people, notably less mobile persons (elderly, otherwise abled, women and children) but also remote self sustained and natural resources dependent ethnic communities. Also mention the high risk that populations living in higher mountaIin areas incurr from glacial lakes outbreaks floods (GLOFS). data on latter to be found at International Centre for Integrated Mountain Development ICIMOD http://www.icimod.org. 3w.icimod.org/publications/newsletter/New38/glacial.htm (Alexander von Hildebrand, World Health Organisation)	Addressed
8-129	A	4	46			A recent inventory carried out by ICIMOD and UNEP/EAP-AP shows that there are 3,252 glaciers covering a surface area of 53,23 sq.km and 2,315 glacial lakes out of which 26 potential dangerous glacial lakes are in Nepal (ICIMOD and UNEP/EAP-AP 2000). Field studies of the six glacial lakes (Tsho Rolpa, Imja, Thulagi, Lower Barun, Dig Tsho, and Tam Pokhari) in Nepal have been carried out by different organisations. Similarly, the inventory carried out shows that in Bhutan there are 677 glaciers covering 1,316 sq.km and 2,674 lakes, out of which 22 are potentially dangerous (Alexander von Hildebrand, World Health Organisation)	Addressed
8-130	A	4	49		50	The sentence "Limited evidence suggests …" is unclear and rather weak. Would it not be more appropriate to indicate such systems "are" effective? (Peter Berry, Health Canada)	Addressed
8-131	A	4				Need to comment on the effect of heat on worker productivity (which is basically a physiological health issue) (Tord Kjellstrom, Australian National University)	Addressed in 8.2
8-132	A	5	1	5	5	I can't do a search of the Chapter, but in the parts that I have read, ECONOMIC ISSUES HAVE HARDLY BEEN ADDRESSED. Also, this paragraph is very badly written and hard to follow. (Paul Reiter, Pasteur Institute)	
8-133	A	5	2		4	"cost-benefit comparisons" between what? Are you referring to cost -benefit	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						comparisons between different adaptation measures or between adaptation and mitigation measures? Needs to be clear as both types of discussions arise in the literature. (Peter Berry, Health Canada)	
8-134	A	5	2			Could a supplementary comment include the difficulty many cultures have in even 'costing' in economic terms the value of a human life? This comment relates in particular to the concern of the previous comment with cultures that do not necessarily distinguish clearly between the health of ecosystems and human health. Ref Secretariat of the Convention on Biodiversity 2004 Akwe: Kon Volunatry guidleins for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities (CBD (Donna Green, CISRO)	Addressed
8-135	A	5	2			Direct loss of productivity from heat related "slowing down" of work may be even greater (Tord Kjellstrom, Australian National University)	Addressed
8-136	A	5	4			I think it would be better to use health economic comparisons rather than 'cost-benefit'. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed, but no studies available
8-137	A	5	4	5	5	this sentence is not clear and a comma is missing after "however" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-138	A	5	5		5	"priorities for expenditure" - for what? Adaptation or Mitigation? This is particularly relevant/important given current state of affairs in most countries and internationally where the bulk of climate change funding is being spent on GHG mitigation measures and not on adaptation research and policy development activities. (Peter Berry, Health Canada)	Addressed
8-139	A	5	7	5	9	This paragraph says nothing in particular. It should be omitted. (Paul Reiter, Pasteur Institute)	Addressed
8-140	A	5	8			the point is that the adaptation and mitigation strategies may have direct health impacts, as well as the potentially beneficial effects intended on adaptation and mitigation. For example renewable energy strategies will result in reduced particulate air pollution, as	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						well as reducing greenhouse gas emissions. (Andrew Haines, London School of Hygiene & Tropical Medicine)	
8-141	A	5	11	5	15	Expert Review: On the Executive summary; Expert Reviewer strongly suggests that "oil crisis" will be serious for economic development and improved capacity to adaptation. 1) Instability of world oil supply in future evaluated by Colin J. Campbell and Matthew R. Simmons will make hard to adapt to climate change in various sectors and nations in both developed and developing countries. 2) IPCC Emission Scenarios (2000) should be revised using Peak Oil Scenarios. (Mitsuru ANDO, Toyama University of International Studies)	Not Addressed, as part of WgIII
8-142	A	5	11	5	13	Where is the evidence for this statement? Again, very badly written. (Paul Reiter, Pasteur Institute)	
8-143	A	5	13			it is unclear what is meant by the manner in which growth occurs. I presume what is meant is the relative investment of resources into strengthening and developing infrastructure which might promote adaptation. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-144	A	5	14		15	Should more explicitly frame this discussion in terms of a population health approach. Education is only one of many important determinants of health. Could also include reference to early childhood development, socio-economic status, healthcare system, social networks, physical and built enviornments etc all of which have very important impacts on health and well-being. (Peter Berry, Health Canada)	Addressed
8-145	A	5	22		22	change "good" to "appropriate" (Peter Berry, Health Canada)	Addressed
8-146	A	5	24	5	28	Where is this written in the text? (Paul Reiter, Pasteur Institute)	Addressed
8-147	A	5	26		33	What is the difference between "effects of climate change" line 26 and "health impacts of climate change" line 33? Need to be consistent in wording. (Peter Berry, Health Canada)	Addressed
8-148	A	5	26		28	The term "disease control measures" is used throughout the chapter to refer to all public health and health sector adaptation measures. However, the term implies a very narrow meaning - implicitly providing a focus on infectious diseases. For example, it is	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						unclear if the following adaptation activities would be included under this rubric - research on climate change and health impacts, development of a heat-alert warning system, emergency response system in Arctic community to reduce travel injuries, social networking activities to build adaptive capacity of local communities etc. Also, the phrase "may not translate to other settings" is vague and should be replaced. Does this mean may not be adopted? Why? Because of lack of resources, technicaly feasability and/or other reasons? (Peter Berry, Health Canada)	
8-149	A	5	28			Add the following sentence at the end: " Future projections should alos incorporate changes in adaptive capacity due to changes in the level of economic development, human and social capital, and secular technological changes that might occur (Goklany 2005b)." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed
8-150	A	5	31			8.1.1 is interesting, but the contents are not always relevant to the subject of climate change. Make the link and reduce section. Eg global level inequalities are important but are they relevant to the subject? Show the relevance or leave out. (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-151	A	5	31	5	31	Delete period after "8.1" to read "8.1 Scope and key issues" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-152	A	5	31			8.1: Scope: There is no need to put 8.1.1 State of health and 8.1.2 Findings from TAR. (Akihiko SASAKI, Fukushima Pref. Authority)	Not applicable
8-153	A	5	33	5	33	This is the second time that climate change is taken to be proven without doubt - I would not want to down play the significance of the observed temperture record but not all disease are only temperture driven. (Andy Morse, University of Liverpool)	Not applicable
8-154	A	5	38		40	It is and should be recognized that the most severe health impacts and greatest population health burden will be faced by people living in developing countries. However, the chapter needs to recognize that developed countires also have vulnerable populations who could be impacted greatly be climate change (e.g., poor, elderly, children, those with pre-existing illnesses, those living in Arctic regions being exposed to greatest changes). See Health Canada, Climate Change and Health: Research Report,	Addressed in conclusions

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						2004 (page 18-20) and Health Canada, Health Policy Research Bulletin, Anita Walker, "Vulnerability: Who's Most At Risk", Forthcoming. One of the reasons for providing information on health impacts of climate change is to motivate countries to take the most important adaptation measure of all - reducing GHG emissions - and it is simply that case that health impacts of popolulations living in developing countries, will not alone persuade developed countries (those responsible for bulk of GHG emissions) to take actions to significantly reduce. The story about vulnerabilities of populations in developed countries needs to be told as well. (Peter Berry, Health Canada)	
8-155	A	5	40			unclear expression: "health futures" (Thomas Kistemann, Institute for Hygiene and Public Health)	Text removed
8-156	A	5	40			substitute ´health futures´ by health scenarios or a similar term. A health future is a vague concept. (Xavier Rodo, University of Barcelona)	Text removed
8-157	A	5	43	5	43	Delete period after "8.1.1" to read "8.1.1 State of health in the world" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-158	A	5	45			Phsyical, social and psychological well-being are essential indicators of sustainable… (Rosalie Woodruff, Australian National University)	Addressed
8-159	A	5	49	5	49	Have African life expectancy trends been reversed recently? largely due to HIV/AIDS? (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-160	A	6	3		4	I propose to insert the following new text piece: In CIS countries considerably negative trends in population health have been observed after 1991 as a result of the political and socio-economic changes. For instance, in Russia annual male standardized mortality mst increased 40 % from 1991 to 1994 with the respective decrease of life expectancy below 60 years. Value of mst per 100,000 male persons was equal to 1706 in 1991 and 2382 in 1994 (WHO European standard; Demographic yearbooks of Russia, 2000,...,2004). Some improvement in the state of health after 1994 was interrupted by the state financial default in 1998, and negative trends (or stagnation) in the health conditions began again. They have remained up to present days. (Vladimir Demin, Russian research center "Kurchatov institute")	Addressed in one sub sentence

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-161	A	6	9		12	What role does the chronic disease epidemic play in both developing and developed countries in increasing vulnerabilities to the health impacts of climate change? For example, it can be expected that increasing rates of diabetes, and childhood obesity would increase sensitivity to climate change impacts in the short to medium term. Given the size of the populations involved this is a potentially ver serious development. (Peter Berry, Health Canada)	Not addressed.
8-162	A	6	14		25	It is not clear in this paragraph how the specific diseases highlighted (e.g., malaria, darrhoeal diseases, malnutrition) relate to sensitivity to climate change impacts. For example, does malnutrition mean that children afflicted will be more sensitive to health impacts of specific climate change events (e.g., monsoon) or that climate change is expected to increase malnutrition or both? (Peter Berry, Health Canada)	Addressed
8-163	A	6	14			In this paragraph three examples are mentioned: malaria, diarrhoeal diseases, malnutrition. No-one disagrees that malaria is climate sensitive, but recent evidence clearly suggests that it is less sensitive to climate change than previously presumed. Malnutrition on the other hand, if large parts of Africa for instance become less productive, is clearly a major outcome. List examples in order of importance re climate change. Resist the temptation to repeat out-of-date assumptions and rhetoric. (Marlies Craig, Medical Research Council of South Africa)	Addressed in 8.2 and 8.4
8-164	A	6	14	6	15	Under sub head-state of health in the world, only detahs have been mentioned. Incidence of diseases in most climate vulnerable areas may be mentioned. (Ramesh Dhiman, Malaria Research Centre)	Not applicable. Lengths.
8-165	A	6	14			This paragraph implies acceptance of which diseases are "climate-sensitive." I doubt there is such agreement. For instance, it is not obvious why unsafe water and poor sanitation are climate sensitive. Nor is the direction of sensitivity clear even when there might be agreement that a disease is climate sensitive. For instance, there are debates among experts about whether malaria incidence will rise with global warming or fall on net (my reading is that malaria exposure will not be particularly sensitive to changes in temperature (Richert, I think makes this argument), but this is not the point). Thus, there needs to be a paragraph to lay out what diseases are climate sensitive and why, or at least what factors go into defining a disease as climate-sensitive. And to be useful, it	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						can't be "every disease is climate sensitive." There needs to be some attempt at prioritizing. (Alan Krupnick, Resources for the Future)	
8-166	A	6	14		25	A general description of the health situation in the world is expected here as an introduction however some of the conditions discussed later in the chapter are missing as dengue or heat related conditions, for example (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Not applicable. Limitation of lengths
8-167	A	6	14	6	25	malaria and other vector-borne diseases (like dengue) are clearly climate-sensitive, diarrhea and malnutrition are much less and belong to another category. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Not applicable
8-168	A	6	16			rewrite ´…conditions that are attributable mainly, but not only, to unsafe water…´. Also in the line 18, where percentages are given, it would be preferably to give absolute numbers rather, or conversely the percentages with respect to the total population. (Xavier Rodo, University of Barcelona)	Addressed
8-169	A	6	17			Further explanation of statements would be useful e.g. p6 line 17 what are the major forms of malnutrition? (Claire Hanson, University of East Anglia)	Addressed
8-170	A	6	18	6	18	Can a different adjective for diminutive other than dwarf be used please (Andy Morse, University of Liverpool)	Addressed
8-171	A	6	21	6	21	Can you really have a prevalance of underweight? Prevalance of diseases that lead to being underweight (Andy Morse, University of Liverpool)	Addressed
8-172	A	6	25			it is particularly many sub-Saharan African countries that are far behind on their MDG targets (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-173	A	6	28	6	28	Delete period after "8.1.2" to read "8.1.2 Findings from the Third Assessment Report" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-174	A	6	30	6	30	Once acronym TAR has been defined (on p.5, line 36), use only acronym "TAR" for remainder of chapter. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-175	A	6	33			As most of the bullets apply to developing countries, I would be more specific about	Not applicable. This is the summary of

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						this one applying to developed countries as well. It is these countries where the population tends to live in high rises without the ability to open windows and without the social networks to protect elderly and ill people from dying in their sleep from excessive heat. (Alan Krupnick, Resources for the Future)	a published reviewed document.
8-176	A	6	39			This seems like a second order effect relative to some of the other bullets. I would drop it as being too speculative and being partly picked up elsewhere. (Alan Krupnick, Resources for the Future)	Not applicable. This is the summary of a published reviewed document.
8-177	A	6	39	6	41	This is an important topic with significant cost implications I an not sure that it has been readdressed and new literature collated. James Bogardi of UNU-EHS has been making public statements on the topic and I assume these are based on recent research. (David Shearman, Univeristy of Adelaide)	Not applicable. This is the summary of a published reviewed document.
8-178	A	6	45	6	47	It is stated that climate change will result in decrease in precipitations at lower latitudes, but there is no consensus about that, according outputs from WG 1 chapters (Michel Boko, Université d'Abomey-Calavi)	Not applicable. This is the summary of a published reviewed document.
8-179	A	6	45			There is a certain absoluteness here that is troublesome. If yields increase in higher latitudes and fall in lower latitudes, it is not clear that net yields will fall. If they don't, then increased trade or foreign aid could offset any reduction in food supply in lower latitude areas. (Alan Krupnick, Resources for the Future)	Not applicable. This is the summary of a published reviewed document.
8-180	A	6	48			Rather than saying "assuming current emission levels continue," say "other things equal." Current levels are going to be coming down more than likely. But the point is that with higher temperatures, conditions for ozone formation are likely to occur more frequently, irrespective of the ozone-precursors being emitted. lso, this bullet puts an emphasis on ozone, with particulates as an afterthought. This emphasis should be reversed in terms of potency. Whether particulates are as sensitive to temperature as ozone is, is an open question. This is an important research area. (Alan Krupnick, Resources for the Future)	Addressed
8-181	A	7	5	7	5	Insert "s" at end of "level" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-182	A	7	6		10	More countries have performed a national assessment.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Pim Martens, University of Maastricht)	
8-183	A	7	8	7	7	Reference author names are mixed around. "Calheiros and Casimiro" should read "Casimiro and Calheiros" (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Addressed
8-184	A	7	14			Even though some countries have adopted adaptation measures to reduce health risks associated with climate change, I don't believe climate change is now an issue of concern for health policy from the perspective of health policy makers. For example, how many countries have completed assessments of health impacts? How may national health agencies or departments have completed reviews of thier own policies and programs to see how they might be affected be climate change? How may health departments or event countries ar making significant investments in either health adaptation research or policy development and how many health departments are starting to integrate climate change or even weather information into their planning processes? I suspect most countries are still in the same situation as Canada where the health community is not motivated by climate change risks. We must be candid about the degree to which the health community is involved in the climate change issue. (Peter Berry, Health Canada)	Disagree. Health institutions are at the beginning of activities in this area, similar to what happened to air pollution in the 70s
8-185	A	7	15		17	give examples please. (Xavier Rodo, University of Barcelona)	Not applicable
8-186	A	7	18			Mention whether, since TAR, there have been more emissions of GHG, increasing the overall threats. (Alexander von Hildebrand, World Health Organisation)	Addressed in wg1 and wg3
8-187	A	7	22	7	32	It is important to capture major types of research methods used to assess the health impacts of climate variability and change. Empirical appraoch is only one of them. I suggest to describe research methods as follows: 1. Analogous analyses (eg, seasonal patterns of diseases); 2. Empirical appraoch including laboratory studies (eg, infectivity of vector), field studies (eg, interactions between hoster, vector, pathogen, environmental conditions and human disease) and epidemiological studies (eg, time series analysis, spatial modelling and increasingly sptiotemporal modelling); and 3. Scenario-based mathematical medelling (eg, predict disease endemic area by 2100). (Shilu Tong, queensland university of technology)	Addressed, only partly.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-188	A	7	25		27	Need to include extreme winter weather such as "ice storms, blizzards, extreme cold" The winter kills more than the summer. (Thomas Moore, Stanford University)	Addressed
8-189	A	7	28	7	29	temporal studies often look for affect modifiers that influence sensitivity of individuals to climate change. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-190	A	7	32			in addition there are those studies that evaluate the impact of adaptation strategies on sensitivity to climate variability. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-191	A	7	34			A major challenge, usually forgotten by health policy analysts, is to capture the behavioral dimension of health risks. That is, people can adapt to lower their risks of rising temperatures and other physical changes associated with climate change, and such adaptations can affect underlying "concentration"-response relationships. Indeed, a given set of population behaviors underlies all epidemiologically-derived relationships but is usually ignored. So, if warmer temperatures and higher incomes result in more air conditioning, the health effects of global warming will be lower than otherwise. Perhaps the phrase "contextual reality" (pg.8ln3) is meant to convey this point, but it is too vague to do so. (Alan Krupnick, Resources for the Future)	Not addressed
8-192	A	7	34	8	4	Major challenges we face include two aspects: 1. Conceptual challenge such as how to define the health impact of climate change given climate is NOT an etiological factor of disease but it may be a risk factor. 2. Methodological challenge such as how to quantify, forecast and mitigate the health impact of climate change. We need to address key issues - eg, data (particularly long-term health outcomes and confounders) gaps, modelling issues, quality assurance in data linkages, and uncertainty analysis. (Shilu Tong, queensland university of technology)	Not addressed, the current division captures all these differences
8-193	A	7	35			...data and information, particularly the length of timeseries of health data, and… (Rosalie Woodruff, Australian National University)	Addressed
8-194	A	7	39			Include to particular climate sensitive health determinants in: "The difficulty of attributing health outcomes " to particular climate sensitive health determinants.." or climate change per se"	Not applicable

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Alexander von Hildebrand, World Health Organisation)	
8-195	A	7	40	7	42	Indeed. By the way, is there an attempt to get an overall picture, not by generalizing to global level (which requires many invalid assumptions), but by assessing effects at a local/regional level and adding up total outcomes at the end? (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-196	A	7	40	7	2	The authors might consider a specific reference to the "problems of scale". (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed
8-197	A	7	43			substitute health by health and climate. Also the concept of climate-related thresholds for populations stated in line 44 should be explained clearly. (Xavier Rodo, University of Barcelona)	Addressed
8-198	A	7	44	7	44	This bullet point may be better written as "the ability to identify climate-related threshholds for population health". (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-199	A	7	45		45	Add under major challenges a last bullet "understanding and measuring adaptive and coping capacity so as to get a clearer understanding of vulnerabilities" (Peter Berry, Health Canada)	Addressed
8-200	A	7	45			Add a bullet point -- the measurement of human performance factors related to climate, wellbeing and socio-economic development (Tord Kjellstrom, Australian National University)	Not applicable
8-201	A	7	46	8	3	The main point about the importance of multiple exposures made in the paragraph is a good one. However, a better description of the synergistic impacts of multiple climate change and health impacts on populations is required here. Use an example such as a person being exposed to a climate change related heatwave while also exposed to higher than normal smog levels or communities having to cope with an extreme weather event while also being under stress by an emerging disease related to a changing climate (e.g., West Nile or Lyme Disease). Even countries/communities with a high capacity to cope with climate change impacts may have difficulty adapting effectively to synergistic impacts or effects. (Peter Berry, Health Canada)	Addressed
8-202	A	7	46			This paragraph is VITAL. Excellently stated. The rest of the document should keep	Thanks

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						referring back to what is so clearly written here, live up to this high standard of accountable reporting. The document should be more careful, critical, more honest about limitations of predictions and adaptations. You can only take comments (especially later in the document) seriously only if they contain less rhetoric, and more sober-minded considerations. (Marlies Craig, Medical Research Council of South Africa)	
8-203	A	7	48		48	What is a health inequality? Does this refer to differences in health status or differences related to access to healthcare and other factors contributing to good health outcomes? (Peter Berry, Health Canada)	Addressed
8-204	A	7	50			substitute Certain populations by Different populations, as in fact urban, rural and coastal populations are All populations. (Xavier Rodo, University of Barcelona)	Addressed
8-205	A	8	1			Include:mountain in (urban,rural, mountain,coastal) (Alexander von Hildebrand, World Health Organisation)	Addressed
8-206	A	8	2		3	This depends how you define 'validation' and 'reality'; health impact assessments face similar 'problems' with this as all other impact assessments. (Pim Martens, University of Maastricht)	Addressed
8-207	A	8	3		3	What is "contextual reality"? (Peter Berry, Health Canada)	Addressed
8-208	A	8	3			remove ´contextual reality´. This is not a clear terminology. (Xavier Rodo, University of Barcelona)	Addressed
8-209	A	8	6	8	6	Delete period after "8.2" to read "8.2 Current sensitivity to weather and climate" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-210	A	8	6			Section 8.2. It is said..´published evidence indicates: etc…´ Please refer to specific studies for each of the published evidences. (Xavier Rodo, University of Barcelona)	Addressed.
8-211	A	8	6			8.2: Current sensitivity "Sensitivity" and "current" are not defined. able 8.1 uses "vulnerability" instead of "sensitivity", and "disease burden". Sex discrimination in Table 8.1 is meaningless, or it should be related with Box 8.1 Gender. In regional comparison, difference between social sensitivity and individual/physical sensitivity is not considered, which the uncertainty depends on. For example, repeated typhoons	We ensure that these terms are defined and check IPCC glossary, and chapters in AR4.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						decrease the sensitivities chronologically or as unexplained social response that would increase the uncertainty. The meaning of "Current " should be the function connecting the experience of past 20 years and future. The purpose to discuss health impacts is not the description of increased impacts of climate change, but of increased vulnerability of human society that depends more and more on information and knowledge on systems. Even though climate change and social vulnerability would increase, people will still be able to adapt to them by dynamic response. The final goal of IPCC report is to suggest frameworks and parameters of social dynamic response and evaluate whether it is possible or not (success rate = reversed risk) and how (options, timing, and subpopulation/preload), according to uncontrolled conditions and places. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-212	A	8	6			8.2 Current sensitivity has an argument in sequence and contents. 8.2.3 and 8.2.4 are chronologically different but similar in results. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed
8-213	A	8	8			The assessment of ´high quality´empirical studies implies there are ´low quality´empirical studies. In fact I think it is impossible to grade among empirical studies provided they are ´well-done´. (Xavier Rodo, University of Barcelona)	Addressed.
8-214	A	8	9			The chapter often refers to "sensitivity" in describing health impacts when it seems the terms vulnerability, exposure or adaptive capacity would be more appropriate. For example, after the reference to evidence for current sensitivity, the fourth bullet (line 19) refers to "health effects of flooding and weather disasters are severe and long lasting". However, this would seem to be more appropriately termed evidence of vulnerability given that the occurrance of severe health effects is dependant on more than sensitivity of populations to the hazard in question, but also to rates of exposure and the capacity to adapt. The terminology throughout the chapter in this regard, should be correctly used and consistent. (Peter Berry, Health Canada)	Addressed .
8-215	A	8	9			When the text refers to úncertainty, is it really uncertainty as referred in other parts of the TAR or just, lack of knowledge? In fact, te term uncertainty has a very clear definition in other chapters of the report and we should avoid the more popular use of	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						such words. (Xavier Rodo, University of Barcelona)	
8-216	A	8	9	8	11	This sentence is ambiguous. In many of the examples given for the rest of this section the authors do not assess the "strength of the association" between the climate/weather and health outcomes". (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed.
8-217	A	8	14	8	14	Can you add vectors after species i.e. insect species (vectors) (Andy Morse, University of Liverpool)	Not addressed.
8-218	A	8	14			Substitute insect species by vectors. (Xavier Rodo, University of Barcelona)	See above comment.
8-219	A	8	16			"…that are not adapted." Not sure what is meant by this - it could be read as behavioural or physiological. Do we know the extent to which physiological adaptation can extend? It would be better to say that high temperatures cause large increases in deaths in vulnerable populations when they are unable to protect themselves. (Rosalie Woodruff, Australian National University)	Addressed.
8-220	A	8	17	8	18	The names of additional diseases should be listed here - see my comments on section 8.2.9. (David Shearman, Univeristy of Adelaide)	Addressed in table 8.3
8-221	A	8	18			after diseases, add: water-borne diseases. There is a bulk of evidence (at least: Pinfold et al., 1991; Checkley et al., 2000; Singh et al., 2001; Wade et al., 2004, Benson et al., 2000; Rose et al., 2000, Curriero et al., 2001, Karanis et al., 2000, Hunter et al., 2003, Pascual et al., 2000, Bouma and Pascual, 2001, Codeco, 2001, Rodo et al., 2002, Louis et al., 2003, Lama et al., 2004, Koelle et al., 2005). (Xavier Rodo, University of Barcelona)	Addressed
8-222	A	8	19			it is primarily the mental health impacts of flooding and weather disasters that are severe and long lasting. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-223	A	8	20			Include: increasing threat form glacial lakes outburst floding menacing populations living in valleys of higher mountainous regions. Alos look into latest data related to increased released of GHG from previously glacial ice/snow covered dark soil, now warming up and emmitting CO2.	Addressed in 8.4

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Alexander von Hildebrand, World Health Organisation)	
8-224	A	8	21	8	21	Substitute parentheses instead of brackets and "see" for consistency in citing tables, chapters, sections: …"(see Table 8.1)." (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-225	A	8	21	8	22	This implies that some other diseases are not of global relevance! They are of global relevance and their names should be summarised here with appropriate cross references if necessary to make the chapter comprehensive. (David Shearman, Univeristy of Adelaide)	Addressed.
8-226	A	8	24	8	24	This is a very important figure; I was somewhat dissappointed that it was not yet available. (Erin Lipp, University of Georgia)	Addressed
8-227	A	8	27	10	9	The term "temperature-related mortality" is misleading. Nobody dies from temperature but from e.g. heat load. Most epidemiological studies use just air temperature as an indicator for the thermal environment thus ignoring fundamental pysiological knowledge in heat exchange where air temperature, water vapour pressure, wind velocity, and short- and long-wave radiation fluxes are the atmospheric input variables. In heat load conditions heat loss from the human body is mainly by latent heat flux determined by water vapour pressure and wind velocity. Suggestion: "heat-reated" or "cold-related" mortality, respectively. Missing is a statement considering exposure (indoor - outdoor; ground floor - under the roof). (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	Addressed.
8-228	A	8	27			Section 8.2.1. I think this section needs to include discussion of winter-related mortality and morbidity beyond that due simply to cold waves. There should be discussion of the widely-observed phenomenon of higher deaths throughout the winter season. The reasons for this likely relate to indoor activities, lower ventillation rates of buildings, and greater transmission of infectious diseases, although I don't know how well these influences have been sorted out to-date. Warmer winter temperatures would seem likely to reduce the winter mort/morb bulge considerable, although with consirable uncertainty regarding the degree of attendant life shortenning. You might change the title of Section 8.2.1.2. to cold-season mortality, and include both cold waves and this other phenomenon.	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Patrick Kinney, Mailman School of Public Health at Columbia University)	
8-229	A	8	27			Comments in 8.2.1-8 are frequently described in 8.3 and thereafter, thus to cite the referred position may be convenient to readers. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed
8-230	A	8	33			8.2.1 Heat wave: 8.2.1.3 Temperature & mortality should be put in the beginning and described about the extent of adaptation. Then, drastic changes and regional difference should be described. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed.
8-231	A	8	35	9	15	Literature on impact of heat waves on health has been amply covered. (Ramesh Dhiman, Malaria Research Centre)	
8-232	A	8	35	8	38	There is a group on global warming and health impacts, coordinated by Dr M. Kabuto, National Institute of Environmental Studies, and they undertook a study on heat waves in 2004. A paper, entitled "A comparative study on daily maximum temperature and personally exposed temperature during hot summer daus in 3 Japanese cities", will appear in the next month's Japanese Journal of Public Health (abstract in English). The authors should obtain a copy of the paper from Dr Kabuto (email: kabuto@nies.or.jp) and incorporate the study findings in the next revision. (Hisashi Ogawa, World Health Organization Western Pacific Regional Office)	Paper requested
8-233	A	8	40	8	43	Has many references with examples from France and Italy, but I think it needs one for an Iberian Peninsular example, since population in this reagion (i.e. In Portugal) seems to be more sensitive than most other Southern European countries (i.e. Italy) when we compare the number of excess deaths with the total population for the country/city. Suitable references could be: a) Nogueira et al., 2005, Eurosurveillance, volume 10, issue 7-8. or b) Calado et al., "Portugal, Summer 2003 Mortality: the Heatwave Influence" in Extreme Weather Events and Public Health Responses, (Kirch et al., editors), 2005. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Addressed here and chapter 12
8-234	A	8	45	8	48	Insert the word "Some" at the beginning of the sentence that now begins "Climatologists now consider …" The position taken by Stott et al in their 2004 paper is not universally held. Delete the sentence "Therefore, the excess deaths that …" It is incorrect, as it is almost certain that previous natural climate changes, such as the Little	Not Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Ice Age, caused many deaths. See Fagan, B., (2000): The Little Ice Age: How Climate Made History 1300-1850. Basic Books, 246 pp. for a detailed history of climate impacts in Europe over the period. This history details many famines and similar fatal occurances due to climate change. (Lenny Bernstein, IPIECA)	
8-235	A	8	48	8	48	Can you conclusively attribute the European heat wave to climate change given the caution in the citations immediately before? (Andy Morse, University of Liverpool)	Not the chapter 8 but in wg1.
8-236	A	9	3	9	3	Insert "s" at end of "wave" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-237	A	9	4	9	4	Add: ' In turn, mortality of children under 10 seems to be relatively unafected by heat waves (Díaz et al 2004). Reference: Díaz J., C. Linares, R. García-Herrera, C. López and R. Trigo, 2004: Impact of temperature and air pollution on the mortality of children in Madrid. Journal of Occupational and Environmental Medicine, 46(8) 768-774. (Ricardo García-Herrera, Universidad Complutense de Madrid)	Not Addressed because of space
8-238	A	9	5		5	What is "short-term mortality displacement" I think I know but this should be made clearer for the reader, many of which will not be familiar with the terms used in this type of research. (Peter Berry, Health Canada)	Addressed
8-239	A	9	5			Define “morality displacement,” e.g., resulting in only a fewer days or weeks of premature death. (Alan Krupnick, Resources for the Future)	Addressed.
8-240	A	9	10			The comment "high mortality in rural populations, the elderly and outdoor workers" need to be further elaborated upon, as the high mortality in outdoor workers is ignored in other parts of the chapter (Tord Kjellstrom, Australian National University)	Addressed.
8-241	A	9	12			If the European healtwave gave controversial (initially low) numbers, one could assume a similar situation in other countries. However, no evidence is given that the mortality figures are due to heat stroke only. (Carlos Corvalan, WHO)	Addressed
8-242	A	9	16			Include data on heat waves in India in 2004 and 2005	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Alexander von Hildebrand, World Health Organisation)	
8-243	A	9	20			outdoors; also in fuel poor dwellings with the vulnerable. (Geoffrey Levermore, Manchester University)	Addressed.
8-244	A	9	23	8	25	There are likely to be regional variation in climate change some regions may cool so it does not actually follow that heat waves will mean less cold conditions for some regions. It is a too general statement (Andy Morse, University of Liverpool)	WGI.
8-245	A	9	24		25	There have been studies that have quantified the savings in lives from coldwaves-related deaths. See Thomas Gale Moore, "Health and Amenity Effectrs of Global Warming," Economic Inquiry 36(3) (July) : 471-86; C.G. Bentham, 1997, Health. Chapter 8 in Economic Impacts of the Hot Summer and Unusually Warm Year of 1995, ed. J.P. Palutikof, S. Subak, and M. D. Agnew. London: U.K. Department of the Environment, 87-95; A. Lerchl, 1998, Changes in the Seasonality of Mortality in Germany from 1946 to 1995; The Role of Temperature. Internatioal Journal of Biometeorology 42: 84-88; Thomas Gale Moore, In Sickness or in Health: The Kyoto Protocol versus Global Warming, 2000, No 104 Hoover Institution Essays in Public Policy. (Thomas Moore, Stanford University)	Addressed, although most of these references were addressed in TAR
8-246	A	9	25		25	"…some coldwave-related deaths might be avoided" is inconsistent with line 9-10 page 4 "projected climate change will probably have some health benefits including reduced cold-related mortality" The second line is a much stronger statement than the first. The message should be consistent in this regard. Also, do the studies which indicate a decrease in cold related deaths take into account a possible increase due to more traffic accidents etc? (Peter Berry, Health Canada)	Addressed
8-247	A	9	27	10	9	Incorporate this section with sections 8.2.1.1. and 8.2.1.2 as appropriate and avoid repeating information. (Marlies Craig, Medical Research Council of South Africa)	Not Addressed
8-248	A	9	29	9	37	Section 8.2.1.3. The French National Institute of Public Health Surveillance (InVS) has carried out a very informative case control study on individual and environmental risk factors of death on ederly people during the 2003 heat wave. A paper is currently	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						submitted for publication in an international scientific journal, but a complete report (in French) is available since september 2004 on the InVS web site. It should be interesting for readers of the IPCC report to cite this document (within the other references on line 32/page 9), without changing the text: National Institute of Public Health Surveillance (InVS), 2004: Etude des facteurs de risque de décès des personnes âgées résidant à domicile durant la vague de chaleur d'août 2003. Institut de veille sanitaire (InVS), Saint-Maurice, France. http://www.invs.sante.fr/publications (Pascal EMPEREUR-BISSONNET, National Institute of Public Health Surveillance (InVS))	
8-249	A	9	32			change to "individual physiology, social connectedness, building construction and design, and behavioural responses (e.g. air conditioning)" (Rosalie Woodruff, Australian National University)	Partly Addressed
8-250	A	9	33			change to "level factors, such as climate, urban design, city size and…" (Rosalie Woodruff, Australian National University)	Addressed
8-251	A	9	34	9	34	Add: ' this relationship can show very high variability, even for very close cities (García-Herrera et al 2005). Reference: García-Herrera R., J. Díaz, R.M. Trigo and E. Hernández, 2005. Extrem summer temperatures in Iberia: Health impacts and associated synoptic conditions. Annales Geophysicae 23, 239-251. (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed in chapter 12
8-252	A	9	35	9	35	Insert hyphen to read "cold-related" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-253	A	9	39		42	This paragraph is unclear. "High temperatures contribute to overall mortality". Does this refer to "long-term" mortality as opposed to short-term mortality described in line 35 on page 8? (Peter Berry, Health Canada)	Addressed
8-254	A	9	40			(and earlier). There is an unexamined assumption that life years lost (and presumably DALYs, as the phrase “global burden of disease” is used) is the appropriate metric for measuring health effects. I dispute this, without taking anything away from the heroic effort of the GBD team. This is a long conversation I am happy to have if it is desired.	The chapter uses a range of health metrics, and authors agree that Years of life lost is an important one. It is not appropriate to discuss the literature on

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						There are issues about whether DALYs is the appropriate health index, whether a health index based on years life lost (whether quality adjusted or not) is appropriate, and, if not, what would be used in its place. (Alan Krupnick, Resources for the Future)	their relative merits in this chapter.
8-255	A	9	44	9	48	Section 8.2.1.3. The National Institute of Public Health Surveillance has also made an original study on the relationship between temperature, ozone concentration in air and mortality in 9 French big cities. Its report can be loaded from the InVS web site. It should be important : i) to cite this document (line 48/page 9): National Institute of Public Health Surveillance (InVS), 2004: Vague de chaleur de l'été 2003: relations entre température, pollution atmosphérique et mortalité dans neuf villes françaises. Institut de veille sanitaire (InVS), Saint-Maurice, France. http://www.invs.sante.fr/publications ii) and to add at the end of the last sentence of the paragraph (line 48/page 9), just before the references "and in the same country from one city to another; no interaction between high temperatures and ozone pollution was observed on mortality rates during the 2003 heat wave in France." (Pascal EMPEREUR-BISSONNET, National Institute of Public Health Surveillance (InVS))	Addressed
8-256	A	9	44			There are studies that have quantified the separate or related effects of heat and air pollution. Please consult with one of the key researchers in the air pollution epidemiology field for references. (Tord Kjellstrom, Australian National University)	Addressed.
8-257	A	9	44	9	45	The work of Knowlton and Kinney, Columbia University shows that in the interaction of temperature rise and ozone pollution to cause mortality, temperature rise is the predominant cause. (David Shearman, Univeristy of Adelaide)	Addressed in 8.4
8-258	A	9	45		46	"same weather conditions that cause heat waves also cause high pollution exposures". This is not correct. Weather conditions do not "cause" (certainly are not the sole cause) of high pollution exposures (what about toxic emissions?). Also, weather conditions do not cause exposures. Individuals are the primary cause of exposure as they can adjust behaviour significantly to either increase or decrease exposures. Sugges replacing	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						exposures with "conditions" or "episodes" (Peter Berry, Health Canada)	
8-259	A	9	45			Hales (Hales S, Salmond C, Town GI, et al. (2000) Daily mortality in relation to weather and air pollution in Christchurch, New Zealand. Australian & New Zealand Journal of Public Health 24: 89-91.) found no evidence of interaction between the effects of temperature and particulate air pollution. (Rosalie Woodruff, Australian National University)	Addressed
8-260	A	9	46			since when statistics on health and ozone concentration are available? (Yola Verhasselt, Royal Academy of Overseas Sciences)	Do not understand comment.
8-261	A	9	46			"also cause high levels of some pollutants…" (Rosalie Woodruff, Australian National University)	Addressed
8-262	A	9	49			What do we know about the impact of higher temperatures on the pollutants present in the Asian Brown Cloud? (Alexander von Hildebrand, World Health Organisation)	Addressed
8-263	A	9	50	10	1	when do important social changes occur? (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-264	A	10	0			Pg 10. Findings from the New Orleans disaster would be a useful addition to assessing the vulnerability of developed countries to disease. (Alan Krupnick, Resources for the Future)	Addressed
8-265	A	10	0			Suggest reordering the paras in 8.2.2 as follows: (1) In the last…(2) Estimates of...(3) Populations with poor… (4) Evidence shows that… (5) There has been … (6)There is further evidence… (Rosalie Woodruff, Australian National University)	Addressed
8-266	A	10	8			The reductions in winter mortality can be caused by a number of other factors than outdoor temperature: better house heating, better general health, better treatment of winter respiratory diseases, etc. (Tord Kjellstrom, Australian National University)	Addressed.
8-267	A	10	12	11	24	Section 8.2.2 - With the new events of hurricanes (Katrina, Rita etc.) in 2005 in the US and in Mexico, additional evidence can be used in support of resulting health impacts of hurricanes, identification of vulnerable population groups, and identification of health system vulnerabilities. In addition these new events provide examples that can be used	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						for comparisons between the response capacity of developed and developing countries. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	
8-268	A	10	12	11	24	the genesis of Katrina and Reeta storms in US in August 2005 may be added (Ramesh Dhiman, Malaria Research Centre)	Addressed
8-269	A	10	12	8	23	The December 2004 Indian Ocean Tsunami and the 2005 Atlantic Hurricane season must be mentioned in this enumeration, even if it is briefly; they have a great deal of 'demonstration' value. (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Addressed
8-270	A	10	12			Some references for each of the major storm/flood events would be useful in section 8.2.2 p10. (Claire Hanson, University of East Anglia)	Addressed
8-271	A	10	12			Key and timely expamles are missing in this section: hurricane Katrina and the Asian tsunami (2004) (only covered in box 8.1). Even while all of the data are not 'in' on these disasters they certainly bear metning. Examples are made of the vulnerabilty of New Orleans, in particular, and the events associated with this hurricane supports these assessments (Erin Lipp, University of Georgia)	Addressed
8-272	A	10	12	11		8.2.2 Wind storms and flood. Wind storms are not discussed at all. They should not be left out (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Wind storms are discussed in the context of storm surges of cyclones. Will add some comment on windstorms (e.g. injuries from high winds)
8-273	A	10	12			8.2.2 Windstorms and floods should be included into drastic phenomenon (8.2.1.2) and described. They should be described as an impact with or without adaptation. If Box 8.1 deals gender, they must explain physiological difference or social bias of gender due to culture, religion, and system, and the effect to modify health impact of climate change. Some factors may be preferable to women. (Akihiko SASAKI, Fukushima Pref. Authority)	No action needed.
8-274	A	10	13			I would recommend a separate subsection looking at trends in aggregate deaths and death rates from extreme weather events over longer periods of time than what is considered here. I would look at them in the aggregate because of the episodic nature of the data. According to the EM-DAT database -- which is incomplete, and the	Not addressed because of the inherent problems related to the EmDAT database before 1990

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						further back one goes, the more incomplete it is likely to be -- aggregate deaths and death rates worldwide due to "weather-related extreme events" (droughts, extreme temperatures, floods, landslides, waves and surges, wild fires and wind storms of different types (e.g., hurricanes, cyclones, tornados, typhoons, etc.) have trended downward since the 1920s. Specifically, comparing the 1920s to the 2000-2004 period, the annual number of deaths has declined from 485,200 to 19,400, a 96 percent decline, while the death rates per million has declined from 241.8 to 3.1, a decline of 98.7 percent. The average number of deaths per year from floods dropped from 436,000 during the 1930s to 5,000 from 2000-2004, while death rates over this period dropped from 204 per million to around 1 per million. For droughts, average deaths per year dropped from 472,000 in the 1920s to about 200 in 2000-2004; death rates declined from 235 per million to less than 0.04 per million. For wind storms, death rates peaked in the 1970s (at 36 per million) and were down to 0.4 per million from 2000-2004. [Source: updated from Goklany 2005(c).] (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-275	A	10	14	10	33	Expert Review: On 8.2.2 Wind storms and floods; Expert Reviewer strongly suggests that it is necessary to input the latest data of impacts of recent hurricane "Katerina" disaster on population health. (Mitsuru ANDO, Toyama University of International Studies)	Addressed
8-276	A	10	14	10	33	These two paragraphs can furthermore be amalgamated or split in another way; there is some repetition. Perhaps introduce statistics on storm/flood disasters in par 1 and thend discuss direct/indirect effects in 2nd par. (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-277	A	10	14	10	33	The use of the words "direct" and "indirect" health effects is not consistent in these two paragraphs, and possibly elsewhere in the document. Clarify this issue in an introductory section, by adopting a general definition, and stick with those definitions. "Indirect" should also have several sub-categories. eg directly transmitted climate-sensitive infectious diseases are not the same as vector-mediated diseases. Different categories have different levels of complexity, and predictions related to different categories have different levels of confidence. (Marlies Craig, Medical Research Council of South Africa)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-278	A	10	14	10	18	I would replece the first two sentences in this para with material from the previous comment. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not Addressed see above
8-279	A	10	14			Should hurricane Katrina and the effects on New Orleans be mentioned here? (Tord Kjellstrom, Australian National University)	Addressed
8-280	A	10	14			do we have a historic overview of occurrence and impact? Floods are not only a consequence of heavy rainfalls, but can be substantially influenced by other factors, such as soil erosion (e.g. resulting from deforestation), inappropriate agricultural practices , lack of efficient water management and infrastructure, etc. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Not Addressed
8-281	A	10	16			Further explanation of statements would be useful e.g. p10 line 16 Hurricane Mitch was 1998 not 2000/01 as implied by the text (Claire Hanson, University of East Anglia)	Addressed
8-282	A	10	16	10	16	Delete "the" & put initial capital on "hurricane" to read "Hurricane Mitch" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-283	A	10	17	10	17	Subsitute dash for slash, to read "2000-2001" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-284	A	10	17	10	17	Delete "have" to read "…Mozambique killed 813…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-285	A	10	20			"…communicable diseases, toxic contamination and mental health…" (Rosalie Woodruff, Australian National University)	Disagree. The evidence for health effects of toxic contamination is weak – and discussed in the following paragraphs.
8-286	A	10	23	10	23	The statement on disease risk following population displacement should have a more specific reference. (Roger Few, University of East Anglia)	Addressed
8-287	A	10	25		27	This sentence seems contradictory or at least counterintuitive. Why does the burden of illness lremain considerable while vulnerability has decreased? High vulnerability means a community has the capacity to take action to protect itself from the hazards. Are the regions in question simply not adapting although they have the capacity to do so? This needs to be explained.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Peter Berry, Health Canada)	
8-288	A	10	25	8	27	Hurricane Katrina and others have shown that there IS vulnerability even in the United States – It's very didactic... (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Addressed.
8-289	A	10	33			Bangladesh is a good example of country which appears to be adapting to a considerable degree to climate extremes. For example, the advent of storm shelters and better early warning systems appears to have reduced the death rate from floods in recent years. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-290	A	10	37			"income" is missing ("low income countries") (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-291	A	10	37	10	37	Transpose word "income" and insert 2 hyphens, to read "…in both high- and low-income…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-292	A	10	37			´Studies in both high income and low countries…under investigated´ does not make sense. (Xavier Rodo, University of Barcelona)	Addressed
8-293	A	10	38	10	38	Insert 2 hyphens, to read "…flood-related impacts is under-investigated…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-294	A	10	42			It was unclear what the phrase 'a small but significant effect from this more severe mental illness following disasters' meant. Is the implication that post-traumatic stress disorder is more severe than anxiety and depression? If so, this is probably an over-simplification. Some psychiatrists prefer not to use the term PTSD and refer instead to increased prevalence of common mental disorders such as anxiety and depression. There is also evidence of medium- to long-term impacts on behavioural disorders in young children following floods. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-295	A	10	44	10	44	Delete comma after "disease" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-296	A	10	46	10	46	Insert two hyphens, to read "…low- and middle-income countries…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-297	A	10	47			I think it would also be useful to add leptopirosis as an example of a disease that frequently increases after flooding. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-298	A	11	3		4	What does "mobilization" and "re-mobilization" of chemicals refer to in this sentence? Dispersal? (Peter Berry, Health Canada)	Addressed
8-299	A	11	3			I think there needs to be a paragraph inserted on the public health impacts of Hurricane Katrina. Of course we cannot be certain that this was due to climate change but it is this kind of event that is likely to become more frequent with climate change. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-300	A	11	3			a comma is missing after "cases" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-301	A	11	3			"In some cases flooding…" (Rosalie Woodruff, Australian National University)	Addressed
8-302	A	11	4	11	7	commas missing (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-303	A	11	4	11	4	"e.g." should be followed by a comma, so move comma from after "environment" to after "e.g." (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-304	A	11	12			We have some reports on chemical contamination related to "Katrina" hurricane. To include. (Alexander von Hildebrand, World Health Organisation)	Addressed
8-305	A	11	13	11	24	In these two paragraphs the discussion turns from specific health impacts of flooding more towards determinents of vulnerability - however it reads as rather superficial and selective (e.g. the sentence on lines 18-19). Space limitations mean that the complexity of vulnerability cannot be covered in depth, but the section could be strengthened e.g. perhaps by stating that vulnerability is shaped both by attributues of the people at risk (where they live, income, age, gender, health status etc) and by broader social/environmental factors (including disaster management policy, health sector preparedness and environmental degradation). (Roger Few, University of East Anglia)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-306	A	11	13	11	14	disability should be added to this list (Roger Few, University of East Anglia)	Addressed
8-307	A	11	13	11	13	delete ", either" since there are 3 items, not 2, to relate among (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-308	A	11	13			"there is evidence…" (ie remove "further") (Rosalie Woodruff, Australian National University)	Addressed
8-309	A	11	14			this is particularly the case of some urban slum areas. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-310	A	11	19			Might also include Adger WN, Hughes TP, Folke C, et al. (2005) Social-Ecological Resilience to Coastal Disasters. Science 309(5737): 1036-1039. (Rosalie Woodruff, Australian National University)	Addressed
8-311	A	11	22	11	22	Please check overall consistency in the way that you cite other chapters. In some places (here) the draft simply says "(Chapter 6)"; in other places [like line 5, p.12] the word "see" is included in parentheses too e.g., "see chapter 5" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-312	A	11	25			Include data related to increased frequency of unusual number and force of huricanes and storms in 2005 (Alexander von Hildebrand, World Health Organisation)	See comments above-
8-313	A	11	27			Box 8.1 states females are more vulnerable, but the figures in Table 8.1 don't corroborate (Elizabeth Casman, Carnegie Mellon University)	The tables are discussing different things. Table 8.1 doesn't include flood deaths.
8-314	A	11	30			Is it Aceh Baser or Banda Aceh? (Alexander von Hildebrand, World Health Organisation)	Addressed
8-315	A	11	31			a comma is missing after "district" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-316	A	11	31	11	31	Capitalize "OXFAM" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-317	A	11	31			"…(Oxfam, 2005). Sex-related differences apply to all..." (Rosalie Woodruff, Australian National University)	Addressed
8-318	A	11	32	11	32	Substitute colon for dash, to read "…phases of a disaster: from …" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-319	A	11	37	11	38	Substitute semicolon for comma, to read "…following a disaster; may have limited mobility, restricted access to resources; and …" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-320	A	11	37			Change to: "Women are the providers of care (which typically puts them at greater risk during and following a disaster) and more often than men have limited mobility, restricted access to resources and are socially isolated (Briceno). Natural disasters can increase domestic violence and the occurrence of post-traumatic stress in women..." (Rosalie Woodruff, Australian National University)	Addressed partly
8-321	A	11	49			Section 8.2.3 does not say anything on hygiene-related disease risk from drought (lack of water for washing etc) (Roger Few, University of East Anglia)	Addressed
8-322	A	11	49	11	49	For clarity, begin section 8.2.3 title at top of page 12 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not applicable
8-323	A	11	49			There are potential global impacts of drought in regions such as the Sahel. Studies and satellite images have documented the global spread of Sahel dust during certain times of the year; these dust clouds have been shown to harbor crop pathogens (which could cause food shortage issues in areas far removed from Africa), have been suspected to harbor animal pathogens (including foot and mouth disease) as well as human pathogens (see reviews and studies by Dale Griffin et al.). Finally, some of this dust transport has also been linked to blooms of harmful algae (by adding nutrients and irons to populations). The subject is broached in section 8.2.5.3 (long range transport of air pollutants) but I think it is deserving of additional attention. (Erin Lipp, University of Georgia)	Addressed
8-324	A	11	49			8.2.3 Drought and nutrition: I evaluate to separate it from other climate change. Temperature and rainfall produce completely different health impacts, thus it is important to separate drought counteraction from evaluation of the adaptability. The drought in southern Sahara in Box 8.2 is not universal. (Akihiko SASAKI, Fukushima Pref. Authority)	Disagree. Subheadings will not be revised.
8-325	A	12	2		2	Suggest putting reference to water scarcity before reference to adversely affects food production (Peter Berry, Health Canada)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-326	A	12	2		7	How is an observational study on rural populations different than a study at the local level? (Peter Berry, Health Canada)	Addressed
8-327	A	12	2	12	3	This sentence may be reworded as "Drought is defined as a period of below average precipitation that causes water scarcity and adversely affects food production systems". (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-328	A	12	2	12	2	Insert hyphen, to read "below-average" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-329	A	12	3			substitute malnutrition by starvation. (Xavier Rodo, University of Barcelona)	Disagree. Malnutrition is the acceptable term
8-330	A	12	3			What is the evidence or criteria for this assertion? Other severe impacts of drought include mental health (including suicide in instances - see Nicholls N, Butler CD and Hanigan I. (2005) Inter-annual rainfall variations and suicide in New South Wales, Australia, 1964-2001. International Journal of Biometeorology Oct 19: 1-5), and population displacement when drought and environmental deterioration (particularly soil erosion and salinity) combine to make land unproductive. These two both have long-term effects on communities. (Rosalie Woodruff, Australian National University)	Addressed.
8-331	A	12	5	12	5	Insert hyphen to read "low-income"; substitute parentheses for brackets; use initial capital on "Chapter" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-332	A	12	7			it might be worth adding the evidence of linkages between drought and the El Niño phenomenon. In particular with the number of people affected by natural disasters at a global level (Bouma MJ, Kovats SR, Goubet SA, St H Cox J, Haines A. Global assessment of El Niño's disaster burden. Lancet 1997; 350: 1435-1438). (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-333	A	12	12	12	12	Delete comma after "drought" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-334	A	12	13	12	13	Delete hyphen in "micro-nutrients" to be consistent with word format used on p.12 line 41 and p.32 line 23	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-335	A	12	16	12	16	delete "the" after "for" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-336	A	12	16			"The increasing incidence of drought…" Over what time period? (Rosalie Woodruff, Australian National University)	Addressed
8-337	A	12	21			there are also large numbers of AIDS orphans (around 12 million) in Africa who will be particularly vulnerable to disease caused by climate vulnerability. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-338	A	12	23	12	33	The ratrher long discussion on meningitis does not make an explict link betweent the disease and drought (Roger Few, University of East Anglia)	Addressed
8-339	A	12	23	12	23	Delete comma after "sub-Saharan Africa" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-340	A	12	23			The sentence starting "The spatial distribution…" and on to the end of this para are not specific to drought - they may be relevant in section 8.2.9. It would be relevant to add in that some mosquito-borne diseases that have reservoir hosts show strong drought/non-drought temporal relationships. During drought periods, the activity of mosquitoes is dramatically decreased and the population of non-immune reservoir hosts builds up. When the drought breaks, there is a much larger proprtion of susceptible hosts to become infected, thus increasing infectivity. See for Ross River virus disease [Woodruff RE, Guest CS, Garner MG, et al. (2002) Predicting Ross River virus epidemics from regional weather data. Epidemiology 13(4): 384-393.] - and others re Rift Valley fever. (Rosalie Woodruff, Australian National University)	[Will clarify] The effects on Ross River virus should be addressed in Australia chapter, and referred to in vbd section 8.2.9. Addressed
8-341	A	12	26	12	26	Delete "s" in "appears" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-342	A	12	32	12	33	it is unclear what is implied by the changing spatial limits of meningitis and other diseases in West Africa. It would be helpful to be more specific about what the changes have been. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-343	A	12	34			Mention impact of sea acidification form CO2 absorption and impact on reduced	Not Addressed, as not directly related

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						calcification capacity of coral reefs leading to changes in water Ph and type and quantity of sea plancton, having an impact on availability of sea food, weakeninig food security.Nature: John Raven, University of Dundee (see http://www.nature.com/news/2005/050627/full/050627-14.html) and Science News: Chris Langdon (http://www.hawaii.edu/cgi-bin/uhnews?20050919103059) Miami University and Victoria Fabry, California State University (http://www.csusm.edu/cwis/newsmedia/releases/05-06/FabryNature.htm) (Alexander von Hildebrand, World Health Organisation)	to human health
8-344	A	12	37			I suggest deleting this box and putting the few sentences that say something new to the section above it, into that section. These sentences start with "The northern limit…" (Rosalie Woodruff, Australian National University)	Disagree. Box on Sahel is cross cutting issue
8-345	A	12	39	12	39	Have "MDGs" (Millenium Development Goals) been previously defined in the document? Not within Chapter 8. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-346	A	12	39			MDGs? (Alan Krupnick, Resources for the Future)	Addressed
8-347	A	12	48			malaria may have decreased secondary to decreases in annual rainfall but Niger is currently facing major famine secondary to drought and that should be briefly mentioned. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-348	A	13	0			Section 8.2.4. Some relevant studies on FBD are missing (e.g. Rose et al., 2001; Patrick et al., 2004; (van Donkersgoed, 2001; Emiliani, 2003; Patz et al., 2001 and Chai et al., 2001 among others), and no mention is made on studies of linkages between climate and Cryptosporidium spp and E. Coli 0157:H7 among others. (Xavier Rodo, University of Barcelona)	Addressed partly
8-349	A	13	3			8.2.4 Food safety is continuous to 8.2.3. Except for drinking water, it can include drought as food safety. As health impacts, influences of drought on movable food, and on unmovable production resource and ecosystem should be separated from the view of reducing human migration. This is a cross cutting issue. (Akihiko SASAKI, Fukushima Pref. Authority)	Do not understand.
8-350	A	13	3			Mention the role of behaviour in increasing the risk of outbreaks during warmer	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						weather - more warmer weather will increase risky behaviours (ie poor cold chain, outdoor parties) as well as direct effects on the breeding cycles of pathogens. (Rosalie Woodruff, Australian National University)	
8-351	A	13	7			"increase" instead of "increases" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-352	A	13	7	13	7	Delete "s" on "increases" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-353	A	13	9		12	"30% of cases of salmonellosis" over what timeframe? (Peter Berry, Health Canada)	Addressed
8-354	A	13	10			although increasing temperatures are associated with salmonella infections, overall there has been a decrease in incidence of salmonella due to immunisation programmes in chickens. The affect of climate may be stronger in absolute terms in those parts of the world where there are no mechanisms to control salmonella infection. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-355	A	13	10			on "the" transmission (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-356	A	13	10	13	11	I disagree with the notion that temperature is not a clear correlate with prevalence of campylobacteriosis. From my research it is among the only environmental parameters that shows a consistent statistically significant relationship with the disease (Erin Lipp, University of Georgia)	Addressed
8-357	A	13	11	13	11	Question of how to consistently use "Campylobacter", whethe to italicize and whether to use capital "C"; make "foodborne" one word to be consistent with other instances of its usage in this chapter (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-358	A	13	14			Change to "Contact between food and vectors that transmit pathogens, especially…" (Rosalie Woodruff, Australian National University)	Addressed
8-359	A	13	15	13	15	“Calyptrate” flies – Either drop the term entirely, using 'house flies, blow flies and flesh flies' or explain it (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Addressed
8-360	A	13	15			Fly activity - more precise to say temperature rather than weather (unless other factors are involved).	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Rosalie Woodruff, Australian National University)	
8-361	A	13	16	13	16	Insert "the" before "northern US" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-362	A	13	17			Change pests to vectors (Rosalie Woodruff, Australian National University)	Addressed
8-363	A	13	18			Change pests to vectors (Rosalie Woodruff, Australian National University)	Addressed
8-364	A	13	23	13	23	omission between disease and climate….eg …..sensitivity of these diseases to climate change. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-365	A	13	23			diseases "to" climate change or "towards" climate change (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-366	A	13	23	13	23	Insert "to" after "diseases" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-367	A	13	24			Mention the potential risk of increased presence of toxic pesticide residues in food due to increased use of biocides because of more pest pressure on crops (Alexander von Hildebrand, World Health Organisation)	Not addressed lack of references
8-368	A	13	25	13	25	Insert "see" before "Section" to be consistent with notes on p.11,l.22 and p.12,l.5 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-369	A	13	25	13	28	Shouldn't the context also include the effects of technical innovation, the spread of newer technologies to developing countries, and with rising incomes, greater use of standard techniques for refrigeration or food preservation? (Alan Krupnick, Resources for the Future)	Addressed
8-370	A	13	27		27	Why should the effects of climate change be seen in the context of globalization of food trade, mass tourism, unplanned urbanization and migration? Will these exacerbate the impacts of climate change on food safety? How? (Peter Berry, Health Canada)	Addressed
8-371	A	13	31	15	15	This sub-section (air pollution) is quite comprehensive, and could be the model for the rest of the section (similarly with the sub-section on rodent and vector-borne diseases). However, if length is a problem, then this section would need to be reduced.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Carlos Corvalan, WHO)	
8-372	A	13	31			Sec8.2.5.2. is not satisfactory. If there is reason to believe that sulfate concetnrations (or PM2.5 in general) is likely to be larger because of changes in weather patterns as a result of climate change, this would be a lot more important than ozone effects. (Alan Krupnick, Resources for the Future)	Addressed
8-373	A	13	31			See comments in #4 (above) (Erin Lipp, University of Georgia)	[? Dust storms from Sahel?}
8-374	A	13	31			8.2.5 Air quality related with urban and energy issues is not universal. Urban risk can be reduced by scattering and escape from the urban center. This action depends on the risk recognition when and what extent heat waves damage the people. Non-local and true risk of climate change would be the risk of social system and the fact there is no place to escape. However, the risk is still higher in urban area than else even though they have more heat safe systems (air-conditioning, hospitals and public areas). There is no need to separate 8.2.5.2 and 8.2.5.3 because both are not related with climate change. (Akihiko SASAKI, Fukushima Pref. Authority)	Disagree.
8-375	A	13	33		39	These are WHO regions. If uses in this report they would need to be defined (countries involved), as they do not correspond to other definitions. (e.g. Thailand and Indonesia are in South East Asia Region, but Viet-nam and Cambodia are in Western Pacific). (Carlos Corvalan, WHO)	Addressed
8-376	A	13	34			Air pollutants are not increasing in all developing countries. The data are quite mixed. I can provide data, if you need it. (Alan Krupnick, Resources for the Future)	Addressed
8-377	A	13	36			These losses are estimates. The sentence makes it sound like attributable fact, which it is not and never can be. (Alan Krupnick, Resources for the Future)	Disagree. These figures are appropriate here.
8-378	A	13	36			expand DALYs (unless used several times throughout the chapter) (Rosalie Woodruff, Australian National University)	Addressed in 8.4
8-379	A	13	37			put word "outdoor" between "urban" and "air" (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-380	A	13	38	13	38	Long sentence; consider substituting semicolon for "and" to break up sentence	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-381	A	13	38			…"deaths ARE due to…" (Rosalie Woodruff, Australian National University)	Addressed
8-382	A	13	39			Why is biomass fuel burning indoors mentioned? It is either not relevant or, with climate change, likely to be reduced (to the extent such fuel is burned for heat rather than solely in food preparation). (Alan Krupnick, Resources for the Future)	Disagree
8-383	A	13	41			"determines" instead of "determine" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-384	A	13	41			The whole last para on this page could be removed - it is too detailed for this publication (Rosalie Woodruff, Australian National University)	Addressed
8-385	A	13	49		49	Define "urban heat island" (Peter Berry, Health Canada)	Ensure Heat island is in glossary
8-386	A	14	0			In some of the sections 8.2.5.2, 8.2.5.3 the link to climate (and therefore, later to climate change) is not clear at all. Similarly, studies between pollution changes and climate variability or change are not well reported. Same as the links between windblown dust events and climate variability. Also, in page 14, line 40 a sentence begins with ´Thus,…´while this sentenceis clearly not the consequence of the previous one, please correct. (Xavier Rodo, University of Barcelona)	Addressed
8-387	A	14	2	14	2	"intoxications" implies drunk in American English. I'd choose another word… (Darrell Winner, US EPA)	Disagree common language in food safety, but yes it can include alcohol
8-388	A	14	3		3	This sentence lacks clarity and needs to be reworded. What does "intoxications" mean? (Peter Berry, Health Canada)	Addressed
8-389	A	14	3	14	10	In this paragraph, I don't see any relationship with climate change issue (Michel Boko, Université d'Abomey-Calavi)	Addressed
8-390	A	14	3	14	3	The paragraph that starts on this line could use a transition sentence to relate increased fire incidence to climate change & drought; also insert hyphen between "fire" and "related" to read "…fire-related burns…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-391	A	14	3			Please make the link from climate change to increased frequency of fires or drop. (Alan Krupnick, Resources for the Future)	Addressed
8-392	A	14	3	14	10	This paragraph discuss fires that cause burns and intoxications, but does not discuss the causes of fires (forest fires, open burning of waste, indoor smoke from solid fuels, etc.) and more importantly their relations to air quality and climate change. The links of fires to air quality and climate change need to be described. (Hisashi Ogawa, World Health Organization Western Pacific Regional Office)	Addressed
8-393	A	14	3			fires are generally caused by non-climatic factors (man-made activities). (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-394	A	14	3		10	Direct health effects from burning doesn't seem to fit under the air pollution section, but I understand the motivation for putting it there. More importantly, something needs to be said to link the prevalence of fires with weather / climate. (J. Jason West, Princeton University)	Agree.
8-395	A	14	3	14	10	This whole para needs to be linked to the issue of bushfires and climate change. This is too general at present. (Rosalie Woodruff, Australian National University)	Addressed
8-396	A	14	3			Sentence starting "Globally…" is unnecessary. (Rosalie Woodruff, Australian National University)	Addressed
8-397	A	14	10		11	I propose to insert the following new text piece: Unusual long-term warm (hot) and rainless steady weather conditions which began more often to happen in the temperate latitudes of European and Asian parts of Russia can lead to serious forest fires. The danger of these fires increases, if the fire spreads on peatbogs. In this case considerable territories begin to suffer from smog. Such weather conditions with smog result in the direct impacts on the population health. Besides the indirect population health losses can happen due to increased motor transport accidents. Such dangerous phenomena were observed in Moscow and neighbor regions (Summer 2002 and Autumn 2005); in Khabarovsk region (Autumn 2005) (current news and Kislitsin et al., 2004). (Vladimir Demin, Russian research center "Kurchatov institute")	Addressed
8-398	A	14	12	14	31	Assuming that most people live and die indoors there are open questions in the "association between ozone and mortality" because indoors they are not exposed to the	Not Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						distinctively higher outdoor ozone levels. The role of fine particles due to gas to particle conversion should be mentioned. (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	
8-399	A	14	12	14	12	Delete period after "8.2.5.1" and insert hyphen after "Ground", to read "8.2.5.1 Ground-level ozone" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-400	A	14	14		31	If there is space in this ozone section, you might mention that while we know a lot about health effects in Europe and N. America, many fewer studies have been conducted elsewhere in the world. (J. Jason West, Princeton University)	Addressed repetitively said across the chapter
8-401	A	14	16	14	16	wind is singular in this context (Andy Morse, University of Liverpool)	Addressed
8-402	A	14	16	14	18	I'm not familiar with them, but the two Nilsson references seem out of place here (discussing ozone with aerosol in title of references). Besides the credit should go to 1) Haagen-Smit A.J. and Fox M.M. (1954) Photochemical ozone formation with hydrocarbons and automobile exhaust. J. Air Pollut. Control Assoc. 4, 105–109. (Darrell Winner, US EPA)	Addressed
8-403	A	14	18	14	18	The factors controlling the production of tropospheric ozone are well known in basic textbooks of atmopheric chemistry, so the Nilsson cites are redundant (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed
8-404	A	14	18		22	The references here are not really conclusive primary references. These alternatives address background ozone: Vingarzan, R. (2004) Atmos. Environ. 38, 3431-3442, Lelieveld, J., van Aardenne, J., Fischer, H., de Reus, M., Williams, J. & Winkler, P. (2004) Science 304, 1483-1487. (J. Jason West, Princeton University)	Addressed
8-405	A	14	21			Is this because car transportation has also been increasing in Asia, or for other reasons? (Rosalie Woodruff, Australian National University)	Addressed
8-406	A	14	27		28	Another study by Bell et al is a landmark paper and should be mentioned with the others: Bell, M. L., McDermott, A., Zeger, S. L., Samet, J. M. & Dominici, F. (2004) JAMA 292, 2372-2378. The statement that "several studies provided also evidence …" repeats what was in the previous sentence, particularly because those studies are almost	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						all on short-term premature mortality. (J. Jason West, Princeton University)	
8-407	A	14	29		30	Provide examples of "housing characteristics" that are relevant. (Peter Berry, Health Canada)	Too much detail, differs across areas.
8-408	A	14	35	14	38	This is a general basic statement about the meteorological factors driving the concentration of atmospheric pollutants, so the references to Mc Gregor, Hartley and Pal Ayra can be deleted (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed
8-409	A	14	35			Section 8.2.5.2. Include a sentence pointing out that a substantial portion of ambient fine particulate matter (I.e., PM2.5) is formed via atmospheric reactions that depend, in part, on temperature and humidity. Thus, concentrations of PM2.5 may also change in response to climate change, with associated changes in annual mortality risks (Pope et al., JAMA 2002). (Patrick Kinney, Mailman School of Public Health at Columbia University)	Addressed
8-410	A	14	35		44	The issue of energy consumption to warm or cool down houses and energy consumption in relation to emissions and climate change could be stressed a little more here (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Not addressed
8-411	A	14	35		44	There is a section on ozone and this section on all other air pollutants. Of the other air pollutants, PM is clearly most important for health and a focused discussion on PM would be more valuable than generalities about air pollutants. A focused discussion on PM should communicate the new stronger evidence that PM affects mortality (in long term as well as short term), referencing Pope et al and other studies: Pope, C. A., Burnett, R. T., Thun, M. J., Calle, E. E., Krewski, D., Ito, K. & Thurston, G. D. (2002) JAMA 287, 1132-1141. (J. Jason West, Princeton University)	Addressed
8-412	A	14	35	14	38	The references here are all relatively recent, while this information has been known for a long time. I'd suggest citing: 1) Niemeyer L.E. (1960) Forecasting air pollution potential. Mon. Weath. Rev. 88, 88–96. 2) Holzworth G.C. (1967) Mixing depths, wind speeds and air pollution potential for selected locations in the United States. J. Appl. Meteor. 6, 1039–1044.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Darrell Winner, US EPA)	
8-413	A	14	38	14	40	The fact that air pollutants show seasonalities is, again, very basic. So, no references are required to stress such a basic fact. (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed
8-414	A	14	38			Clarify whether these seasonal cycles are these related to weather cycles or to human behaviour that changes across seasons (eg PM increases in winter due to wood smoke). (Rosalie Woodruff, Australian National University)	Not addressed
8-415	A	14	40	14	42	"Thus, local conditions and emissions are more important than global concentrations of pollutants in determining human exposures." Is that true? Certainly for some locations, but I think it is too sweeping. Rising global background levels of air pollutants can already be detected and will have a larger impact in the coming decades. (Darrell Winner, US EPA)	Not addressed
8-416	A	14	41	14	44	The example of the “Mexico city smog bowl” for air quality is too good to pass - (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Don’t understand
8-417	A	14	41	14	44	Add reference - Aw, J.; Kleeman, M. J., Evaluating the First-order Effect of Intraannual Temperature Variability on Urban Air Pollution. J. Geophys. Res. 2003, 108, 4365. (Darrell Winner, US EPA)	Addressed
8-418	A	14	43			the statement "because the climate is conducive to chemical reactions" is cryptic. (Rosalie Woodruff, Australian National University)	Not addressed
8-419	A	14	44			Could an additional comment suggest that in many countries there is already a disproportionate burden of air pollutants on some sections of society, which with climate change are likely to be enhanced? Ref Congressional Black Caucus Foundation 2004 ‘African Americans and Climate Change: An Unequal Burden’ (Congressional Black Caucus Fdn) (Donna Green, CISRO)	Not addressed
8-420	A	14	44			"and the topography restricts the dispersion of pollutants" Is this independent of season? If so, it's not relevant in this discussion. (Rosalie Woodruff, Australian National University)	Not addressed
8-421	A	14	46			The mechanisms by which climate change will influence the transport of air pollutants has not been explained. If it is by increases or changes in the projected strength or direction of wind (and hence intensity or changed pattern of dust storms) then this has	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						some relevance. (Rosalie Woodruff, Australian National University)	
8-422	A	14	48	15	15	This section does not make a link between long-range transport and weather or meteorology, nor is that link made in subsequent sections. (J. Jason West, Princeton University)	Not adressed
8-423	A	15	0			Section. 8.2.7. on water and disease should be more balanced and take into consideration importance of seasonality changes and the interplay between intrinsic and extrinsic factors in modulating disease dynamics, as agreed in recent literature (Pascual and Dobson, 2005; Koelle et al., 2005). Also the paragraph on cholera should be completely rewritten to account for old and recent results, that pose doubts on the importance of coastal sea surface temperatures (Ise et al., 1996; Singh et al., 1993; Mazzafero et al., 1995), while accounting for the relevant role of large-scale climate phenomena, such as ENSO and decadal climate changes having an influence on regional rainfall, flooding and temperature patterns, for instance in south America (Franco et al., 1997), SE Asia (Pascual et al., 2000; Koelle et al., 2005) and Africa (Colombo et al., 1993). Clearly, revisiting cholera literature reflects that coastal SSTs in the Bay of Bengal have a limited role in exacerbating the disease, whereas ENSO, the NW Pacific and regions of the Indian ocean appear to have, instead, a predominant role. Also, lagged effects, for instance through the alteration of the snowpack dynamics in the Himalaias and the resulting flooding and resulting monsoonal responses should be integrated in a more updated explanation of the epidemiology of cholera. As a consequence, also last sentence in line 44, page 16, should be rewritten, as the mechanisms by which SST dynamics affect disease transmission already begin to be understood (Bouma and Pascual, 2001; Koelle et al., 2005). (Xavier Rodo, University of Barcelona)	Addressed
8-424	A	15	1	6		more references than text. Pick a good subset (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-425	A	15	1		6	The report has just over 30 pages of text with 20 pages of references. Given its current length, one way tor educe would be to consider removing some references. Is it necessary to have 15 references for a statement on (unmetioned) health impacts of transport of pollutants? This applies to several other parts of the chapter, although not at	Addressed. Conflicts with earlier comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						this scale. (Carlos Corvalan, WHO)	
8-426	A	15	4	15	5	What are “urban-industrial mechanisms”? How about industrial and mobile sources? (Alan Krupnick, Resources for the Future)	Addressed
8-427	A	15	5			change the word mechanisms, what do urban=industrial mechanisms refer to? In line 10, define PM (particulate matter?) and state units for the measures 2.5-10 in line 11. (Xavier Rodo, University of Barcelona)	Addressed
8-428	A	15	10	15	11	Is PM defined elsewhere or is its use so common that it is understood by many people? (Andy Morse, University of Liverpool)	Addressed
8-429	A	15	18			The timing and abundance of pollen has been clearly mentionned both here and in Chapter 1.3.7.5. These are partly redundant. I would suggest to mention shortly the following elements: '- the importance of new aeroallergens for a region, either by shifting of distribution areas (see also chapter 1.3.5.4), or by introduction of invasive plants such as ragweed. This is a great concern for allergies (references available) '- the importance of the interelationships between aeroallergens and pollution (see D'Amato and other authors) (Bernard Clot, MeteoSwiss)	Addressed
8-430	A	15	18			Some important references in this context are lacking either here or in Chapter 1.3.7.5. eg : Corden et al 2003, D'Odorico et al 2003, Clot 2003, Singh 2003, Harrison et al 2005, Voltolini et al 2000... or, which are the criteria to chose the refs? Thanks (Bernard Clot, MeteoSwiss)	Addressed
8-431	A	15	18	15	31	It must be made more clear that not pollen per se but only allergenic pollen are to be considered which differ from area to area. Ragweed can be taken as good example how a plant with high allergenic pollen is disseminating to another continent and widespreading due to favourable climate conditions. (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	Addressed
8-432	A	15	18			8.2.6 Aeroallergens are limited in characteristics to describe the relationship between temperature-dependent ecosystem and human sensitivity. When the changes of water quality and animal ecosystem will be generalized as a part of climate change, the human sensitivity to them should be authorized with proper classification.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Akihiko SASAKI, Fukushima Pref. Authority)	
8-433	A	15	20		31	If there is evidence that pollen production causes asthma and other effects, and that higher temperatures are associated with changes in pollen production, then there is an effect of climatic changes on health through this mechanism. (Pim Martens, University of Maastricht)	Not necessarily, however text is clearer.
8-434	A	15	22		22	Add "the health of" after "pollen species that are important to..." (Peter Berry, Health Canada)	Addressed
8-435	A	15	22	15	25	I found the discussion here very confusing in as much as there appear to be two trends in opposite directions, one causing earlier onset of the production of pollen and the other causing later onset. Does this mean that the spring production of pollen was becoming earlier up to a certain point in time and now it is coming later? In addition to any effects of temperature there is also a potentially important effect of carbon dioxide fertilisation on the production of pollen which could increase pollen counts. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-436	A	15	23			D'Amato 2001 is related to pollution and aeroallergens (see addition to the text proposed below), not to earlier onset (Bernard Clot, MeteoSwiss)	Addressed
8-437	A	15	24			Chapter 1.3.7.5 (Bernard Clot, MeteoSwiss)	Addressed
8-438	A	15	26			Van Vliet et al 2002 does not cover high latitudes? (Would be better cited line 23) (Bernard Clot, MeteoSwiss)	Addressed
8-439	A	15	29			Emberlin et al was already cited line 26 …maybe not necessary twice? (Bernard Clot, MeteoSwiss)	Addressed
8-440	A	15	29			Can't find this reference Levetin 2001 (see also p54, lines 25-26) I do not find any paper from Levetin in JACI 2001 (Bernard Clot, MeteoSwiss)	Addressed
8-441	A	15	30			Wayne et al 2002 is related with CO2, and not so much with seasonality (see addition to the text proposed below) (Bernard Clot, MeteoSwiss)	Addressed
8-442	A	15	31			Last sentence: "(medium confidence)" ??? Presence of aeroallergens in the air implies humans being exposed to these allergens. Then prolonged pollen season means higher,	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						longer risk for allergies. In particular when new aeroallergens are introduced in an area (see below). (Bernard Clot, MeteoSwiss)	
8-443	A	15	34			8.2.7 Water deals with water quality and water-infection. To respond to key water issue such as terrorism and industrial pollution, 8.2.7 should be independent from 8.2 and should evaluate health risk with regional diversity. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed
8-444	A	15	36	15	36	Insert hyphen after "water" to read "water-related"; make word format consistent for "water-borne" or "waterborne" throughout chapter (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-445	A	15	37	15	37	Insert hyphen after "water' to read "water-washed" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-446	A	15	40		40	"global climate change". Other references in the chapter are made to "climate change" Is this different? Terminology should be consistent (Peter Berry, Health Canada)	Addressed
8-447	A	15	40	15	40	Capitalize "Chapter", insert "see" before "Chapter 3" for consistency (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-448	A	15	45			no comma (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-449	A	16	0			In general, when the text discribes the big picture, e.g. all diarrhoeal disease, but doesn't make it clear that only a fraction of the cases are related to climate directly, credibility is lost. (Elizabeth Casman, Carnegie Mellon University)	Addressed.
8-450	A	16	0			sec 8.2.8. Here is another good example of failure to see positive sides. Workers who must work outdoors in the winter or in poorly heated conditions could find their health improving with a temperature rise. This effect is probably more than offset by the negative effects. But not to acknowledge it is off-putting. (Alan Krupnick, Resources for the Future)	Addressed.
8-451	A	16	0			Extreme rainfall event (depending on how one defines extreme) could dilute pollutants and carry them off, thereby reducing risks. In this entire section on waterborne disease risks, I would start by being very clear on the changes in precipitation location,	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						frequency and severity that are being hypothesized and then attempt to link the literature to those. At present this discussion has too much of an ad hoc feel. Later, ENSOs are discussed. But I didn't see any discussion linking more frequent or severe ENSOs to climate change. (Alan Krupnick, Resources for the Future)	
8-452	A	16	3	16	3	Fix misspelling of word "availability" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-453	A	16	3			availability instead of "availably" (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-454	A	16	4	16	4	Insert hyphen between "rodent" and "borne" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-455	A	16	9			a word is missing between "that" and "is" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-456	A	16	9	16	9	Insert "it" after "…some indication that" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-457	A	16	11			"load" instead of "loads" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-458	A	16	14			Seasonal variation in the occurrence of Giardiasis has also been linked to climate factors: N Z Med J. 2004 Nov 5;117(1205):U1149. A descriptive epidemiology of giardiasis in New Zealand and gaps in surveillance data. Hoque E, Hope V, Scragg R, Baker M, Shrestha R. (Tord Kjellstrom, Australian National University)	Will add ref if appropriate.
8-459	A	16	14	16	14	Insert "s" at end of work "outbreak"; make word format consistent for "water-borne" or "waterborne" throughout chapter (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-460	A	16	15	16	15	Delete comma after "Europe" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-461	A	16	16	16	16	Make format consistent throughout chapter 8 (whether italicized or not, whether initial capital "C") for cryptosporidiosis and campylobacteriosis (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-462	A	16	19	16	19	Insert hyphen after "low" to read :"ow-income" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-463	A	16	21	16	21	delete late and replace with "later" as in the sentence "Children may survive the acute illness but "later" die due…. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-464	A	16	21			unclear expression: "late die" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-465	A	16	21	16	21	Insert "r" at end of word "late" to read "later" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-466	A	16	28		33	Are Australia and Israel considered countries that have predominantly low and middle-income populations? (Peter Berry, Health Canada)	Will clarify
8-467	A	16	28	16	29	Insert hyphen in 2 places (after "low" and "middle"), to read "… low- and middle-income populations." (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-468	A	16	30	16	30	The two references here are missing from Bibliography: Checkley et al. and Speelman et al., both (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Addressed.
8-469	A	16	31	16	33	Delete extra close/open parentheses in 2 places, so that each group of citations is contained within one set of parentheses, not two. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-470	A	16	36	16	30	Plankton is a PROVEN environmental reservoir of Vibrio cholerae (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Will clarify the text
8-471	A	16	37	16	37	Add: Cholera in Lima, Peru, correlates with prior isolation of Vibrio cholerae from the environment (rivers), and follows elevation of their temperature (Franco AA et al., 1997). (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Will check reference and include if appropriate
8-472	A	16	39		45	Winter peaks in mortality are widespread, not only in Bangladesh. Cholera as well as malaria are products of poverty not climate. Singapore, for example, has neither and is only 2 degrees from the equator. While in parts of Malasia nearby, malaria is endemic.	Will clarify text

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Thomas Moore, Stanford University)	
8-473	A	16	45			I was surprised that there is no mention of the potential role algae and copepods in cholera transmission. (Andrew Haines, London School of Hygiene & Tropical Medicine)	This is a detail- and implied by the environmental reservoir comment
8-474	A	16	47			"temperatures" instead of "temperature" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-475	A	16	47	16	47	Add "s" at end of "temperature" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-476	A	16	47	16	50	The authors report that 'higher temperature enhance the concentration of enteric pathogens in coastal or recreational waters …' This may be true for some pathogens (e.g., vibrio spp., salmonella, etc.) but it is not true for many others. In fact the papers cited here by Lipp et al. actually show that enteric viruses are found more frequently and at higher concentrations in COOLER temperatures (these organisms can persist in the environment much longer under lower temperatures) and/or under periods of heavy rainfall. (Erin Lipp, University of Georgia)	Addressed. Will contact reviewer and clarify text
8-477	A	16	50	16	50	replace the word "need" with past tense form "needed" as in the sentence: "Further research is "needed"…. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-478	A	16	50			"needed" instead of "need" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-479	A	16	50	16	50	Insert an apostrophe at end of word "pathogens" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-480	A	17	3	17	7	The reader gets a bit lost in this paragraph. Lines 1 to 7 state the changes in lat and alt. Then there is, without reference to these shifts, mention of disease, without mention of the ticks, which does not state, as Randolph does, that factors other than climate are responsible for the change in TBD prevalence and incidence. Instead the text reads: "Climate change is unlikely to explain...as other explanations "cannot be ruled out". There is clear inuendo in this statement, even though THE WORD CLIMATE DOES NOT APPEAR IN RANDOLPH'S TEXT! In the same vein, the next sentence:	Refers to p18 Reword to suggest that where there are multiple potential influences, it is difficult to identify which are relevant in a particular case

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						"THERE IS NO CLEAR EVIDENCE THAT MALARIA HAS NOT BEEN AFFECTED BY CLIMATE CHANGE EITHER IN HIGHLAND AREAS OF AFRICA AND IN SOUTH AMERICA, OR IN CONTINENTAL RUSSIAN FEDERATION". I could equally suggest that there is no clear evidence that the carrot harvest in Hong Kong has not been affected by flying saucers... (Paul Reiter, Pasteur Institute)	
8-481	A	17	4	17	24	Section 8.2.8 – This is an important section, but it seems to be "lost" between two sections discussing infectious diseases. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Not addressed
8-482	A	17	4			Comment on Section 8.2.8. There needs to be similar material addressing issues related to the effects of extreme cold on outdoor workers. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not addressed
8-483	A	17	4			This section requires substantial rewriting. References in Russian need to be fully translated to English and sent to reviewers. It is not only in steel mills and mines that it is hot. Many other work situations have temperatures above 30 degrees C on a regular basis, often with high relative humidity. The statement "many physiological studies have shown that elevated temperatures reduce productivity in workers" needs to be elaborated upon, and references sent to reviewers. (Tord Kjellstrom, Australian National University)	Under development
8-484	A	17	4			8.2.8 Occupational health is expected since TAR, but the content is repetition of 8.2.1. Impacts of heat wave and seasonal temperature variation should be discriminated. In addition, occupations in urban environment should be considered as well as agriculture and forestry. They should comment on adaptation factors and limiting conditions such a car, sunshade, air-conditioning, and water intake have various health impacts and loads to environment and cost. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed
8-485	A	17	7		7	Add "health" after "is an occupational….." (Peter Berry, Health Canada)	Not addressed
8-486	A	17	9			It's difficult to assess these references - they're not in English. (Rosalie Woodruff, Australian National University)	Partly addressed (problems in getting hold of translations)
8-487	A	17	12			"Many physiological studies…reduces productivity in workers." Many studies have	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						shown a relationship between temperature, work rate and physiological change (heart rate, sweating etc), but there are almost none that have gone on to link this to a change in productivity. (Rosalie Woodruff, Australian National University)	
8-488	A	17	14			The Ahasan publication is Bangladesh - where is the reference for Vietnam? (Rosalie Woodruff, Australian National University)	Addressed
8-489	A	17	15	17	15	Veterinary disease is a more appropriate terrm (Paul Reiter, Pasteur Institute)	Not addressed
8-490	A	17	16	17	17	"likely cause" is inappropriate. Better to say "there is evidence that … may be attributed to…" I recently discussed this with one of the authors. She agreed that many other factors may be contributory (intercontinental movement of cattle, dispersal of vectors by factors other than climate change). For example, the claims of new distributions are hard to substantiate, as Ceratopogonids have hardly been surveyed until Bluetongue started occurring. Moreover, there is evidence that other vectors are involved, ones that were always present at higher latitudes . Nevertheless, this is the most plausible claim to date. (Paul Reiter, Pasteur Institute)	Addressed
8-491	A	17	17		24	Cold temperatures also kill for outdoor occupations. Should be referenced (Thomas Moore, Stanford University)	Not addressed
8-492	A	17	18	17	19	Bluetong isnot transmitted by mosquitoes, but by insects of the genus Culicoides. Definitely not active all year round. Culicoides must stop when the temperature drops below freesing. Many of the areas that are now experiencing BT have winters with temperatures far below zero C. This raises another that has not been addressed: if BT was previously limited to regions that were significantly hotter than those in the current range of the disease at this time, are current temperatures in the new range comparable with those at the old limits of transmission. I asked this to another of the authors last week and he was unable to answer. There are other questions that need to be answered. For example, while it is true that there has been a rise in regional temperatures in recent years, there has been a fall in temperatures on the Greek islands of the coast of Turkey that were the first to report arrival of the virus. (Paul Reiter, Pasteur Institute)	Addressed. We need to exactly cite and quote the original paper

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-493	A	17	20	17	22	The suggestion of movement of Leishmaniasis further north as a result of climate change (presumably temperature) is not treated seriously by specialists, (and even the authors that are quoted). If so, it would suggest that the climate of Germany has warmed to the temperatures of the Mediterranean coast. This should be stated much more clearly, otherwise the inference is 'maybe', and is misleading. (Paul Reiter, Pasteur Institute)	Addressed. This is for Naucke and Elisabeth
8-494	A	17	20			What are examples of the health problems associated with outdoor work from these studies? (Rosalie Woodruff, Australian National University)	Addressed
8-495	A	17	23			Include also farmers as at risk from heat related mortality (Alexander von Hildebrand, World Health Organisation)	Not addressed
8-496	A	17	24			how about the increasing importance of cancer (especially skin cancer) for outdoor labourers under hot weather conditions? (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed in 8.2.10
8-497	A	17	25	17	25	Case studies' normally refers to clinical cases. The West Nile example proposed is invalid: presumably, it refers to North America, where there are only seven years of data, during which the virus has steadily progressed across the USA, as well as northwards into Canada and southwards into Mexico and Central America and the Antilles. It is true that WN incidence in a dry, hot year was high, but only in areas that it had not reached in the previous years. In any case, a single year's data without previous year's data, cannot be used as evidence. Also, the inference that ENSO isimplicated in WN transmission is misleading. The last ENSO event was in 1997-98. The first detection of WN in the Americas was in 1999. ENSO is not detectable in much of the new range of WNV, including Canada. (Paul Reiter, Pasteur Institute)	Addressed
8-498	A	17	27	20	23	Section 8.2.9: This section should be expanded to include, other diseases that are climate sensitive. These might inlcude: 1. Rift Valley Fever related to vegetation cover which in turn is related to rainfall and claimte change El Nino events. Previously confirmed to sub-Saharan Africa it is now reported tin Saudi Arabia. 2. Visceral Leishmaniasis, outbreaks of which may show moderate variability based on climate. Then there are two other infectious diseases that should be detailed at this point (as	Addressed in parts

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						8.2.9.5?) but which are not vector driven. 1. Meniingococcal meningitis in the Sahel, the occurrence of which is related to dry dusty conditions and to Atlantic Ocean surface temperatures. This diseases is discussed on pages 11 and 12 at 8.2.1. Drought, food security and malnutrition, which I think is inappropriate and my impression is that casuality is clearer than explained by the discussion of Molesworth's work. 3. Schistosoma Japonicum. The intermediate host has been shown to be temperature dependent in the PRC. The question is whether there is new information on these infections since the TAR. I think that there is for example the work from the Swiss Tropical Institute in Basle on Schistosomiasis, date from the EMPRESS project on Rift Valley fever. (David Shearman, Univeristy of Adelaide)	
8-499	A	17	29	18	36	The division of paragraphs (one core idea per par) is not upheld here. There is no logical flow in the argument. Could some of the information be included in additional sub-headings? Eg non-human diseases (does this go beyond the scope of the IPCC?), other mosquito-borne diseases, other arthropod vectors. (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-500	A	17	29	18	22	under the sub head Vector & Rodent borne diseases, leishmaniasis may also be detailed as it is vulnerable to climate change. (Ramesh Dhiman, Malaria Research Centre)	Addressed
8-501	A	17	29	17	30	In my opinion, this definition more appropriately describes "water-based diseases" than water-borne diseases concept which connotes diseases that result from the direct ingestion of water. Water-based disease concept refers to diseases that result from the mediation of a secondary causative agent usually found around or within water bodies. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-502	A	17	29	17	29	Insert hyphen after "Vector" to read "Vector-borne" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-503	A	17	29			Infected arthropods acquire infection; inference of wording is that they are per se infected. (Paul Reiter, Pasteur Institute)	Addressed
8-504	A	17	29	17	30	Increasingly accurate climate measurements; what does 'accuracy' mean in this context?	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Presumably, even with more accurate measurements, it is not possible to back-date such accuracy to cover previous years of data? (Paul Reiter, Pasteur Institute)	
8-505	A	17	29	17	41	It may be too simplistic to make a generic assessment of the climate-disease relationship. Epidemiological evidence suggests that some diseases respond to climate variability/change differently across geographic areas. It remains unclear why it is the case. (Shilu Tong, queensland university of technology)	Addressed
8-506	A	17	30	17	31	The statement that "VBD's are among the most important health outcomes of climate change" is not supported by further paragraphs. This emerges in following sections. Introductory and summary statements regarding VBD's should echo the evidence reviewed in this report, and not simply repeat past assumptions. (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-507	A	17	30	17	33	The two sentences are difficult to follow. Do they mean that climate is not a good indicator at the local scale? Or do they mean that RS can detect 'factors' that are not clear from satellites? (Paul Reiter, Pasteur Institute)	Addressed
8-508	A	17	30			Many attempts to implicate flies, but very little evidence. Triatomines are bugs (Hemiptera), but in American parlance, bugs are a general term for insects, ticks, etc. (Paul Reiter, Pasteur Institute)	Addressed
8-509	A	17	31			Sensitivity suggests dominant parameter. In many instances, this is clearly not the case. See, for example, Reiter 200 Reiter et al (Paul Reiter, Pasteur Institute)	Amend to avoid implying that climate is always relevant... (we could also note that, where a vector borne disease is climate sensitive, a suitable climate is always necessary for transmission!)
8-510	A	17	32			"vector-borne diseases" instead of "disease" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-511	A	17	33			"vector-borne diseases" instead of "disease" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-512	A	17	33			System? Inappropriate word. Suggest "dynamics of transmission"	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Paul Reiter, Pasteur Institute)	
8-513	A	17	33	17	41	This section needs to be rewritten and simplified. It is currently difficult to understand. (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed
8-514	A	17	34			"Concurrent measurements" refers to ongoing research; not appropriate for the statement of the sentencewhich deals with established knlowledge (Paul Reiter, Pasteur Institute)	Addressed
8-515	A	17	35	17	35	If possible, insert brief description of reservoir hosts i.e., a species that can maitain infection by a pathogen and act as a long-term source of infection for other species (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-516	A	17	35			infection rate; proportion of vectors that are infected? reservoir hosts; if they are not infected, there is no transmission. Presumably refers to alternate hosts? In my opinion, reservoir is a term greatly mis-used: it should refer to a host that maintains the pathogen over periods of non-transmission (e.g. virus in overwintering mosquitoes and ticks). I suggest that host is a more appropriate word. (Paul Reiter, Pasteur Institute)	Addressed
8-517	A	17	36			"Separate analyses"; separate from what? Have been undertaken …? (Paul Reiter, Pasteur Institute)	Addressed
8-518	A	17	37	17	38	"Before they cause" cause is not appropriate. Pathogens cause symptoms (pathology describes) but vectors TRANSMIT (Paul Reiter, Pasteur Institute)	Addressed
8-519	A	17	38	17	38	Delete "the" to read "…and also avoid important confounding…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-520	A	17	38			"also avoid importantconfounding factors" Why "confounding"? They are contributory factors. Confounding means they hide the climate influence; in truth, the factors mentioned CONTRIBUTE to the overall dynamics of transmission (Paul Reiter, Pasteur Institute)	Addressed
8-521	A	17	39	17	41	This point in the sentence [However, changes in vectors (and even transmission dynamics) can occur without changes.....] needs further elaboration especially describing the factors responsible for this trend. Could this be due to immune resistence or effects of better case management of diseases? This needs further discussion. (Julius Fobil, School of Public Health, College of Health Sciences, University of	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Ghana)	
8-522	A	17	39	17	41	This statement, though rather wordy, is important; It puts the rest of the statements in perspective. As such it should be at the BEGINNING of the paragraph; putting such codicils at the end relegates their importance to an afterthought This is a major defect throughout the chapter, and should definitely be corrected. When discussing a complex topic, it is important to STATE THE COMPLEXITIES AT THE BEGINING OF THE DISCUSSION, , and then to review the pros and cons of available evidence/discussion in the context of those complexities. (Paul Reiter, Pasteur Institute)	Addressed .Good point
8-523	A	17	39			Reporting biases are inherent in all epidemiologic studies. Vector studies cannot "avoid" them. "of the disease" What disease? None have been mentioned so far, only the "infected arthropod species" (Paul Reiter, Pasteur Institute)	ADDRESSED – there can be biases in reporting/recording of the vectors
8-524	A	17	40	17	42	I have worked in the field on dengue for more than 14 years, I am regarded as an expert in this field, and have been on WHO Expert Advisory Committee on Vector Biology and Control since 1999. The three references quoted have several things in common. (1) Few of the 11 authors are known in the field of dengue, except in the context of these articles; (2) few of the 11 authors are known in the field of other vector-borne diseases, except in the context of these articles; (3) Although the seasonality of dengue is clear, the reasons for seasonality remain obscure, and dengue specialists have speculated for many years on such reasons; (4) I suggest that quoted references should be accessible to readers of IPCC documents: several of the other articles were not published in established medical journals, nor journals that are prominent in the field of dengue, or any other vector-borne disease. (5) There are 4 dengue viruses; in many (most, by now) places where dengue occurs, successive waves of epidemic transmission occur for the different serotypes. Herd immunity is the principal determinant of the timing of epidemics. A glance at data for Puerto Rico, for example, shows that with the exception of 1998, none of the peak years in transmission coincide for more than one serotype (see Reiter, P. and Gubler, D. J. 1997. Surveillance and control of urban dengue vectors. In: Dengue and Dengue Hemorrhagic Fever, D. J. Gubler and G. Kuno, eds. CAB International, Wallingford, UK. pps 425 - 462.) Moreover, attempts	I s adequate dengue lit search Refers to p 18 No response needed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						by several dengue specialists to correlate these peaks with climate variables have always failed; some dry years, some wet, some warmer, some cooler. (Paul Reiter, Pasteur Institute)	
8-525	A	17	41	17	41	It is not a 'relevance', it is the SIGNIFICANCE of a particular set of parameters. Relevance suggest a pre-concieved notion of conclusion. At this introductory stage of the review, which is setting the stage for evidence for an against, relevance is inappropriate, (Paul Reiter, Pasteur Institute)	Addressed
8-526	A	17	42	17	43	Once again, as with the introductory paragraphs, the dengue/climate topic begins with possible evidence, and ends with a codicil that suggestts caution re this evidence. As already suggested, this is not the best way to approach questionable topics. The correct scientific manner is to give the background (container breeding, urban environment, etc) and then discuss all examples available in the literature in the context of this background. (Paul Reiter, Pasteur Institute)	Addressed
8-527	A	17	43	17	43	"observed effects" is partly in conflict with the next sentence. Also, these observed effects are speculation, mainly by non-specialists in vector borne diseases (see later in this review). None of the high altitude claims are supported by any strong eviidence. This must be clearly stated. See for example Reiter et al, 2004, The Lancet, Infectious Diseases. In that article, 10 top researchers strongly rejected such speculation. Also Hay et al, etc etc. (Paul Reiter, Pasteur Institute)	Addressed Better: "Observed changes in distribution of vectors and VBD…" We should acknowledge that the role of climate is debated (refer to p19) but it is not appropriate to refer to this evidence as mere speculation. Reiter confuses the issue here, since his letter (Reiter et al, 2004) does not explicitly refer to the "malaria and altitude" debate. The word *altitude* does not appear here or in the related comment (Hales and Woodward 2003) For the record, Reiter et al, 2004 included 9 authors, not 10.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-528	A	17	44	17	44	Capitalize "Chapter 1" insert "see" within parentheses, capitalize "Section", transpose period & close-parenthesis to read "…Chapter 1 (see Section 1.3.7.5). " (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-529	A	17	44	17	47	The Pontes reference is valid, and in an appropriate journal, but the point that is mentioned has been known since the days of Walter Reed and Gorgas. Again, this should come first, not as a codicil. This goes for the Depradine and Lovell article (incidentally, dengue surveillance in Barbados is very limited). I was unable to access the Guang article. (Paul Reiter, Pasteur Institute)	Transmission may be limited by low temperature within regions supporting vector populations. Therefore, an increase in the altitude at which disease is transmitted could be related to climate trends, even if below the altitude limit of the vector.
8-530	A	17	44			"has already" infers a confirmation of change of distribution at high altitudes. I know of no published evidence. There are claims that pathogens are now being transmitted at higher altitude, but that altitude is always below the altitudinal limits of the vectors involved. For example, Ae. aegypti is present up to 2,200 m in Colombia, but dengue is limited to 1,700m. Authors probably are referring to unsubstantiated claims in articles by various personswho are not specialists in VBD. For an in-depth review of climate change and mosquito-borne disease, including nearly 200 references pertinent to this chapter, I suggest: Reiter, P. 2001. Climate change and mosquito-borne disease. Environ Health Perspect, 109, Supplement 1:141-161. (Paul Reiter, Pasteur Institute)	Addressed
8-531	A	17	45	17	46	Delete hyphen & close up space to flow-in words in two places ("northeastern" at end of line 45; "microevolutionary" in middle of line 46) (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-532	A	17	46	17	50	The Bradshaw paper refers to a change in distribution. The term "global warming" is inappropriate; an increase in global temperratures, or a warming trend would be appropriate. Global warming is used in the debate onthe contribution of human activities to the current warming trend. However, Bradshaw states "greater warming than in the last 1000 years". Again, not an appropriate statment. There is strong evidence of a major warming trend worldwide until the beginning of the 14th century, with European temperatures higher than at present. Bradshaw's statement suggests a	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						bias, and is contrary to climatic evidence. Clearly, he has good evidence of a change in distribution, but, as explained in 17:50/50, such change is not unprecedented, and if climate driven, is atributable to "Climate Change" not "global warming". (Paul Reiter, Pasteur Institute)	
8-533	A	17	47	17	47	If "Wyeomyia smithii" is italicized here with genus name capitalized, what about previous "Campylobacter" and "Salmonella", should they also be ital & genus capped? (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-534	A	17	50	17	50	There are no supporting statements for "analagous evolutionary changes". Better to use the term "natural selection". It is highly likely that a small portion of the Wy. Population was always able to exploit an "indian summer". The gradual loss of diapause in Ae albopictus as it moved southward into the Florida peninsula is a good example; the original Japanese strain had about 10% non-diapausing insects. Presumably in cold autumns, the non-diapausing speculation did not pay off, whereas in warmer periods, additional reproduction was achieved. Many (most?) organisms have this sort of survival system, arguably a kind of insurance to hedge their bets, an adaptation that is advantageous because climate and weather have such a large degree of natural variation. It is for this reason that climatologists do not give averages in terms of periods of less than 30 years and weather is the variable that is observed from year to year. (Paul Reiter, Pasteur Institute)	Not addressed
8-535	A	18	0			Section 8.2.9.1 on dengue should state more clearly how it is possible to run global statistical models for dengue based on annual avg vapour pressure, when a few lines before, in page 18, it is stated that ´…linkages between climate, weather and dengue are poorly understood..´A more continuous message is needed not to undervalue important studies on dengue propagation. (Xavier Rodo, University of Barcelona)	Not addressed
8-536	A	18	7	18	7	Delete "s" at end of word diseases" to read "…in human disease incidence…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-537	A	18	9		10	This sentence is very unclear and should be reworded. Is there evidence that Malaria has been affected by climate change? (Peter Berry, Health Canada)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-538	A	18	9	18	10	I found the use of the double negative in this sentence rather confusing, would it not be easier to say that there is no strong evidence so far that malaria has been affected by climate change etc (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-539	A	18	9	18	10	"There is no clear evidence that malaria has not been affected by climate change." This is a bizarre way of putting it. The burden of proof should be on those who would say there is an effect. It is my understanding that there is a very lively debate on this issue, but one wouldn't know it at this point in the narrative. (Alan Krupnick, Resources for the Future)	Addressed
8-540	A	18	9	18	9	double negative - "no clear evidence…has not been affected". The emphasis must surely be on evidence that it HAS been effected. (Christopher Thomas, Durham University)	Addressed
8-541	A	18	10		10	"has been affected" or "has not been affected"? (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-542	A	18	15	18	22	can the problem of animal diseases be accepted in a chapter on human health? For me it is ok. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-543	A	18	16	18	20	This discussion would be better suited for chapter 5. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Addressed
8-544	A	18	16	18	18	Blue tongue virus vector = biting midges (Culicoid) NOT mosquito. African Horse sickness main vector = Culicoid midges, secondary vector = mosquito (Christopher Thomas, Durham University)	Addressed
8-545	A	18	17	18	17	Lower-case "h" on "Horse" to read "…African horse sickness" and run-in ""blue" with "tongue" to read "…bluetongue virus " (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-546	A	18	24	18	33	This par is a bit out of place. Examples of case studies using satellite and ENSO data could be included under their respective disease headings. Currently it is a bit too general, and doesn't really give useful information. Satellite and ENSO could be introduced under section 8.1.4 (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-547	A	18	24			"infectious diseases" instead of "disease"	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Thomas Kistemann, Institute for Hygiene and Public Health)	
8-548	A	18	29	18	29	Delete comma after "land cover" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-549	A	18	30	18	30	Increasingly accurate climate measurments - needs clarification as surface observations have declined in many parts of the worlkd especially the devloping world. OK satellite remotely sensed observation continue to increase in scope. (Andy Morse, University of Liverpool)	Addressed
8-550	A	18	31	18	33	A reference is needed for the last sentence. (Shilu Tong, queensland university of technology)	Addressed
8-551	A	18	37			We will need to reflect the increased difficulty to predict the spread of avian flu like diseases, due to climate change altered migratory pathways (Alexander von Hildebrand, World Health Organisation)	Addressed . yes
8-552	A	18	42	18	44	The AIACC Project SIS06 reported that a clear linkage and seasonality in the occurenec of dengue had been found in the Caribbean. Furthermore a moving average temperature index was a good indicator for the potential dengue occurrence. The association between dengue and weather is of partcular significance because unlike malaria, drug resistance is not a competing factor in the attribution of hyper-transmission (epidemics) (Andrew Githeko, Kenya Medical Research Institute)	Not addressed
8-553	A	18	49	19	2	or in lines 20-28 pg 25. or in lines 25-32 pg. 27. Temperature shift might extend dengue vector distribution in temperate areas, but special attention should be paid to urbanization growth: [Bracks M., N. Honorio, R. Lorenco-de-Oliveira, S. Juliano and L. Lounibos (2003). "Convergent habitat segregation of Aedes aegypti and Aedes albopictus (Diptera: Culicidae) in Southeastern Brazil and Florida." Journal of Medical Entomology 40(6): 785-794] found higher abundances of Aedes aegypti at higher human densities. We found that extreme urbanization in temperate cities (Buenos Aires) might limitate its habitat at a smaller scale (Carbajo upublished data), in this city Aedes aegypti adults were more active in middle human densities [Carbajo A.E., Gomez S, Curto SI y Schweigmann NJ. 2004 Variación espacio-temporal del riesgo de transmisión de dengue en la Ciudad de Bs. As.. Medicina de Bs. As., 64: 231-234] (Anibal E. Carbajo, Universidad de Buenos Aires)	Not addressed
8-554	A	18	49	19	2	Again, Hopp and Foley have no background in dengue, and published in totally	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						inappropriate journal. Their 'model' is also inadequate Aegypti was, until recently, present as far north as South Carolina, but the last dengue outbreaks in any part of the USA except on the Texas border, were half a century ago. I have collected in Memphis, Tennessee, after a winter in which temperatures descended to -18degC. To claim "good agreement" between distribution of observed human cases in six tropical countries is curious; dengue outbreaks occurred in Massachussets and Spain when climates were considerably cooler than today. The authors may wish to quote Reiter, P., Lathrop, S., Bunning, M., Biggerstaff, B., Singer, D., Tiwari, T., Baber, L., Amador, M., Thirion, J., Hayes, J., Seca, C., Mendez, J., Ramirez, B., Robinson, J., Rawlings, J., Vorndam, V., Waterman, S., Gubler, D., Clark, G., Hayes, E. Texas lifestyle limits transmission of dengue fever. 2003. Emerg Infect Dis. 9:86-9. in which transmission was shown to be different in two parts of a city (Laredo/Nuevo Laredo) separated by a small river (Rio Grande). (Paul Reiter, Pasteur Institute)	
8-555	A	19	0			But most significant of all, Patz does not give any evidence to support his claim of 'local variation'. It was precisely for this reason that 10 of the worlds top specialists published a protest (Reiter P, Thomas CJ, Atkinson P, Hay SI, Randolph SE, Rogers DJ, Shanks GD, Snow RW, and Spielman AJ. 2004. Global warming and malaria: a call for accuracy. The Lancet, Infectious Diseases (4): 323-324). Having said all this, a glance at Patz's article reveals that it is a review about an article by Roth on cholera (!), not malaria, and belies its objective in the first paragraphs by stating: "But Rodo (3) have now succeeded in finding a robust relationship between progressively stronger El Niño events and cholera prevalence in Bangladesh, spanning a 70-year period; their use of a uniquely high quality extensive cholera database and innovative statistical methods were key. THIS STUDY REPRESENTS THE FIRST PIECE OF EVIDENCE THAT WARMING TRENDS OVER THE LAST CENTURY ARE AFFECTING HUMAN DISEASE". To me, the last sentence is of critical importance: for at least 12 years (I need to check the exact dates) Patz has been a leader in promoting the link between disease prevalence and incidence and climate change. Indeed, he started his career on the subject, he is the founder and Chief Editor of "Global Environmental Change and Human Health", etc. etc. After so many years of conviction and high profile in the media, it is interesting that he has finally found "the first piece of evidence..."	Not addressed . Need to include this

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						Returning now to Patz's critiqe as quoted in the chapter: malaria is only mentioned briefly, but the wording is significant: "However, results were derived from interpolating a broad-scale gridded regional climate data set based on very sparse historical weather station data; such data are intended for upward aggregation for regional and subcontinental climate trend analysis, not for individual village sites (24). Drug resistance of the malaria parasite has received much attribution for increasing malaria in the region; however, drug resistance may disproportionately affect disease severity more than incidence which, at a minimum, requires suitable climatic conditions. In short, the question of vectorborne diseases and long-term climate change remains unresolved; there is a lack of unequivocal quantitative evidence in either direction". Again, if there is no "unequivocal quantitative evidence in either direction" then many of Patz's statements (and those of his colleagues/collaborators) over more than a decade are speculative at best. Lastly, I have never seen any evidence that disease severity is attributable to drug resistance. He may mean that in the absence of effective drugs to treat infections, more people have serious illness. I have selected this paragraph to underline two important problems in this chapter: (1) As in the previous paragraph, the authors are backing authoritative statements by INAPPROPRIATE AND INACCURATE REFERENCE TO PROFESSIONAL LITERATURE; (2) As in much of the climate change literature, there is a strong tendency to contribute to a CIRCUIT OF ARTICLES THAT QUOTE EACH OTHER: a review, based on speculation and dubious models is published in a (often obscure) journal. The claims that are made are debateable, but make little mention (or inaccurate mention) of counter-claims. Other reviews, centered on similar speculations and models quote those reviews ... and so on. As Patz clearly says, he is quoting "the first piece of evidence ...". (Paul Reiter, Pasteur Institute)	
8-556	A	19	0			In section 8.2.9.2, line 34, to be balanced, the sentence should recall the conclusions in Patz et al. 2002, reply to Hay et al., 2002a. Namely, that there is a significant trend in temperature and etc and etc, that accounts for a percentual increase of xx… In page 19, line 37, please give a ref. for the statement raised. (comment from the reviewer: Also, with regard to the ´malaria controversy´it would be perhaps more useful to expose	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						results from WGI on whether or not climate changes can be stated for the region of interest. Can the climate community clearly state whether or not there is a discernible climate change effect in East African Highlands?has there been a trend change in regional temperature? Are precipitation patterns changing? One of the main problems in fact, is that in most of these studies no climatologist is involved and climatological studies are often overlooked. Here there is a chance to add useful info into this controversy, resulting in such a heavy toll in human lives). (Xavier Rodo, University of Barcelona)	
8-557	A	19	3	19	3	Insert period after "Ae"; delete comma after "albopictus"; to be consistent with genus/species name notation on p.18 line 49, spell out Aedes or consider abbreviating genus names throughout chapter (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-558	A	19	3	19	5	It is hard to see how Albo and Juliano's model is relevant. The story of the Asian Tiger mosquito is woth relating. The first specimen was detected in 1983 (Reiter, P. and Darsie, R. F. 1984. Aedes albopictus in Memphis, Tennessee (USA): an achievement of modern transportation? Mosquito News, 44:396-399). There is good evidence that the US infestation of Ae albopictus originated in Japan (Reiter, P. and Sprenger, D. 1987. The used tire trade: a mechanism for the worldwide dispersal of container breeding mosquitoes. J. Am. Mosq. Control Assoc., 3:494-501). The authors of the publication suggested,on the basis of latitude, that the future distribution of the species could extend as far north as Indianapolis/Chicago. This has proved to the case, as the species moved rapidly northwards (Reiter, P. 1998. Aedes albopictus and the world trade in used tires, 1988-1995: the shape of things to come? J. Am. Mosq. Control Assoc., 14:83-94). A study of winter diapause in the newly established population showed that this distribution suggested Japanese origin (Hawley, W.A., Reiter, P., Copeland, R.J., Pumpani, C.B., and Craig, G.B., Jr. 1987. Aedes albopictus in North America: Probable introduction in used tires from Northern Asia. Science, 236:1114-1116.), further evidence of its introduction (and dissemination world wide) in used tires. As for their commet on arid areas: albopictus tends to favour peri-urban areas, with fairly large amounts of vegetation, so I would suspect (not predict!) that it will only survive in arid areas if there is plenty of vegetation. I seem to remember that it is establised inPhoenix, Arizona in rich, irrigated suburbs .. Lastly, albopictus is certainly	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						a vector of dengue, but it is misleding to refer to it as "another vector" because it is much less effective as a vector because it is not anthropophilic; it feeds on almost anything that moves. The best one can say is that it is a 'secondary' vector, and not important in most parts of the world. (Paul Reiter, Pasteur Institute)	
8-559	A	19	3			Check the name of the vector (Alexander von Hildebrand, World Health Organisation)	Not addressed
8-560	A	19	8	20	6	In this section it is very important to distinguish between effects of climate variability and climate change, and how the two are (or are not) connected. (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-561	A	19	8			Section: 8.2.9.2: Here - again - the assessment is missing. The same 'weight' is attahced to the wortk on one group researchers (Hay et al) as to other research done (and cited). (Pim Martens, University of Maastricht)	Not addressed
8-562	A	19	8	20	6	Section 8.2.9.2 comment. I think it would be apporpriate to highlight more strongly the accumulating evidence that rainfall is a key driver of malaria in may parts of the world, especially Africa. For example, in an important paper currently missing from the report, Small, Goetz and Hay (2003, Proc. Natl. Acad. Sci USA 100, 15341-15345) show the importance of rainfall patterns ot historical changes in African malaria. In my review (Thomas 2004, Nature, vol 427, p690-691) I put these results into context:"Mathematical models of malaria transmission, often used to project events under changed climate conditions,are based mainly on temperature-dependent processes and incorporate precipitation only as a simple global threshold sufficient for mosquito breeding. Clearly this needs to be improved, but we have very little empirical understanding of how rainfall,humidity and their interactions with temperature influence vector populations.Moreover,owing to natural variability, it is difficult to identify robust signals in precipitation patterns fromclimate models." I think this is an important general message. (Christopher Thomas, Durham University)	Not addressed
8-563	A	19	10	20	6	Malaria is a product of poverty not climate.	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Thomas Moore, Stanford University)	
8-564	A	19	10	19	11	The Hay et al (2000) article concludes: "Although cyclical variations are evidentin the MENSOI, these clearly do not substantially affect rainfall and temperature in Bangkok or Kericho and thus can exert no‘‘teleconnection’’ with disease incidence. The lack of a strong superannual periodicity in the climate data and the poor relationshipbetween climate at Bangkok and Kericho and ENSO are not consistent with the hypothesis that interepidemic periods aredetermined by climate, at least for these mosquito-borne diseases at these locations. We conclude that intrinsic population dynamic processes offer the most parsimonious explanation for the interepidemic periods of DHF incidence in Bangkok and clinical P. falciparum malaria cases in Kericho. We further assert that epidemiological theory offers a more plausible platform than epidemiological teleconnections on which to build modelsfor epidemic prediction. Combining within-year extrinsic and between-year intrinsic determinants of mosquito-borne disease incidence for epidemic prediction should be the focus of future research". This is incompatible with the statement in the chapter: "The spatial distribution, intensity of transmission and seasonality of malaria is strongly determined by climate in sub-saharan Africa, where socio-economic devedlopment has had only liminted impact on curtailing disease distribution". This another problem with the Chapter: CLAIMS BASED ON ERRONEOUS CITATION OF THE LITERATURE. It is worth mention that the authors of this article are among the most highly regarded in their field. (Paul Reiter, Pasteur Institute)	There is no logical contradiction between Hay et al (2000) and 19:10/11 Check that our reference to Hay et al 2000 is justified here.
8-565	A	19	12			Add the following at the end of the para: " Elsewhere, the incidence of malaria and related fatalities are largely determined for the most part by socio-econimic factors." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not addressed
8-566	A	19	14	19	23	To show the impact of rainfall in different zones in India, ref of Dhiman et al 2003 may be mentioned.(Dhiman, R.C., Bhattacharjee, S., Adak, T. and Subbarao, S.K. 2003. Impact of climate change on malaria in India with emphasis on selected districts. Proceedings of the NATCOM V & A on Water resources, coastal zones and Human Health. IIT Delhi June 27-28, pp 127-133) (Ramesh Dhiman, Malaria Research Centre)	Not addressed
8-567	A	19	14	19	23	No account of malaria, particularly in 'fringe areas' should be made without an	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						explanation of stability. Many factors precipitate epidemic malaria. In sub-Saharan Africa, temperature is rarely the dominant factor. Most important is the species of vector involved, and its degree of anthrophilicity. In areas where An arabiensis is dominant, malaria is less stable (i.e. more prone to epidemics) than in areas where An. gambiae s.s. is the dominant vector. Nevertheless, this paragraph is better referenced and more informative than others, although I suggest the Ndiaye reference is too obscure to be included. (Paul Reiter, Pasteur Institute)	
8-568	A	19	14	19	15	This statement requires a reference (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed
8-569	A	19	22			is the word "outbreaks" or "outcomes"? (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-570	A	19	22			it is unclear what malaria outcomes means in this context. Presumably it does not mean malaria death rates but more malaria incidence? (Andrew Haines, London School of Hygiene & Tropical Medicine)	Addressed
8-571	A	19	25	20	6	These two paragraphs try to summarize the debates on whether or not there is evidence that long-term changes in climate have affect or contributed towards long-term trends in malaria transmission - and there have been a remarkable number of papers on this subject. If the IPCC report aims to provide a critical review then these paragraphs have to be edited. Firstly, all publications (at least since the TAR) should be reviewed. Then there should be a clear distinction between studies that have reported a link a those that haven't, with comment on the methods used. Those studies using actual data (malaria and climate records) and factual historical information should receive more credence than those that use models (malaria and climate), for obvious reasons. Likewise, proper time-series analyses should receive more credence than observational and qualitative studies. (Marlies Craig, Medical Research Council of South Africa)	Addressed Good comment (my emphasis)
8-572	A	19	25	19	34	This paragraph is well written, and refers to evidence published by recognised authorities on malaria. However, in my opinion, Patz's critique of several of the world's top malariologists—in which he suggests that available weather data, dating back to the 1920s, is invalid because it does not deal with local variation in climate—is	Addressed. The error in Hay et al 2002a, referred to by Patz, is the downscaling of gridded data to specific sites. This is

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						hard to understand. First of all, much of the data was collected during the colonial era, when meticulous daily readings were monitored from the "home country". [I have looked at such data, and it is very impressive. The best known is the data set for the Brooke Bond tea estates in Kenya, where meteorological readings were critical to cultivation, and where the environment was remarkably constant (because the tea bushes are maintained at the same low height, less than 1 m, year in, year out). At the same time, the company maintained meticulous records of blood smears taken from their workers and their families, who were provided with clinics and malaria treatmen]. Secondly, it shows regional cycles that surely should be reflected locally, "at the village level" as he puts it. Above all, the data in Hay et al does not show any warming trend over the entire period, nor any association with the prevalence or incidence of malaria. (Paul Reiter, Pasteur Institute)	inappropriate, according to climatologists.
8-573	A	19	26	19	26	In Chapter 8 draft as it now stands, both "time series" and "time-series" are used twice each way. Please decide which is the desired format & change other instances accordingly. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-574	A	19	30	19	30	Insert hyphen after "30" to read "30-year" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-575	A	19	32	19	34	This suggests that we should all question this conclusion. In fact there is an ongoing debate about how to downscale climate surface data to observations. It would be more balanced to express the view that there remains uncertaintly about how to do this and cite both sides to the arguement, not just Patz et al 2002. In my paper Thomas , Davies & Dunn (2004, referenced on line number p61, line) I wrote: "A dispute has arisen over the use of such data to draw inferences for trends in malaria measured over finer spatial scales [32–34], but see also Refs [28,35]" (refs as numbered in Thomas, Davies & Dunn,2004). (Christopher Thomas, Durham University)	As I understand this, it is never appropriate to downscale climate surface data to specific sites. It would be helpful to discuss this point in more detail here.
8-576	A	19	34	19	34	The text and reference do not match. (Shilu Tong, queensland university of technology)	Addressed
8-577	A	19	36			"also been" instead of "been also" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-578	A	19	36	19	37	This sentence is OBSCURE What is meant by "for being premature due to inappropriate use of variables and methods"? Why premature? Is the premise that in future there will be more evidence? If so, we need to wait for it before weighing it up! (Paul Reiter, Pasteur Institute)	Addressed
8-579	A	19	36			Sentence is unclear; add "behind the resurgence of malaria" after "driving force.." (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed
8-580	A	19	40	19	43	The article by Githeko and Ndegwa appeared in "Global Change and Human Health", a journal founded and edited by Jonathan Patz. The journal is rarely cited in the professional literature, and certainly not known to the majority of specialists in this field. (Paul Reiter, Pasteur Institute)	Not addressed
8-581	A	19	41	19	43	I don't understand his sentence, maybe a verb is lacking (Michel Boko, Université d'Abomey-Calavi)	Addressed
8-582	A	19	41			no "and" after "Kenya" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-583	A	19	42		42	What are impatient malaria cases? Needs to be clear for the reader. (Peter Berry, Health Canada)	Addressed
8-584	A	19	42	19	42	Please explain what 'impatient malaria' means (Erin Lipp, University of Georgia)	Addressed
8-585	A	19	43	19	45	"Abnormal" is not an appropriate term in this context. In a sense it is emotive. Above normal, or above average is more appropriate. More interesting is that the text states: "Abnormal increas in minimum temperature has been reporte to have caused major epidemics in the Ethiopiann highlands in the late 1980s and early 1990s". THE DISCUSSION IN THE TEXT ACTUALLY SAYS: This study showed that epidemics in specific years were associated with specific geographic patterns, indicating spatial as well as temporal variations of risk. Epidemic risk is a dynamic phenomenon with changing geographic pattern according to temporal variations in precipitating factors including the interplay of weather anomalies, topography and other eco-epidemiological features. Weather anomalies (especially increased minimum temperature) during the late 1980s and early 1990s might have caused the identified epidemics, but their impact showed high degree of variation between areas with	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						differing epidemiological features. Low immunity status in the populations affected due to abnormally low incidence during transmission seasons prior to the epidemic events probably aggravated the effects of weather anomalies and resulted in high morbidity levels. ANOTHER EXAMPLE OF MISREPRESENTATION OF PUBLISHED EVIDENCE IN ORDER TO SUIT THE CLIMATE CHANGE CAUSE. (Paul Reiter, Pasteur Institute)	
8-586	A	19	44			replace "caused" with "preceded" (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-587	A	19	50			Insert the following new para on line 50: "In a two-part study that examined the variation in malaria case numbers due to climatic and non-climatic factors using 30 years data from Kwa-Zulu Natal (KZN), Craig et al. (2004a, 2004b) found that these numbers were significantly associated with mean maximum daily temperatures from January to October of the preceding season and total rainfall during the current summer months of November–March but found no evidence of association between case totals and climate. In KZN, where malaria control operations are intense, climate appears to drive the interannual variation of malaria incidence, but not its overall level. Thus, while climate is a major limiting factor in the spatial and temporal distribution of malaria, many non-climatic factors may alter or override the effect of climate (Craig et al. 2004a, 2004b). These non-climatic factors include, primarily, drug resistance and HIV prevalence and, secondarily, cross-border people movements, agricultural activities, emergence of insecticide resistance and the use of DDT for indoor residual spraying (Craig 2004b, Barnes et al. 2005). {References: [1] Craig MH, Kleinschmidt I, Nawn JB, Le Sueur D & Sharp BL (2004a) Exploring thirty years of malaria case data in KwaZulu-Natal, South Africa: Part I. The impact of climatic factors.Tropical Medicine and International Health, 9, 1247–1257. [2] Craig MH, Kleinschmidt I, Le Sueur D & Sharp BL (2004) Exploring thirty years of malaria case data in KwaZulu-Natal, South Africa: Part II. The impact of non-climatic factors. Tropical Medicine and International Health 9, 1258–1266. [3] Karen I. Barnes, David N. Durrheim, et al. 2005. Effect of Artemether-Lumefantrine Policy and Improved Vector Control on Malaria Burden in KwaZulu–Natal, South Africa. PLoS Medicine DOI 10.1371/journal.pmed.0020330. [4] Patrick E. Duffy and, Theonest K. Mutabingwa. 2005. Rolling Back a Malaria Epidemic in South Africa. PloS Medicine. DOI:	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						10.1371/journal.pmed.0020368.} (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-588	A	19				no comma before "also" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-589	A	20	0			Many reports stated that the bush fires in 1987 were set by people who were using the opportunity of drought to clear land for cultivation. The 1997-98 ENSO was one of the strongest since the terrible ENSOs of the 19th century, which caused widespread famine. We know nothing about Nipah virus during those episodes. (Paul Reiter, Pasteur Institute)	Not addressed
8-590	A	20	0			Section 8.2.10: when giving examples of emerging diseases, please give quantitative results and confidence assessments or alternatively state that these are qualitative results. Other reemerging diseases should be added. (Xavier Rodo, University of Barcelona)	Not addressed
8-591	A	20	3	20	3	Capitalize S in "section" for consistency (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed. (all small cap)
8-592	A	20	3	20	6	Here again, the introductory paragraph comes at the end, not the beginning! Moreover, there is no reason to state "...because of the paucity of concurrent (?) detailed historical observations on climate and malaria". The statement ignores detailed observations by Hippocrates, historical data dating back to the 17th century, and a wealth of detailed data that has been published since the first decade of the 20th century, following the Ross's work on the transmission cycle of malaria. The work of malariologists in Europe, the United States, and in the Colonies, starting around 1905, is particularly detailed, and frequently mentions the anomalies amd contradictions of climate/malaria issues. Indeed, There is a multitude of excellent references that should be quoted in this paragraph. The statement is an example of another troubling aspect of the chapter: THE AUTHORS ARE CLEARLY UNFAMILIAR WITH THE DETAILS, ESPECIALLY THE HISTORY, OF THE SUBJECT. I would suggest [Reiter P, 2000. From Shakespeare to Defoe: malaria in England in the Little Ice Age. Emerg Infect Dis 6: 1-1]; [Reiter, P. 2001. Climate change and mosquito-borne disease. Environ Health Perspect, 109, Supplement 1:141-161; 1]; Dye, C. and Reiter, P. 2000. Climate change and malaria: temperatures without fevers? Science, 289: 1697-8; ...but here I am also	

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						guilty bias! They will find reference to many publications over the past 100 years, may of them in the first half of the 20th century, when malariology was at its apogee in Europe.There are several papers by Hay, Shanks, Snow etc and that also set the issue in perspective. (Paul Reiter, Pasteur Institute)	
8-593	A	20	5	20	5	Substitute semicolon for comma after "dynamics" and then insert "and", to read "…disease dynamics; and the importance…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-594	A	20	8	20	8	Delete period after "8.2.9.4" for consistency; insert hyphen after "Rodent" to read "8.2.9.4 Rodent-borne infections" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-595	A	20	10	20	18	The first sentence, line 10 is a statement of a well-knwn relationship.. The articles that are cited afterwards are merely recent examples of the phenomenon. The lay reader will get the impression that this is a new phenomenon, which, of course, it is not. This should be emphasized, as there is a danger that the recent dates of the articles will be interpreted as a phenomenon of climate change. (Paul Reiter, Pasteur Institute)	Addressed
8-596	A	20	12	20	16	Make format of "Leptospirosis" consistent as to initial capitalization & italicization (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-597	A	20	12	20	12	Delete "s" at end of "diseases" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Not addressed
8-598	A	20	15			"streets" instead of "street" (Thomas Kistemann, Institute for Hygiene and Public Health)	Not addressed
8-599	A	20	16			febrile, instead of fever-like (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-600	A	20	16	20	16	Insert hyphen after "fever" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-601	A	20	20	20	23	Efects of climate in hantavirus reservoir rodents populations in southern South America (Chile and Argentina) should be added. [R. Murua, L.A. Gonzalez, M. Lima. 2003. Population dynamics of rice rats (a Hantavirus reservoir) in southern Chile: feedback structure and non-linear effects of climatic oscillations. Oikos 102(1) 137-145] and	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						[Thirteen Years of Shifting Top-Down and Bottom-Up Control P.L. Meserve, D.A. Kelt, W.B. Milstead, J.R. Gutierrez. BioScience 53(7) 633-646] which also highlights the need of long term studies to arrive to these kind of conclusions. (Anibal E. Carbajo, Universidad de Buenos Aires)	
8-602	A	20	20	20	23	the HPS outbreak in the southern part of the US some years ago was thought to be due to drought which killed off many of the predators of the field mice followed by heavy rainfall which increased their food supplies and therefore resulted in an explosion of numbers. (Andrew Haines, London School of Hygiene & Tropical Medicine)	Not addressed
8-603	A	20	20	20	20	Hantavirus Pulmonary Syndrome is capitalized whereas other diseases have not been, consider consistent format decision for diseases (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-604	A	20	20	20	23	I really think this section needs to be expanded. There are many rodent borne diseases; a minimum of background, dating back to the earlier literature, is required. Througout the world, human HPS in fections are rare, though the virus may be common in animal reservoirs.The virus became became widely known when an outbreak occurred in the "Four Corners" region of the western United States. HPS was identified there in 1993 although there is no reason to believe that it is a "new" or "emerging" pathogen. Likewise, Puumla virus is widespread in northern Europe, but human cases are rare. This should be emphasized, otherwise there is a danger that the mention of HPS in Panama will be interpreted as a phenomenon of climate change. (Paul Reiter, Pasteur Institute)	Not addressed
8-605	A	20	23	20	23	Insert "host" after word "reservoir" to be consistent with p.17, line 35 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-606	A	20	26	20	45	more information on EID (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-607	A	20	26			Another emerging infectious disease is highly pathogenic avian influenza (Erin Lipp, University of Georgia)	Not addressed
8-608	A	20	29	20	29	Insert "s" at end of word "population" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-609	A	20	29	20	29	"…recently been discovered…" may be evidence of emergence, but in many cases	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						"discovery" is by the advent of new diagnostic methods, new awareness, increased surveillance. Tick-borne encephalitis is a good example. (Paul Reiter, Pasteur Institute)	
8-610	A	20	30	20	31	Some authors have suggested them, but, as already mentioned, the majority are by persons inexpert in the field, and their claims are strongly criticised by experienced experts in this field. Therefore the tone "Increases in the lat ... due to climate change ARE considered emerging diseases" is misleading. The sentence needs to be rewritten: If current warming trends continue, and result in latitudinal or altitudinal extension of diseases, these could also be considered as "emerging". (Paul Reiter, Pasteur Institute)	Addressed
8-611	A	20	31			add “also” before considered. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-612	A	20	33	20	33	Insert word "include" at end of sentence, before colon (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-613	A	20	35	20	35	Capitalize "V" in "Nipah virus"? Question re: consistency in disease naming within chapter 8 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-614	A	20	35	20	36	In effect, all epidemics are a re-emergence ... It is questionable whether we call call Nipah "emerging" without knowing its history beyond the past two decades. (Paul Reiter, Pasteur Institute)	Addressed
8-615	A	20	37	20	37	Delete "s" at end of "reservoirs", and insert "hosts" after "reservoir" for consistency with p.17, l.35 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-616	A	20	40			This example is not as clear as the Nipah virus one. (Carlos Corvalan, WHO)	Addressed
8-617	A	20	40	20	40	Question re: consistency in disease naming within chapter 8 & whether to capitalize and/or italicize (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-618	A	20	40	20	43	Again, all epidemics are emergences/re-emergences. While it is perfectly valid to draw the conclusion that transmission was affected by weather, in the context of climate change it should be clearly stated that these variations are natural, and not in any way	Agreed that we need to make the point that the climate trends could plausibly have been related to greenhouse effect

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						associated climate change. (Paul Reiter, Pasteur Institute)	
8-619	A	20	41	20	41	Delete hyphen in "north-eastern" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-620	A	20	42			Here is an illustration of the issue about how far up the behavioral chain is appropriate to link climate change with disease. If farmers tend to move to the city because of drought and droughts increase from global warming and with greater density in the city incidence of kala-azar goes up, can this effect really be laid at the door of climate change? It seems too much of a stretch. Suggesting that the resulting increase in density leading to discontent and civil unrest (pg. 27, ln 36-37) is also attributable to climate change pushes even further. Maybe the narrative should stick to direct effects. (Alan Krupnick, Resources for the Future)	Addressed
8-621	A	20	46			8.3 Future trends: 8.3.1 Health scenarios cite references of scenario, however, they do not indicate clear direction on health impacts. If the impact does not depend on specific characteristics of HIV or other infections, but the its load itself increased or decreased by climate change, the issue should become whether the society can maintain the control ability and its pace. Then, the issue would become to scenario selection, uncertainty, or cost that there is no budget, or it lasts only a few months, or other sectors lose funding. Health risk itself is not necessary object index. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. These issues are discussed in 8.6 and other sections.
8-622	A	20	46			8.3 Assumptions and 8.4 Future impacts should be reverse in sequence if you consider the overlap of present risk and future vulnerability. (Akihiko SASAKI, Fukushima Pref. Authority)	Disagree.
8-623	A	20	48			In this section it would be interesting to include any existing evidence about the current outbreak of avian influenza and any influence of temperature on the spread among birds. (Tord Kjellstrom, Australian National University)	Addressed
8-624	A	20	50	21	4	8.3.1 Heat scenarios: No need. (Akihiko SASAKI, Fukushima Pref. Authority)	Disagree.
8-625	A	21	0			paragraphs such as the one beginning in line 11 are highly speculative, with no direct climate link and eventually may downgrade the relevance of the overall chapter.	Disagree.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Xavier Rodo, University of Barcelona)	
8-626	A	21	1		4	The Millennium Ecosystem Assessment did a very elaborated scenario excersice which is not discussed here. (Carlos Corvalan, WHO)	Addressed.
8-627	A	21	1	21	1	The word scenarios is inappropriate. Do the authors mean "models" or "projections"? (Paul Reiter, Pasteur Institute)	Definitions elsewhere.
8-628	A	21	2	21	2	Storylines … again, an inappropriate word. To most people, a story is fiction… (Paul Reiter, Pasteur Institute)	Standard language.
8-629	A	21	3	21	3	Insert "SRES" before "emissions", if acronym has been previously explained in preceding Chapters (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-630	A	21	6	21	9	Very hard to understand this one-sentence paragraph, either its content or its objective. (Paul Reiter, Pasteur Institute)	Addressed
8-631	A	21	7	21	7	Spelling og "ageing" with e is elsewhere in Chapter 8 as "aging" without e; make consistent (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-632	A	21	8			The Martens & Hilderink reference has also been published in a peer-reviewed journal as: · Martens, P. (2002). Health transitions in a globalising world: Towards more disease or sustained health? Futures, 37(7), 635-648. (Pim Martens, University of Maastricht)	Addressed.
8-633	A	21	11		29	The concepts expressed here (the three "ages") are described in a paper by Martens and Huynen, 2003. This is not referenced in this paragraph. (Carlos Corvalan, WHO)	Addressed.
8-634	A	21	11	21	11	"An age of emerging infectious diseases" … new diseases have always, and will always be emerging. But is this really the case; are we in a special age? Are we seeing more emerging diseases? Or is our awareness of emergence driving the concept, coupled with our ability to identify pathogens that are relatively rare? And, of course, political reasons for declaring a new threat. After all, many diseases accepted as "non-emerging"—measles, whooping cough, tuberculosis, smallpox, chicken pox, bubonic plague—could be considered to have "emerged" in the period of written history. An excellent example is West Nile virus. It did not "emerge" in the Americas, it was	Addressed. Deleted.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						introduced there. Its explosive dispersal in an immunologically naïve population drew attention to the virus in its original home, the Old World. Increased funding for surveillance has resulted in detection of small numbers (5 in 2005) of confirmed human cases, cases that would probably have never been detected, never mind noticed, before 1999. "If public health systems unravel" … (1) Where has this been suggested in the preceding text? 'If' Implies that it has. Perhaps I have missed it? Also, 'unravel' is an inappropriate word. (Paul Reiter, Pasteur Institute)	
8-635	A	21	11	21	12	"…new pathogens arise that are resistant to our current methods of disease control" The words 'new', 'disease' and 'our' are redundant or unnecesary. The word "resistant" implies selection for resistant strains. Clearly if the pathogens are "new" (probably better to leave out "new" because most of the text refers to pathogens already known), they cannot have undergone selection. The correct wording would be "if the do not respond to ..." Lastly, "falling" life expectancy would be better expressed as "declining" or decreasing"... (Paul Reiter, Pasteur Institute)	Addressed. Rewritten.
8-636	A	21	11	21	29	I have dissected lines 11 to 29 to highlight some of the major shortcoming of this chapter: INAPPROPRIATE CHOICE OF WORDS; CLUMSY SENTENCE STRUCTURE; AND A LACK OF FAMILIARITY WITH THE WORDS, CONCEPTS AND EXPRESSIONS used by specialists in epidemiology/disease transmision/public health, and simply POOR GRAMMAR. (Paul Reiter, Pasteur Institute)	Addressed. Agree.
8-637	A	21	11	21	22	8.3.1 Heat scenarios: Viewpoint is not fixed. If same reuirement is alighned as risk vector, generalization may be possible. (Akihiko SASAKI, Fukushima Pref. Authority)	?
8-638	A	21	13	21	14	History does not "show us". (Paul Reiter, Pasteur Institute)	Addressed.
8-639	A	21	14	21	14	Add "ly" at end of "increasing" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-640	A	21	14	21	15	AIDS has lowered life expectancy around the world, and in nearly all African countries	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						south of the Sahara, not just some. (Paul Reiter, Pasteur Institute)	
8-641	A	21	15		16	How has history shown us "avian influenza spreading worldwide instantaneously"? Is this in humans or in birds? (Peter Berry, Health Canada)	Addressed.
8-642	A	21	15	21	15	As per other comments re: names of diseases, make consistent capitalization of "West Nile virus" i.e., whether or not to also capitalize "V" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-643	A	21	16	21	16	use of the word 'instantaneously' seems inappropriate (Roger Few, University of East Anglia)	Addressed.
8-644	A	21	16	21	16	The mosquito-borne "disease" cannot be a "virus". Use virus, not disease. The virus crossed the Atlantic and results in infection. "Instantaneously" is wrong. A pandemic would be better, or with great rapidity, or something of that nature (Paul Reiter, Pasteur Institute)	Accepted
8-645	A	21	16	21	17	An "age of medical technology could result…" Surely it has already? (Paul Reiter, Pasteur Institute)	NA
8-646	A	21	16	21	16	avian influenza has not spread 'instantaneously'. Suggest 'rapid'. (Christopher Thomas, Durham University)	Addressed.
8-647	A	21	17	21	19	This seems to be a relatively simplistic view of both the effects of economic and technological development on health status and trends in health ninequality. In the main, gaps in health status between richer and poorer nations (as measured by life expectancy and infant mortality) expanded until around 1950, after which they dropped sharply until around 1990. Since then they have begun to expand, largely because of problems in Sub-Saharan Africa (due to AIDS/HIV, and resurgent malaria and TB). [There also was regression in Eastern Europe and the former Soviet Union countries due to their economic implosion, from which they seem to be recovering.] See Goklany (2002). On the other hand, gaps between China and India (on one hand) versus, say, UK and France (on the other) continue to shrink. The problems, therefore, are as much due to lack of economic growth (and globalization) in these areas, compounded by the fact that AIDS/HIV is so expensive to treat (both in terms of human and economic	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						resources). But then there is malaria, which continues to pose a problem despite being a lot cheaper to address. Moreover, there may be situations where some inequality would benefit humanity (Goklany 2002). Consider, for instance, that since most of the easy improvements in public health have been largely captured (except where globalization has lagged), the search for and implementation of cures and treatments for today's unconquered diseases (such as strokes, heart disease, and cancers) could become progressively more expensive. Richer societies are in a better position to invest in the research and development of new or improved technologies in general, and technologies for detecting, treating, or eliminating these diseases in particular. AIDS is a case in point. When AIDS first came on the scene it was a virtual death sentence to evryone, but with the rich nations pouring billions into searching for treatments and cures, it seems managebale, provided one can afford it (which, of course, requires resources, both human and economic). Moreover, new technologies are often relatively costly initially. The rich, therefore, are usually the first to obtain new or innovative technology. As the rich purchase this technology, the supplier can increase production and its price drops because of economies of scale and learning by doing, if nothing else. Such declines allow the less wealthy to also afford that technology, which then paves the way for further price drops and induces people of more modest means to enter the market. Thus, arguably, wealth inequality spurs the invention, innovation, and diffusion of new technologies. To summarize, the rich are not better off because they have taken something away from the poor; rather, the poor are better off because they have benefited from the technologies developed by the rich, and their situation would have been further improved had they been better prepared to capture the benefits of globalization (Goklany 2002). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-648	A	21	17	21	18	which may to some extent off-set" is imprecise and inappropriate choice of words. (Paul Reiter, Pasteur Institute)	English to be revised
8-649	A	21	17	21	17	Technology will not lead to technology… (Paul Reiter, Pasteur Institute)	NA
8-650	A	21	18	21	18	Delete hyphen in "off-set" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-651	A	21	19	21	21	Is this a social statement? Or a Utopian one? What is sustained health? What is "more wide-ranging investment"? Why benefiting "most" segments of the population? How do "scenarios" "describe"? What is the relevance of "changing patterns of "demand on social services"? (Paul Reiter, Pasteur Institute)	NA
8-652	A	21	19	21	19	"At the risk of widening current health inequalities" What is the reasoning here? Is it that richer persons will benefit more from improved treatments? I accept this is a salient point, but is it relevant in the context of the report? (Paul Reiter, Pasteur Institute)	NA
8-653	A	21	20	21	26	8.3.2 Future vulnerability: Unclear intention to write. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed.
8-654	A	21	24		25	Right, health risks will remain as long as the poorest countries remain poor. That is where the emphasis should be. (Thomas Moore, Stanford University)	Addressed.
8-655	A	21	24	21	29	8.3.1 Heat scenarios: Existing effects are not separated and properly arranged (independence and limited effect). Show the chronological change of risk at a place as a three dimensional plot (x, y, z co-ordinates indicate time, effect, and existing effects, respectively). For example, a sigmoid curve of time-effect relationship of a country is ploted on the curved surface made from the conditions of different countries . Regularly it is predicted as parallell shift on this surface, but vulnerability of the country will inducea shift to higher risk point with time due to economi and system collapse. In addition, it is important to make a scenariowhich incorporate unpredictable changes, and predict additional risk. Recent infections, heat wave, typhoons are the case of unpredictable impact, and influenced the thereafter changes of system and policy. We must evaluate both successful and unsuccessful cases and compare the risk difference. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed.
8-656	A	21	24	21	26	This is a simplistic statement perhaps not appropriate without qualification to a climate change document. We all know that developing countries cannot participate in the "growth and development" seen in developed countries without causing a climate change disaster. There has to be a sustainable no-growth world economy for this	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						scenario. (David Shearman, Univeristy of Adelaide)	
8-657	A	21	25	21	29	The scenarios (sic!) "suggest also that" is bad English. "...rapid spread of ideas and technology world-wide" is not explained. Do the authors refer to the Web? "…a mix of positive and negative …" if so, explain what negative "effects" are implied. (Paul Reiter, Pasteur Institute)	English to be revised
8-658	A	21	27	21	29	"deliberate" is un-necessary, it won't happen accidentally. "sustainability" of what? Technology, surely not in the "scenario" described? "…impacts of human activity on climate" implies that human activity is definitly changing climate. This is still debatable and debated. Even if the human impact is major, natural change is still a major part of the changes. The text from 19 to 29 reads more like an article of ideology than of science. It would be much more convincing if stated in the language of science. (Paul Reiter, Pasteur Institute)	NA
8-659	A	21	32			The whole issue of disease control deserves more attention. The moment a disease is the target of control interventions, sometimes resulting in eradication, we have significantly altered (sometimes virtually removed) the effect that climate (at least mean climate, if not climate variability) may originally have had on the disease. The question of control has to be addressed for every disease and every region. We have to acknowledge that climate change will have a much reduced effect where the disease is limited by control, infrastructure, health systems etc, assuming of course that these modern developments are not disrupted. The short par starting pg 22 line 28 is too brief and comes too late to do justice to this issue. (Marlies Craig, Medical Research Council of South Africa)	Addressed. included in Section 8.6.
8-660	A	21	32			8.3.2 Future vulnerability is related with 8.4 Future impacts & vulnerabilities. If future vulnerability could specify only present usual difficulties in cost, inconsistent policy, unbalanced counteraction, and poor information strategy, there is no meaning of policy making against climate change. True future vulnerability should be compared with the present state, showing what extent it is, and how much it is in velocity and in human load, and that they requests counteractions to change the policy and systems. Non-infectious disease will induce collapse of medical and welfare systems. It will reduce the long-lasting action against the health impact of climate change. The change of	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						insurance charge rate may induce people self-preventive behavior like ecology movements. It is a policy option, and its scenario analysis will support the policy effect on health impact by climate change. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-661	A	21	34	22	45	also 1-5 pg 31. I agree with the general view of these sections and believe that are crutial; they give a good scope of the situation (or future) in subdeveloped countries. (Anibal E. Carbajo, Universidad de Buenos Aires)	No response necessary.
8-662	A	21	34		40	"HIV/AIDS epidemic will be a significant influence" on coping capacity for climate related infections, food shortages and increase frequency of storms, floods and droughts: This should have a reference. (Carlos Corvalan, WHO)	Addressed
8-663	A	21	34	21	34	The health futures are not relevant to climate change; climate change is relevant to "health futures" "health futures" is also obverse. Future should qualify health… (Paul Reiter, Pasteur Institute)	NA
8-664	A	21	37	21	40	8.3.2 Future vulnerability: Numelize the rare of movable people and increased load due to diseases at a population. For example, HIV produces one-thirds and three times, respectively. And malaria produces hour-fifty and one time and half, respectively. The weighted total of them are movable people and increased loadat a population, and their diffeence would indicate the vulnerability. (Akihiko SASAKI, Fukushima Pref. Authority)	Not addressed
8-665	A	21	38	21	39	Climate-related infections; the infections are not climate-related, although the disease may be. (Paul Reiter, Pasteur Institute)	Accepted
8-666	A	21	42	22	18	8.3.2 Future vulnerability: not needed. (Akihiko SASAKI, Fukushima Pref. Authority)	Not addressed. Not allowed to change.
8-667	A	21	42			In this para include discussion of the effect of population ageing projected for many developed countries. The elderly are a highly vulnerable groups for most climate change impacts (eg heatwaves, flooding deaths) due to their physiology and decreased mobility. In Australia, the proportion of people aged over 65 will be 2.5 to 4.7 times by 2100 than at present (don't know figures for elsewhere).	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Rosalie Woodruff, Australian National University)	
8-668	A	21	43			after ´…density of settlement´a mention should be made to the landscape or environment structure, as it is through the immediate environment that climate effects downscale to affect populations and disease transmission/propagation. (Xavier Rodo, University of Barcelona)	Addressed
8-669	A	21	46	21	47	Leads us to expect? A better way to put this would be just to use the figures quoted in lines 49-50 (as an opening sentence) and then put some of the material of the first sentences of the paragraph. AS IN MUCH OF THIS CHAPTER, MUCH OF THE WORDING IS SUPERFLUOUS, AND THE ORDER OF CONCEPTS IS ILLOGICAL. (Paul Reiter, Pasteur Institute)	English to be revised
8-670	A	22	1		9	It is not enough to argue that increases in population - primarily in cities - will mean increases in health impacts from climate change. This may increase exposures to hazards associated with climate change, but whether impacts actually occur will depend on whether the new populations are vulnerable or not to those impacts. This passage seems to imply that because most of the population growth will take place in cities these people will be vulnerable to climate change health impacts. However, people living in cities may, or may not be more vulnerable to health impacts than are people living in rural communities. I am not sure what most recent evidence suggests in this regard, but this passage needs to be clearer about its messaging. (Peter Berry, Health Canada)	Addressed
8-671	A	22	1	22	1	Insert hyphen after "climate" to read "climate-sensitive" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-672	A	22	1	22	1	High population growth rates … rapid increases in population. "will affect global trends" means worldwide, and trends must an object; you can't have a trend in disease, only a trend in growth or decline or pathogenicity etc (Paul Reiter, Pasteur Institute)	NA
8-673	A	22	1	22	2	"episodes"? Infections. (Paul Reiter, Pasteur Institute)	NA
8-674	A	22	2	22	3	"fraction" is inappropriate; the numbers could plummet, but the fraction remain the same. Incidence is probably the term required.	Accepted

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Paul Reiter, Pasteur Institute)	
8-675	A	22	3	22	9	Separate par on urbanization. (Marlies Craig, Medical Research Council of South Africa)	Addressed.
8-676	A	22	3	22	4	better: "Considering the impacts of climate change, urbanization is also of high relevance" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-677	A	22	6	22	7	This is, again, a confusing sentence. People affected by coastal flooding and malaria; does this mean malaria resulting from flooding? And "spread": does this mean dispersal, or an increase in geographic range? And "trajectories" surely means estimates? And is the sentence really necessary? If so, it should be put earlier in the paragraph as an example that is then explained. THIS IS ANOTHER PROBLEM. THE ORDER OF CONCEPTS is often CART-BEFORE-HORSE: if a statment is worth making, it should be made at the start, and then explained. This will also help with WORDING OVERLOAD which is another problem. (Paul Reiter, Pasteur Institute)	English to be revised
8-678	A	22	14			a comma is missing after "region" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-679	A	22	16	22	18	"while economic inequalities between regions, countries and within countries" if all these nouns are required, I suggest it would be better to put them in the reverse order? And what exactly does "economic inequalities" mean? Differences in income? Economics is composed of a whole plethora of parameters, of which income is one. And inequalities cannot "grow world-wide", they can only increase within populations, though the same increase may be seen (?) throughout the world (unlikely?). (Paul Reiter, Pasteur Institute)	English to be revised
8-680	A	22	20			better: "will depend not only on..." (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-681	A	22	21			"on" is missing after also (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-682	A	22	22	22	24	Is there anything about which the authors can be positive (or rather, can not be negative?)?!!! Economic growth is, per se, wealth-creating (though often the wealth may be limited to a small portion of the population). And social change … does this	NA

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						cause environmental disruption. I suspect, given the sentence thatt follows, that the authors mean industrialization. And disruption ... is damage the word that is required? (Paul Reiter, Pasteur Institute)	
8-683	A	22	22	22	22	"Economic growth is double-sided"; a meaningless statement, even with the qualifiers that come afterwards. (Paul Reiter, Pasteur Institute)	Addressed.
8-684	A	22	24		26	Mixed blessings: This statement needs a reference (Carlos Corvalan, WHO)	Addressed
8-685	A	22	24	22	26	This sentence only works for an international audience if the locations are expressed - presumably talking about rapid urbanization in the 19th C in Western Europe, and extensive land clearances in the 20th C in (e.g.) humid tropical regions. (Roger Few, University of East Anglia)	Addressed
8-686	A	22	24			Life expectancies increased in the 19th century, although not as fast as they did in the 20th. (Thomas Moore, Stanford University)	Addressed
8-687	A	22	28	22	28	Health services are not a "buffer". They may offset the impact of climate change. (Paul Reiter, Pasteur Institute)	English to be revised
8-688	A	22	28	22	32	8.3.2 Future vulnerability: Give more functions of health buffer, and structurize, systematize, make them as resources so that you canindicate the ability and characteristics of each country . In addition, vulnerability of countries to hazards and heat wave are different also by company cooperation, NGO activity, and information system. These are evident in developed countries, however, it is impossible in developing countries due to poor know how, few human resource. It is important to indicate as a table what is needed, and what is transfere. If it is still impossible to do, thus, it is noy human risk but true environmental risk that need support bu other countries. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed Added to the extent possible.
8-689	A	22	34	22	42	8.3.2 Future vulnerability: It is not the point. (Akihiko SASAKI, Fukushima Pref. Authority)	Not addressed
8-690	A	22	35	22	36	It is striking that, despite repeated discussion of problems of heat, air-conditioning is only mentioned once in the whole chapter! In richer countries, air conditioning is the	NA

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						answer to heat. After the 2003 heat wave in Paris, air-conditioning has become much more prevalent. If economic growth is disruptive to social change, it surely also can lead to safer living conditions? The authors do mention airconditioning in a later section, but negate it by suggesting an increase in greenhous gases and augmentation of the urban heat island. It seems that the authors are searching to the bottom of the barrel to find negatives for every aspect of modern society. Perhaps they are worried about the use of energy based on fossil fuels? I can understand that, but with all the projections about the future, can they not envisage the development of alternate fuels? And air conditioning can have added advantages: when windows are kept closed, mosquitoes are kept at bay (see: Reiter, P., Lathrop, S., Bunning, M., Biggerstaff, B., Singer, D., Tiwari, T., Baber, L., Amador, M., Thirion, J., Hayes, J., Seca, C., Mendez, J., Ramirez, B., Robinson, J., Rawlings, J., Vorndam, V., Waterman, S., Gubler, D., Clark, G., Hayes, E. Texas lifestyle limits transmission of dengue fever. 2003. Emerg Infect Dis. 9:86-9 (Paul Reiter, Pasteur Institute)	Air conditioning will not be possible for most vulnerable populations in low-income countries.
8-691	A	22	36	22	36	Delete comma after "future cities" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-692	A	22	37			the effects on agricultural production should not only be seen as an issue of plant growth. The impact of lowered work ability of the rural people due to heat needs to be analysed. (Tord Kjellstrom, Australian National University)	Addressed.
8-693	A	22	37	22	39	Surely this can be put in a more positive way: Conditions of trade must be maintained that allow poorer countries to share world markets, or some such statement. Again, this seems to smack of a criticism of capitalism;I see no place for this in this Chapter. (Paul Reiter, Pasteur Institute)	Addressed.
8-694	A	22	40	22	41	Within text is "et al." italicized as in citations? Here it is not, make consistent throughout (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-695	A	22	42	22	45	It could be worth to add that this will be not possible, because of the mechanisms of world trade which results in low price for raw materials from these developing countries.	Not addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Michel Boko, Université d'Abomey-Calavi)	
8-696	A	22	42	22	42	Substitute "However," for "But" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-697	A	22	42	22	45	8.3.2 Future vulnerability: Improper description. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-698	A	22	43	22	43	What "assumes"? And why are climate change impacts "predominantly negative"? Apart from anything else, models suggest that climate change is more likely to affect the higher latitudes, and the poorer countries are (mostly) at lower latitudes. Also, warmer climates in some areas may have great positive impact, as can more rainfall in others. At the beginning of the 20th century, people resisted the advent of the motor car, saying its impact would be "predominantly negative". Clearly, there are negative aspects, but transport today is much better than in the age of horse-drawn carriages, and cars have made an immense contribution to wealth and health throughout the world. (Paul Reiter, Pasteur Institute)	NA
8-699	A	22	44		45	This is correct and should be emphsized more. (Thomas Moore, Stanford University)	
8-700	A	22	44	22	45	Stimulate production means induce people to plant and harvest more. I suspect the authors want to say that HIGHER (not rising) temperatures and HIGHER CO2 levels will increase productivity. This is a positive impact, but, as usual, left as a codicil so as not to disrupt the continual gloom of the text. I am getting impatient! Why not put this as a positive impact, and then qualify the shortcomings in the sentences that follow? Is it imperative that the whole document is a litlany of disaster? (Paul Reiter, Pasteur Institute)	NA
8-701	A	22	48	29	44	I recommend incorporating contents of Section 8.4 entirely under relevant (parallel) headings in section 8.2. Section 8.2 can then become a more general discussion of climate effects, impacts and projections. Climate effects on health (as per section 8.2) in the context of this report are only relevant as far as they relate to climate change, and that link should be made straight away. By bringing together the two it also becomes clearer which projections are more reliable, based on the current understanding of general climate effects on each health issue. At the moment there is also a certain amount of repetition, which would be thus avoided.	Good point, but decision was taken by TSU to set up chapter in this way. Links to climate change made clearer.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Marlies Craig, Medical Research Council of South Africa)	
8-702	A	22	48			8.4 Future impacts: Parts before 8.4.1 are too long and meaningless unless they discuss the risk and philosophy of modeling. Modeling is limited only to 8.4.1 or includes up to 8.4.5? (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed Section reorganized to make clear models are only in 8.4.1 Introductory sentences moved to conclusions.
8-703	A	22	48			8.4 Future impacts will produce confusion if it includes "vulnerability" in the title. An alternative is "risk in general population and environment". I wonder if the title "8.4.1 Modeling of the burden of disease" should be put here, because modeling may be included in 8.3 Assumptions. (Akihiko SASAKI, Fukushima Pref. Authority)	Title given by TSU
8-704	A	22	48			8.4 Key future impacts P22-29: Too long but poor. Simplify in general. The despription of major parts depends on 8.3, thus it is meningless to depict points here. (Akihiko SASAKI, Fukushima Pref. Authority)	?
8-705	A	22	50			Section 8.4. remove first introductory par. It contains unqualified statements some of which contradict the more detailed discussions in earlier and following disease-specific sections. The second and third par can be dropped. Broad statements that inadequately summarize more detailed discussion to follow, do not do justice to the complexity of a topic. (Marlies Craig, Medical Research Council of South Africa)	Addressed Sentences corrected and moved to conclusions.
8-706	A	22	50	23	18	this part would serve better as a summary at the end of chapter 8 (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-707	A	23	2	22	3	Delete 2 commas (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-708	A	23	3	23	4	Increases in heat waves: the frequency? And "are likely to lead to increase in heat-related deaths…" surely this has been flogged enough? (Paul Reiter, Pasteur Institute)	NA Moved to conclusions
8-709	A	23	4	23	4	Insert hyphen after "ground" to read "ground-level" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-710	A	23	5	23	5	Insert "and cardiovascular" after "respiratory"; ozone has been associated with both sets of causes of morbidity and mortality	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-711	A	23	6	23	6	Change "facilitating" to "facilitate" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-712	A	23	6	23	6	The control of temperture by malaria is only in certain areas e.g uplands but in many areas it is limited by rainfall only and an increase in temperature may reduce its range - as there is probably an optimal temperature for transmission from theory. Therefore this statement needs some further clarifcation. (Andy Morse, University of Liverpool)	Addressed Statement qualified.
8-713	A	23	7	23	7	Delete comma after "distributions" ; delete "s" at end of "increases" ; delete "in" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-714	A	23	7	23	8	"With less certainty about ….precipitation patterns". Why less certainty? We know that precipitation is often the most important of the two (in many places where malaria is endemic and stable, rainfall is the key determinant of seasonality and prevalence. In places where malaria is endemic and unstable, precipitation is often the precipitating (sic!) factor as well. AT THIS JUNCTURE, A FEW SUGGESTIONS: (1) Throughout the text, there is frequent reference to malaria and other vector-borne diseases,but no explanation of critical concepts such as species composition, host preference, vector competence, vectorial capacity , etc. etc. Above all, there is no account of stability vs instability. All are key factors in transmission. In other words, there is a lack of explanation of the fundamentals of the discussion, without which, persons that are not specialists in this field will not be able to weigh up the pros and cons of the arguements presented. (2) Much of the text deals with changes in prevalence, incidence, and epidemic transmission, but here again, critical concepts such as herd immunity, reproductive rate and force of transmission are not outlined. (3) There is frequent mention of mathematical models, but almost no mention of the type of model in question, nor an outline of the methodology and structure used to devlope that model, nor any account of its advantages and shortcomings. No discussion based on models is valid, unless described in the context of such details. Above all, the description of a model should include key formulae used, and, if appropriate, some account of values ascribed to critical parameters. It would be useful to include brief mention of citations and comments by other specialists in this field, particularly other modelers. (4) There	Addressed Sentences clarified. Comments on additional material are useful, but the page constraint does not allow for such a detailed discussion. Further, this is an assessment and not a literature review. Tables included at end of chapter.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						are no figures or other illustrations in the text, yet these are important, particularly when describing abstract concepts such as models to the lay person. Computer graphics illustrating, for example, the distribution of stable and unstable malaria in Africa, would be a useful addition. Lastly, I suggest that the authors draw up a table that lists the models they refer to, and to give basic descriptors (e.g. statistical vs. biological), and the outcome of the model. This would be a better way of summarizing the modelling literature than simply quoting the authors. (Paul Reiter, Pasteur Institute)	
8-715	A	23	9	23	12	It is inappropriate to use the term "predictive modelling". Models are not forecasts, they are tools for exploring the interaction of chosen parameters. The misconception (or mis-leading presentation) of models as "predictors" of events in the next 50 or 100 years lies at the heart of much of the climate of sensationalism and fear that is nurtured by the media. (Paul Reiter, Pasteur Institute)	English to be revised
8-716	A	23	9			´…Similarly, increases in temperature are likely to be associated with increases in diarrhoeal diseases.´ it should be stated that disrupted weather patterns affecting rainfall distribution changes and moisture availability (for instance through an effect on floodings, increases in river discharges, but also droughts) have a serious impact on WBD and later also on FBD. Overall burden of WBD is not discussed in text, only referred to in Table 8.1. (Xavier Rodo, University of Barcelona)	Addressed
8-717	A	23	11	23	12	What is meant by "temperature changes become more significant"? Is this an increase in the rate of warming, or an increase in the impact of warming? (Paul Reiter, Pasteur Institute)	Addressed .Sentences deleted. “Rate of warming” is the correct
8-718	A	23	13			Mention projected efects from bursting glacial lakes, with loss of life, injury, destruction of property, loss of agricultural land, impact on livelihood (Alexander von Hildebrand, World Health Organisation)	Addressed. Sentences deleted.
8-719	A	23	14		18	This passage makes it sound as if the health benefits of climate change might be on par with the negative impacts. I believe recent World Health Organization book Risks and Responses (2003) (page 7) argues that we expect more negative outcomes. Is there more recent scientific findings that indicate otherwise?	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Peter Berry, Health Canada)	
8-720	A	23	14	23	18	This topic is treated much too briefly. (1) There is good evidence that, if climates continue to warm, agricultural productivity could be greatly augmented in many parts of the world (e.g. the colder regions of Russia, Canada and Argentina). This could well lead to lower prices for staples such as wheat and maize, and many other positive results. (2) There is no doubt that increased CO2 does improve the growth and health of plants (viz. the use of very high concentrations of CO2 in Dutch greenhouses), much higher than envisaged with the continued use of fossil fuels. (3) I cannot think of any part of the world where temperatures "exceed the upper threshold for vectors or parasites". Malaria, for example, is endemic and stable in much of West Africa, and in Southern Sudan, some of the hottest and driest regions of the world. (4) I cannot think of any part of the world where rainfall "exceeds the upper threshold ...". Of course, in some regions, heavy rainfall is associated with malaria, in others, malaria declines, and in stull others epdemic transmission is associated with drought. Yet nature is incredibly resilient. Changes in conditions can result in selection of new strains of individual speces, or to their replacement by species more suitable to the new environment. Such replacment can have a desirable impact, viz. the replacement of Ae. aegypti, an excellent vector of dengue, yellow fever and other arboviruses, by Ae. albopictus, which, in most circumstances, is a very inferior vector (as appears to be happening in Cameroon (Dider Fontenile, personal communication)) and has certainly occurred in the US in the past 30 years. Conversly, urbanization can favour aegypti over albopictus, as has happened in much of SE Asia. (6). This brings me to another point that I consider to be important: throughout the chapter, the tone of the text is UN-NECESSARILY PESSIMISTIC! Of course there are good arguments to support negative impacts in some situations, but equally there are many arguments to support improvements, and others that question the negatives or positive arguments. There are also peer reviewd publications by experts that refute claims of both positive and negative arguements, or consider them greatly overstated. I have a strong feeling of IMBALANCE in reading this review, an underlying (but not very subtle) INUENDO in manner in which concepts are presented, and an APOCALYPTIC DOOM AND GLOOM that appears to be the objective of the message conveyed by the authors. As stated in comment for page 19, lines 39 - 41, and in other comments, I feel that	Addressed As public health professionals, we are concerned with regions of the world that will be further challenged by changes in temperature and precipitation. There also is good evidence that agriculture will not benefit in all regions of the world, leading to increases in food insecurity. Section edited. No need to go into these details. No one would advocate an increase in CO_2 emissions in order to get some "benefits" in the long term

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						fundamental points that are widely accepted, and published by acknowledged experts, should be stated first, followed by suggestions and speculations of authors who are concerned about changes in the future. (Paul Reiter, Pasteur Institute)	
8-721	A	23	15	23	15	Move hyphen from after "some" to after "pollutant" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-722	A	23	20	23	23	What assessment exercise is this is talking about ? - not clear (Roger Few, University of East Anglia)	Addressed.
8-723	A	23	20	23	28	This paragraph is not clear enough to me. It seems to be referred to an specific study, not cited, conducted on populations on coastal areas and developping countries. Since the context of such study is not clearly stated, the paragraph is confusing. Since the debate on the shutdown of the thermoaline circulation is still very open, I find the last sentence not really focused within the general context. (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed
8-724	A	23	20	23	27	These 3 sentences seem to contradict one another. The first one says "… a more integrated assessment was undertaken for health impacts in particularly vulnerable areas ..." & then the third sentence says "No projections are available on how climate change could affect population health in geographic areas believed to be at particularly risk..."; delete "ly" in "particularly" (line 26); First sentence (lines 20-23) mentions "a more integrated assessment was undertaken..." but by whom? (no citation, please insert) (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed .Sentences deleted
8-725	A	23	21	23	27	Why the past tense, "was undertaken"? Is this by the IPCC team? What does "a more integrated assessment" mean? There is mention of "particularly vulnerable populations in the first sentence, yet the penultimate sentence states that no "projections" are available for areas "particularly at risk". (Paul Reiter, Pasteur Institute)	Sentences deleted
8-726	A	23	27	23	28	The shutdown of the thermohaline circulation would surely be such a catastrophic event that studies projecting its potential health impact are hardly necessary? It should also be stated, clearly, that this is a speculation that is held by a very small minority of specialists, though for Hollywood ("The Day After Tomorrow") it earned big bucks. (Paul Reiter, Pasteur Institute)	Sentences deleted

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-727	A	23	27			Remove sentence in page 23, line 27 on the shutdown of the thermohaline circulation, it is not relevant here. (Xavier Rodo, University of Barcelona)	Sentences deleted
8-728	A	23	30		31	the figure should be added (Yola Verhasselt, Royal Academy of Overseas Sciences)	Agree.
8-729	A	23	34			8.4.1 Modeling will specify policy options in prediction of span and difference, and uncertainty. Figures are important to predict completely different types of span and image of social conditions. Disease itself has meaning only background information such as a place of event and its timing. Universal prediction and showing common vulnerability are important and could be accomplished by technology transfer, spread, and connection in counteraction. 8.4.1.1-8.4.1.4 should be merged in two parts, that is, infection and urban environment. (Akihiko SASAKI, Fukushima Pref. Authority)	Disagree with combining quantitative modeling results and qualitative assessment.
8-730	A	23	41	23	43	Some description of the past is important here, because it puts transmission in temperate regions into perspective. For example, it is important to emphasize that the disease was a major cause of morbidity and mortality on both continents (e.g. in Poland, Finland and northern Russia). This is rarely mentioned in the climate change literature. Other points that are relevant: (1) the decline of the disease began (in much of western Europe) in the mid- to late-19th century. The reasons for the decline were complex, but for the most part vector and disease control activites were not invovled. Indeed, transmission in the South of France, Britain, much of France and Germany occurred before the mode of transmission was understood. (3) "Vector and disease control activies" in the 1950's in regions such as the southern US and other regions e.g. certain parts of Holland, were really clean-up operations: the disease had been a major cause of morbidity and mortality but had largely disappeared by this time. In contrast, in the same period, major campaigns were necessary in southern Europe, Poland, Finland and vast areas of the Soviet Union. Eradication of the disease was only possible following the advent of DDT. Accouts of this are given in Reiter P, 2000. From Shakespeare to Defoe: malaria in England in the Little Ice Age. Emerg Infect Dis 6: 1-11; Reiter, P. 2001. Climate change and mosquito-borne disease. Environ Health Perspect, 109, Supplement 1:141-161. (Paul Reiter, Pasteur Institute)	This is an assessment of literature published on climate change and health since the TAR, not a historical review.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-731	A	23	44	23	45	Insert hyphen after "person" to read "person-months"; insert hyphen after "population" to read "population-weighted" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-732	A	23	45	23	45	Not clear what this really means. Also, which health outcomes? (Paul Reiter, Pasteur Institute)	Addressed.
8-733	A	24	1			An example of the fact that per capita income cannot necessarily protect against particular diseases is the recent dengue outbreaks in Singapore, which have been unsatisfactorily controlled, despite massive government expenditure and a highly compliant population. (Rosalie Woodruff, Australian National University)	Good point. Reference would be helpful.
8-734	A	24	4			Add to this list of references the following: Goklany (1999a, 2005b). (Indur Goklany, Office of Policy Analysis, Department of the Interior)	To be evaluated.
8-735	A	24	8			See comment 3. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	?
8-736	A	24	8	24	25	I was astonished when I first heard of this study (I was at a climate change meeting in Miilan); likewise my colleagues in vector-borne disease research were furious. I suggest the authors enlarge upon the means by which the WHO arrived at their estimate of "150,000 lives". Considering that estimates of lives lost are variously stated by WHO to range from 1 million to 2 million, 150,000 lives attributable to climate change is incomprehensible. Moreover, I FIND NO MENTION OF THIS FIGURE in Ezzati et al, 2002, the Campbell Lendrum reference was unobtainable (a non-peer rreviewed article) as wasone of the articles listed as "McMichael 2004" in the list of references. (Paul Reiter, Pasteur Institute)	Interesting as Dr. Reiter was a peer reviewer of the GBD. References corrected
8-737	A	24	12	24	12	Insert comma after first 5 in number to read "5,500,000 DALYs" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-738	A	24	12			Is 5500,000 a typo? (Alan Krupnick, Resources for the Future)	Corrected.
8-739	A	24	17			WHO assessment did not include dengue. (Carlos Corvalan, WHO)	Corrected
8-740	A	24	17	24	17	Elsewhere in Chpater 8 "Falciparum" has not been capitalized, please make consistent with your choice of format for disease names as per previous comments	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-741	A	24	29	24	29	No reference is given for this "evidence". What "evidence" can there be? Table 8.1, but all the reference to malaria are for models ; MODELS ARE NOT EVIDENCE. This is a very important point, as already mention in 23:9/12 (Paul Reiter, Pasteur Institute)	Corrected. Accepted. Replace "Evidence since the TAR..." By "models developed since the TAR…"
8-742	A	24	34		36	I don't understand this statement. (Marlies Craig, Medical Research Council of South Africa)	Statement clarified.
8-743	A	24	34	24	37	The Lieshout article is in a (non-peer reviewed?) journal, "Global Environmental Change". A quick glance will confirm that this is dedicated to climate change/disease—in my opinion this is not a serious scientific publication, and certainly does not publish articles by leaders in the disease field. THIS IS AN IMPORTANT POINT. Scientists strive to publish their articles in PEER REVIEWED JOUNALS THAT HAVE WIDE READERSHIP, ARE READ BY PROFESSIONALS IN THIER FIELD, AND ARE CONSIDERED AS "HIGH QUALITY". For example, if an author wishes to publish on the impact of climate on malaria, and the article is of particularly wide interest, he/she will try Nature, or Science, or PNAS. If turned down by these prestigious journals, or if he/she wants to reach the maximum audience in the malaria field, a malaria journal, a parasitology journal, or a tropical medicine journal would all be appropriate. If he/she wants to target a particluar audience that is not specifically malaria or climate, he/she may choose a well respected general journal, such as Emerging Infectious Diseases or Environmental Health Perspectives. A climate journal, however, will generally be inappropriate, because few specialists in malaria read climatological journals, and because climatological journals are more likely to send the manuscript to climatologists than to malaria specialists for peer review. If the article not accepted by the journal of choice, and the author still wishes to publish, he/she will try an alternative peer-reviewd journal, but again, one that is read by his peers. The ultimate resort is to publish in minority or non-peer reviewed publications. Journals like "Global Environmental Change" and "Salud Ambiental" do not have a major world readership, and are certainly not routinely read by malaria specialists. The Martins article was unobtainable. In an important review like the IPCC, reference	GEC is a peer-reviewed journal.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						should be restricted to professional journals of high standing that are relevant to the main subject of the discussion, and are readily obtainable by the lay reader. (Paul Reiter, Pasteur Institute)	
8-744	A	24	38	24	39	The Rogers and Randolp clearly CATEGORICALLY STATES that the models in question suggest "REMARKABLY FEW CHANGES, EVEN UNDER EXTREME SCENARIOS" The Hales reference is the vapour pressure article. (Paul Reiter, Pasteur Institute)	Remarkably few changes does not mean no change.
8-745	A	24	43	24	48	The sentence that is qualified by four references states: "climate change may be associated with both expansions and contractions of the geographic area suitable for transmission ...of malaria ..." As already stated, the Lieshout article is in "Global Environmental Change" ; the Hartman article is in another (non-peer reviewed?) journal: "Climate Change and Human Health". [A quick glance at the list of editors, authorship, and titles confirms that many of them are written by persons in the climate change field, not specialists in malaria epidemiology]. The Tanser article was published in The Lancet, a generalist medical journal. It was roundly denounced in the same journal by ten of the world's leaders in vector-borne disease (see page 25:2/3) in [Reiter P, Thomas CJ, Atkinson P, Hay SI, Randolph SE, Rogers DJ, Shanks GD, Snow RW, and Spielman AJ. 2004. Global warming and malaria: a call for accuracy. The Lancet, Infectious Diseases (4): 323-324]. On the other hand, the authors of the Thomas article, published in a leading journal, Parasitology Today, conclude that malaria is MORE LIKELY TO CONTRACT IN RANGE if climate continues to warm. This conclusion is certainly not "both expansions AND contractions" but the distinction is not apparent to the reader. (Paul Reiter, Pasteur Institute)	Addressed.
8-746	A	24	44			are there examples of “contractions of the geographic area”? (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed.
8-747	A	24	46	25	4	Tanser et al.'s model has drawn a great of criticism and I would hesitate to give it as much prominance as this, although the general conclusion you draw from it (extended seasons) seems fine. However, I very much doubt the numercial estimates mean very much and I would not want to see them included. The criticism of this paper by Reiter et al, 2004, was not just concerned with the relationship between season length and	Sentences deleted.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						disease burden, but more specifically with fundamental flaws in the modelling Tanser et al employed. Subsequent letters about this model and its interpretation in Lancet Infectious Diseases, Reflections and Reaction Section on Global Climate change and malaria Vol 5, May, 2005 should be cited to show the debate surrounding the model. In recent (as yet unpublished) material I have seen other authors dismiss this paper due to its overt inadequacies. It would be a pity to hang too much emphasis on it in the current report. (Christopher Thomas, Durham University)	
8-748	A	24	47			highland instead of highlands (Thomas Kistemann, Institute for Hygiene and Public Health)	Eds
8-749	A	24	47	25	4	The first sentence is convoluted and obscure. The paragraph should start with a clear statement of the complex historical relationship between economic development and public health (roughly: (1) Emergence of communicable diseases following the beginnings of agricultural societies; (2) Major urban epidemics ihe Ancient Civilizations (Babylonian, Egyptian, Greek and Roman); (3) Mediaeval plagues in a time of prosperity (high population growth resulting from high agricultural productivity associated with a warmer climate); (4) Industrial Revolution, leading first to major problems of health in urban environment, but later to unprecedented improvements, though much more rapid in countries where political activity favoured emphasis on Public Health. (5) Major improvements in public health in recent years in countries with emergent liberal economies (e.g. Malaysia, Thailand, Singapore) and in countries with controlled economies (e.g. Cuba). (6) Regions of the world with poor leadership and/or civil strife where it is a clear that inadequate attention is paid to public health, and in consequence, poor public health is an impediment to development. After this, a statment on the difficulties (for economists) in unravelling these complexities. (Paul Reiter, Pasteur Institute)	This is an assessment not a literature review. Paragraph rewritten.
8-750	A	24	47			Reference to the East African highlands is redundant as the model identified many highland areas identified as being at increased risk of transmission and this is addressed in the next sentence. (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Deleted.
8-751	A	24	48	24	50	Current population exposure is quoted at the beginning of this sentence so the	Deleted.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						corresponding changes quoted should also relate to population exposure. Consider breaking into two sentences or changing to the following: "From an estimated annual average current exposure of 3.1 billion person months (445 million people exposed), a 13 - 19% potential increase in population exposure and a 5 - 7% increase (mainly altitudinal) in malaria distribution are projected by 2100, with little increase in the latitudinal extent of the disease." (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	
8-752	A	25	0			The final sentence of Kuhn et al article, published in the Journal of Medical Entomolgy reads: "Hence, there remain great challenges ahead in any attempt to estimate the risk of malaria reemergence in Europe due to anthropogenic influences on world climate". Once again, the authors of the Chapter seem to have missed this statement. In addition, although they do admit that Kuhn et al state that the risk of malaria "could remain very low", I have searched the document, but find nothing to support their statement that her work suggests "increased risk could occur in some parts of south-east Europe". Another example of a mis-quote. (Paul Reiter, Pasteur Institute)	Reference should have been to Kuhn's thesis; reference corrected.
8-753	A	25	2	25	4	Despite a number of well-quoted articles in professional journals, the only reference to my publications is the article in the Lancet signed by the 10 leading authors mentioned . None of the details of this article, which is strongly critical of Tanser and other non-specialists in our field, are mentioned, and they follow this brief reference with a statement of their own: "increase in months per year of transmission" has "important implications for vector control". There was no mention of vector control in our article and the "important implications for vector control" statement is debatable. This illustrates another shortcoming of the Chapter: the authors tend to PLAY DOWN THE WORK PUBLISHED BY SCIENTISTS WHO QUESTION THE WARMING/INCREASED PREVALENCE/INCIDENCE of vector-borne disease (often referred to as called 'skeptics') while GIVING CREDENCE TO NON-SPECIALISTS WHO SUPPORT THE HYPOTHESIS. In addition, many of the 'SKEPTICS' STATEMENTS ARE MIS-QUOTED, or quoted out of context. (Paul Reiter, Pasteur Institute)	Sentences rewritten. Quotations checked
8-754	A	25	7	25	7	"Anopheline" is not italicized here, but elsewhere falciparum is, make consistent; also "anopheline" as adjective is typically not capitalized	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-755	A	25	12	25	15	Equally the work of Cesario, University of Acre, has shown an increase in malaria in Amazonian forest with decrease in rainfall. The mechanism is temperature rise > drier forest and loss of forest due to burning > collection of rainwater in pools in clearings > increased breeding of mosquitoes despite overall reduction in rainfall. (David Shearman, Univeristy of Adelaide)	Reference could not be located on Medline or via Google.
8-756	A	25	12			An assessment in Australia (McMichael AJ, Woodruff RE, Whetton P, et al. (2003) Human health and climate change in Oceania: a risk assessment. Canberra, Australia, Commonwealth Department of Health and Ageing: 116.) based on climatic suitability for the main Anopheline vectors and parasite indicated a likely southward expansion of habitat in the north of the country, although capacity to respond would mean future risk of endemicity remains low. (Rosalie Woodruff, Australian National University)	Addressed.
8-757	A	25	15			no comma after "India" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-758	A	25	15	25	15	Delete comma after "India" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-759	A	25	16	25	17	I have been unable to access either the Shukla or the Mitra articles. The Shukla reference seems incomplete. The van Lieshout article has already been mentioned. (Paul Reiter, Pasteur Institute)	References available upon request.
8-760	A	25	17			Direct Ref of Dhiman et al 2003(cited above) may be quoted. (Ramesh Dhiman, Malaria Research Centre)	Reference could not be identified on Medline.
8-761	A	25	20	25	28	I have worked on dengue in the field and laboratory for nearly 20 years. The conclusions of Hales et al, that the distribution of dengue is can be modelled with "high accuracy" on vapour pressure, and that future climate will expand the distribution of dengue because of changes of vapour pressure, and the suggestion that vapour pressure is a "key determinant of dengue" by the authors of Chapter 8 is evidence that neither group is familiar with the epidemiology of dengue. It would have been easier for them to say that dengue occurs in the tropics... Here, as elsewhere, Chapter 8 should include details of the model, the formulae used, and a graph indicating the relationship between vapour pressure and dengue indicence.	See table. Reiter has not understood Hales et al. These authors do not state that:**…future climate will expand the distribution of dengue** the authors conclude that the geographic regions climatically suitable

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Paul Reiter, Pasteur Institute)	for transmission will increase. Vapour pressure is an empirical predictor of dengue, but need not be a key biological determinant. There is no space in the text for these details
8-762	A	25	20			For dengue in page 25, line 20 give confidence estimates, state whether the conclusions on the only model available, are the results of an ensemble of runs or just a few simulations. An assessment of the validity of results is needed. State why a link with water vapour is relevant, what is the link to dengue vectors. No reference to yellow fever is made throughout the chapter and only a sentence to discuss on likely impacts on tick-borne encephalitis. (Xavier Rodo, University of Barcelona)	Information added; information also available in table.
8-763	A	25	20	25	28	Some sentences about dengue are repetitive to page 18, last 2 para.. (Shilu Tong, queensland university of technology)	Edited.
8-764	A	25	25		28	What percentage increase in population at risk is an increase of 3.5 billion people? This would give a better sense of the severity of the problem. (Peter Berry, Health Canada)	Addressed.
8-765	A	25	30	25	30	Insert hyphen after "vector" to read "vector-borne" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-766	A	25	31	25	31	Why only in Europe? Consider inserting "and North America" after "Europe", since Powassan virus cases in North America (a tick-borne flavivirus related to tick-borne encephalitis virus) can also cause encephalitis (4 cases documented 1999-2001, see http://www.stopticks.org/ticks/powassan.asp) (Kim Knowlton, Mailman School of Public Health, Columbia University)	Looking only at climate change projections.
8-767	A	25	34			The section on atmospheric variables, 8.4.1.3, has no mention of the paper by Messner, et al, showing association of cardiac mortality with atmospheric pressure, specifically the Arctic Oscillation. the paper appeared in the Journal of Internal Medicine, 2003; 253:666-670. Atmospheric pressure association with mortality is probably worth	This paper does not include climate change projections.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						mentioning as one of the atmospheric variables influencing mortality. (James Berner, Alaska Native Tribal Health Consortium)	
8-768	A	25	34	26	7	See comment No 3 on simple use of just "temperature". (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	?
8-769	A	25	34	25	34	Insert 2 hyphens, one after "Heat" and another after "cold" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-770	A	25	34			Sec 8.4.1.3. Rather than just stating that much of the research is in developed countries, it could be stated that developing countries may be less vulnerable to heat-related mortality because people have never learned to rely on air conditioning and, owing to poverty, infrastructure has been built that so happens to accommodate temperature variability, e.g., windows in developed countries are often sealed to make air conditioning more efficient. (Alan Krupnick, Resources for the Future)	A reference is needed to add this.
8-771	A	25	36			Please downgrade conclusions on the basis of the number of studies on the topic. Only results for the UK, Portugal and Australia-New Zealand are given. Some important studies such as cold-related deaths by Armstrong et al., 2004 do not appear in Table 8.3, please correct. (Xavier Rodo, University of Barcelona)	Sentences edited. The Armstrong paper doe not include climate change projections.
8-772	A	25	38	25	38	Section 8.4.1.3 and Table 8.3 do not reference the predictive modeling of heat-related mortality in California by Hayhoe et al. (2004): Hayhoe K, Cayan D, Field CB, et al. 2004. Emissions pathways, climate change, and impacts on California. PNAS 101(34):12422-12427. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-773	A	25	42	25	45	Reduction of cold deaths greater than increase in heat-related deaths is contentious. Completely other causal relationship. See comment No 2. In Europe winter mortality is lower in cold climates than in moderate climates. Ref: THE EUROWINTER GROUP, 1997: Cold exposure and winter mortality from ischaemic heart disease,cerebrovascular disease, respiratory disease, and all causes in warm and cold regions of Europe. Keatinge, W.R., Donaldson, G.C. (Coord.). Lancet 349: 1341 - 46 (Gerd Jendritzky PhD, Meteorological Institute, University of Freiburg)	Assessing literature published since the TAR. Sentences rewritten.
8-774	A	25	42	25	44	Not all previous researchers have projected decreases in net annual temperature-related	Assessing literature published since the

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						mortality. Kalkstein and Greene (1997) concluded from consideration of global modelm simulations of climate change for the years 2020 and 2050, that summer mortality would increase more than winter mortality would decrease, thus a net increase in weather-related mortality. [Citation: Kalkstein LS, Greene JS. 1997. An Evaluation of Climate/Mortality Relationships in Large U.S. Cities and the Possible Impacts of a Climate Change. Environ Health Perspect 105:84-93.] (Kim Knowlton, Mailman School of Public Health, Columbia University)	TAR. Sentences rewritten.
8-775	A	25	42	25	42	Insert "-related" after "cold" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-776	A	25	42		45	Maybe a word or two on cold as a cofactor for respiratory track infections. This point probably would need more coverage. (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	This section is focusing on how climate change projections could affect human health.
8-777	A	25	44	25	45	Could use another senetence to clarify meaning: "However, projections of deaths attributable to cold, and the potential for diminishing their numbers during relatively warmer winters under a changing climate, will be over-estimated unless they take into account the effect of influenza and season..." (Kim Knowlton, Mailman School of Public Health, Columbia University)	Sentence edited.
8-778	A	25	44			TBE ? TB perhaps? (Geoffrey Levermore, Manchester University)	Reference is to TBE.
8-779	A	25	44	25	45	The sentence on cold-related deaths is contradictory; perhaps what was meant was under-estimate unless influenza and season are taken into account. Here again, a positive impact of warming is presented as offset by a negative superimposed on the positive. Does this mean there will be more influenza in warmer winters? Or more deaths in warmer winters from the disease? It might be pertinent to suggest that recombinant vaccines will be increasingly available to combat influenza, so that warmer winters and protection against influenza will result in less mortality? (Paul Reiter, Pasteur Institute)	Addressed. Rewording of the sentence to be done
8-780	A	25	44			No - reductions of cold deaths will be incredibly small in Australia. There will be far greater increases in heat-related deaths. Remove "Australia" from this list. (Rosalie Woodruff, Australian National University)	Addressed.
8-781	A	26	2			and increasingly in developing countries	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Carlos Corvalan, WHO)	
8-782	A	26	2			change "is likely to" to "will" (Rosalie Woodruff, Australian National University)	Addressed.
8-783	A	26	3	26	3	Make spelling of "aging" (vs. "ageing") consistent throughout Chapter 8 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-784	A	26	5	26	5	Omission the word "in" between the words "changes" and the word "the" in the sentence that reads: Predictive models do not includes changes "in" the……. (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed.
8-785	A	26	5			"in" is missing after "changes" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-786	A	26	5			The situation in Europe in 2003 may very well come back with climate change. It should be analysed further here. In addition, the impact in developing countries should eb discussed, as heat waves there may have much higher impacts than what is reported due to lack of accurate death reporting and epidemiological analysis. (Tord Kjellstrom, Australian National University)	Information in text box.
8-787	A	26	5	26	5	Insert "in" after "changes" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-788	A	26	9	26	9	Delete period after "8.4.1.4" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-789	A	26	9			The authors report two studies on the projected health outcomes associated with air pollution/ozone. Interestingly the two examples (US and UK) give differing outcomes; while the US (New York) anticipated worsening air qaulity the UK expected fewer days with heavy pollution. It is not clear from the text why these are so divergent. Additional time spent on this would be helpful (Erin Lipp, University of Georgia)	Good point, but there is insufficient information at this time to understand the divergent results. This is an area where further research would be most helpful.
8-790	A	26	11	26	48	I know nothing about urban air quality, but once again, the proposed positive impacts follow two paragraphs of negatives. For example, I am surprised by the statement that cyclones will decrease in the US, given the certainty with which recent hurricanes have been attributed to a warming climate (despite statements to the contrary by many experts on the subject). The UK study also suggests that the future British weather will	Sentence refers to surface cyclones, not hurricanes.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						clear the air of pollutants. To an Englishman, that sounds great! (Paul Reiter, Pasteur Institute)	
8-791	A	26	11	26	13	I recommend adding the following reference - Fusco, A.C. and J.A. Logan, Analysis of 1970-1995 Trends in Tropospheric Ozone at Northern Hemisphere Midlatitudes with the GEOS-CHEM Model, J. Geophys. Res., 108 (D15), 4449, doi:10.1029/2002JD002742, 2003. (Darrell Winner, US EPA)	Addressed.
8-792	A	26	13	26	13	Insert hyphen after "ground" to read "ground-level" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-793	A	26	13	26	15	Add the following references 1) Hogrefe, C., B. Lynn, K. Civerolo, J.-Y. Ku, J. Rosenthal, C. Rosenzweig, R. Goldberg, S. Gaffin, K. Knowlton, and P. L. Kinney, Simulating changes in regional air pollution over the eastern United States due to changes in global and regional climate and emissions, Journal of Geophysical Research -Atmospheres109, D22301, (doi:10.1029/2004JD004690), 2004. (Darrell Winner, US EPA)	Addressed.
8-794	A	26	14	26	14	Delete comma after "patterns" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-795	A	26	17		23	As it is, these two sentences seem to contradict one another - the first says it is due to local temperature and UV, and the second on "requisite meteorological conditions" which I take to mean the frequency of stagnation conditions. In fact, all three are important and could just be summarized in one sentence. (J. Jason West, Princeton University)	Edited.
8-796	A	26	17	26	19	"The fraction of future ozone concentrations attributable to climate change is the portion that is the consequence of climate change on local temperature and UV." I disagree with this statement. A big effect of climate change may be on intercontinental transport and rising global background levels. At the local level, changes in precipitation will also have a role. (Darrell Winner, US EPA)	Edited.
8-797	A	26	25			The relationship between ozone and mortality is very controversial. Recent studies (Michelle Bell, et al, 2005) suggest that there is a small but significant effect, but perhaps different than that assumed by Knowlton et al. At a minimum, the table should	A number of recent studies support the conclusion that ozone can increase mortality. This is an assessment, not a

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						include the relative risk coefficient used (Alan Krupnick, Resources for the Future)	literature review so the reader is referred to the original papers for more information.
8-798	A	26	28	26	28	Insert "SRES" before "A2" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-799	A	26	29	26	29	Substitute "county" for "city" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-800	A	26	33	26	33	Insert hyphen after "low" to read "low-income" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-801	A	26	41	26	41	Consider making notation consistent within chapter 8: "US" , "United States", or "USA" (all 3 variants have been used) (Kim Knowlton, Mailman School of Public Health, Columbia University)	Okay.
8-802	A	26	44			"to" is missing after "due" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-803	A	26	44	26	44	Insert "to" after "due" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-804	A	26	45			"plays" instead of "play" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-805	A	26	45	26	45	Insert "s" at end of "play" ("…plays a significant role…") (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-806	A	26	46			A reference could be added for "Because transboundary transport of pollutants play a significant role in determining local to regional air quality ": Bergin, M. S., J. J. West, T. J. Keating, and A. G. Russell (2005) Regional atmospheric pollution and transboundary air quality management, Annual Review of Environment and Resources, 30:1-37, doi: 10.1146/annurev.energy.30.050504.144138. (J. Jason West, Princeton University)	Addressed.
8-807	A	27	1			In this section the impact of hot climate on peoples ability to exercise, either through sports activities or through "active transport" (walking or bicycling to work). Climate change may in this way contribute to the global obesity epidemic. (Tord Kjellstrom, Australian National University)	References needed.
8-808	A	27	1			8.4.2 Urban population is unclear. Does it intend to reduce urbanization or impacts of	Section reorganized to clarify.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						urban migrants due to climate change. If urbanization needs to be inhibited to reduce the risk of climate change, the supporting analysis should be done such an s moving capital city and forming new urban areas. IPCC has not answer to risk of high density living yet. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-809	A	27	1		23	this is a general feature independent of climate change. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Section reorganized to clarify.
8-810	A	27	3	27	23	These two paragraphs discuss rapid urbanization and urban health problems, but are not related to climate change. The paragraphs should be either deleted or substantially shortened. (Hisashi Ogawa, World Health Organization Western Pacific Regional Office)	Section reorganized to clarify.
8-811	A	27	3	27	37	Most of this page is devoted to urbanization that the authors do not attribute to climate. Statements that large numbers of Africans and Indians live in deplorable conditions in urban areas, and that urban malaria is a growing problem, do not seem to have much relevance to climate change, nor do the psychological diseases that are mentioned. (Paul Reiter, Pasteur Institute)	Section reorganized to clarify.
8-812	A	27	18			a space is missing after the bracket (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-813	A	27	22	27	22	Delete "s" at end of "diseases" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-814	A	27	25	27	32	Once again, I am surprized that air conditioning is not mentioned in the discussions on heat waves in cities. If energy becomes cheaper in the coming decades (with new technologies as well as current ones) air conditioniing will increasingly be an option for developing countries. Air-conditioned buildings also protect inhabitants from vector-borne diseases, such as dengue [Reiter, P., Lathrop, S., Bunning, M., Biggerstaff, B., Singer, D., Tiwari, T., Baber, L., Amador, M., Thirion, J., Hayes, J., Seca, C., Mendez, J., Ramirez, B., Robinson, J., Rawlings, J., Vorndam, V., Waterman, S., Gubler, D., Clark, G., Hayes, E. Texas lifestyle limits transmission of dengue fever. 2003. Emerg Infect Dis. 9:86-9.] (Paul Reiter, Pasteur Institute)	Air conditioning is unlikely to be available to many in low-income countries that currently experience increased mortality during heat waves. Responded before (NA)
8-815	A	27	30		30	"Adaptation to climate change will require a range of diverse and complex adaptation	Edited. Some of this is included in 8.6.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						strategies" It is not clear to me how the needed adaptation strategies are "complex" given that most of them - at least for the developed world - will build on existing activities and programs. For example, "On their own, few climate related risks are likely to warrant new systems and infrastructures. Rather, efforts to protect Canadians from the impacts of climate change will likely entail revising, reorienting or strengthening public health policies and practices currently aimed at protecting Canadians from air pollution (e.g., smog alerts), poor water quality (e.g., boil water advisories), vector-borne and zoonotic diseases (e.g., monitoring and surveillance), extreme weather events (e.g., emergency health services) and heat waves (e.g., "cooling off" locations)." Peter Berry Health Policy Research Bulletin: Planning Our Future: Reducing the Health Impacts of Climate Change, Forthcoming. What is complex for health sector decision makers, which is not captured in this chapter, is the method by which they are to determine where current health policies and activities are, or will be, inadequate to protect health from climate change impacts, and how policies need to change or be strengthened. In this regard, most health sector decision makers do not understand what "adaptation" is because they are already engaged in many of the activities which the research community is advocating for. This is a major obstacle for facilitating adaptation to the health impacts of climate change. Discussions about "adaptation" needs should be complemented with discussions about how health decision makers can increase their use of weather and climate information in their regular risk managment and planning activities. (Peter Berry, Health Canada)	
8-816	A	27	32			The above report will be available on the web in November 2005. (Rosalie Woodruff, Australian National University)	As of 3/2006, still can't find.
8-817	A	27	32			Amitrano L, Hargreaves R, Page I, Hennessy K, Lee T, Snow M, Winton L, Woodruff R, Kjellstrom T (2005) An Assessment of the Need to Adapt Buildings for the Unavoidable Consequences of Climate Change. A report for the Australian Greenhouse Office, pp. 101. (Rosalie Woodruff, Australian National University)	See above.
8-818	A	27	34			Stating that climate change may affect the rate of urbanization may seem a bit exxagerated. Perhaps this sentence could be rewritten. (Xavier Rodo, University of Barcelona)	Edited.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-819	A	27	40			8.4.3 Rural population does not gives information whether heat wave, food resource or health would become their risk, including time, place, and diversity and influence to production. (Akihiko SASAKI, Fukushima Pref. Authority)	References needed.
8-820	A	27	42	28	30	Again, not my speciality, but the overall tone of the section sounds un-necessarily pessimistic. After all, with a 56% in crease in cereal production and a 90% increase in livestock production, why then throw cold water on the picture by bringing up malnutrition due to drought and flooding! Will these events really be so much more frequent that they need be mentioned here? I have read enough of the climate literature to know that many climatologists do not support this pessimistic scenario. (Paul Reiter, Pasteur Institute)	Because experts in this area are pessimistic about the ability to reach the MDGs, and because malnutrition is a reality in many low-income countries – a reality that is projected to get worse with increasing temperatures.
8-821	A	27	45			Add: and GLOFS in "loss of land through a rise in sea level" and GLOFS (Alexander von Hildebrand, World Health Organisation)	Addressed.
8-822	A	28	3	28	4	Add "s" at end of "area"; insert "due" after "burdens" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-823	A	28	3	28	5	Here is an example of a discussion of the mitigating effects of adaptive strategies, but such discussions appear spottily. Either be comprehensive or drop. (Alan Krupnick, Resources for the Future)	See Chapter 17 for a comprehensive discussion.
8-824	A	28	6	28	9	Another study that projects the impact of climate change on malaria outside Africa and is cited elsewhere in the document is McMichael et al., 2004 (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed.
8-825	A	28	7	28	9	Insert hyphen before "climate" to read "after-climate change"; insert "the" before "2050s"; insert "a" before "range" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-826	A	28	9			"a" is missing before "range" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-827	A	28	13	28	23	This paragraph is a bit confusing. It begins by stating that goals of reducing world hunger with not be meant by the target of 2015 and that food supply will not keep up with population. Then data are presented that show a largge increase in production of food is expected. Some word smithing may be needed to tie these together in a more understandable format.	Edited.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Erin Lipp, University of Georgia)	
8-828	A	28	20	28	21	It is important to know what could be the situation at regional levels. See comment above (page 22) (Michel Boko, Université d'Abomey-Calavi)	See chapter on agriculture.
8-829	A	28	23	28	23	Insert "global" after "overall" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-830	A	28	25			This para would probably be better in the section on drought - there is some repitition. (Rosalie Woodruff, Australian National University)	True, but we wanted to highlight vulnerable populations here.
8-831	A	28	28	28	30	Sentence requires a reference (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Will get.
8-832	A	28	33			8.4.4 Coastal area deals with chronic impact but lacks the aspects of health adaptation of the population in urban area and in small islands. From this aspect, the description should be done on vast health impact in New Orleans, USA, 2005. (Akihiko SASAKI, Fukushima Pref. Authority)	See chapters on small island states and north America.
8-833	A	28	35	28	35	Insert one space between "100" and "m" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-834	A	28	35	28	50	Once again, a litany of disasters, ending up with the frequency and intensity of harmful algal blooms in the North Sea. Where do these blooms occur nowadays? In Portugal? In Morocco? Further south? Are they a major problem, worth mention in this context? Indeed, are all these pessimistic prognostications really worth including? And, with a bit of effort, are there not just as many positive events to mention? (Paul Reiter, Pasteur Institute)	Literature on the positive impacts of climate change and health limited to possible reductions in cold-related mortality and to possible reductions in the range of some VBD.
8-835	A	28	44			Give uncertainties and confidence intervals in sections 8.4.3 and 8.4.4. In page 28, line 44, a reference to Singh et al, 2001 should be added and some of the statements made in this section should be referenced. (Xavier Rodo, University of Barcelona)	Singh et al. does not provide projections on climate change impacts. It is included in the chapter on small island states.
8-836	A	28	44			Mention the study carried out by TERI India on climate change impact and sea level rise on low lying areas in India. More information with me. (Alexander von Hildebrand, World Health Organisation)	Reference needed.
8-837	A	28	49			this phenomenon is also very frequent in the Baltic Sea (and other places?) (Tord Kjellstrom, Australian National University)	Reference needed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-838	A	29	1	29	31	Climate related health issues are not pointed out in these three paragraphs (Michel Boko, Université d'Abomey-Calavi)	Addressed. Section edited to clarify.
8-839	A	29	1	29	31	Again, a litany of doomsday prognostications. I know that many climatologists and other specialists in the physical biosphere are not in agreement with the predictions mentioned. I suggest it is important to emphasize that many are quite likely to be wrong. Again, this is a question of models, and not predictions. Above all, I am uncomfortable with statements that the design capacity of protection levees will not have improved in 100 years time. Even Jules Verne did not write about computers, cell phones, internal combustion engines, nuclear power, insecticides, organ transplants, e-mail, television, radio ... I had better stop! (Paul Reiter, Pasteur Institute)	No response required.
8-840	A	29	9			"decreases" instead of decrease (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-841	A	29	9	29	9	Insert "s" at end of "decrease" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-842	A	29	9			"Assuming sea-level rise is ignored…." Is this reasonable? If not, why report on this work? (Alan Krupnick, Resources for the Future)	This assumption was made by the study authors to differentiate impacts with and without climate change.
8-843	A	29	12	29	13	Regroup the gepgraphic areas for east to west progression i.e., SE Asia, S Asia, Africa Indian Ocean, Africa Atlantic, Southern Mediterranean (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-844	A	29	15	29	15	Insert hyphen after "low" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-845	A	29	16	29	16	delete the article "a" before 18% and replace with the article "an" (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed.
8-846	A	29	16			° is missing between 2 and C (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-847	A	29	16	29	16	Insert degree symbol after 2 in "2C" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-848	A	29	19	29	19	Clarify "57%" - is that of people?	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-849	A	29	24		31	Need to revise based on Hurricane Katrina experience. (Peter Berry, Health Canada)	Addressed.
8-850	A	29	24		31	needs updating. No longer the hypothetical. (Elizabeth Casman, Carnegie Mellon University)	Addressed.
8-851	A	29	24		31	The experience of New Orleans from Hurricane Katrina could usefully be recounted here. (Alan Krupnick, Resources for the Future)	Addressed. See north American chapter.
8-852	A	29	24	29	31	This paragraph is describing a 'what if' for something that has already happended. A discusison of Hurricane Katrina is needed. (Erin Lipp, University of Georgia)	Addressed.
8-853	A	29	24		31	Could the paragraph be outdated with the recent experince with Katrina in New Orleans? (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Addressed.
8-854	A	29	24			Ummm…I guess it doesn't need to be said that you'll be needing to update this para now. Quite prophetic as it is. (Rosalie Woodruff, Australian National University)	Addressed.
8-855	A	29	25			hurricane Katrina !!!! (Tord Kjellstrom, Australian National University)	Addressed.
8-856	A	29	25	29	25	Insert "see" before "Chapter" or as decided for consistent format of cross-references (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-857	A	29	25			this example should be - unfortunately – updated - 36: a definition of “mountain areas” (according to heighth) would be useful. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Section rewritten.
8-858	A	29	26			a space is missing before "m" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-859	A	29	34			8.4.5 Mountains give some information on impacts to people in highlands of Asia and South America. The social living should be compare in a table according to the height less than 1000 m, 1000-2000 m, and 2000 m and over, including population, temperature, death cause, and prevalence of non-infectious diseases. They are more useful to understand the living risk than ecological difference described in other	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						chapters. For example, in Japan only a small population exist in 1000-2000 m area, but many small cities exist in less than 500 m or 500-1000 m in height and people suffer from summer heat and winter cold. Present description gives little information on the height difference of health risk. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-860	A	29	34			Develop this para further using WHO's workshop report on climate change in the Himalayas, December 2005 (Alexander von Hildebrand, World Health Organisation)	Addressed.
8-861	A	29	36		44	Very brief section on mountains, which should be expanded. (Carlos Corvalan, WHO)	Addressed.
8-862	A	29	36	29	44	I can't help feeling that the authors are scraping the barrel here. Given all the talk of the disappearance of glaciers,what are the reasons for suggesting that floods, droughts and erratic rainfall will result? The reference to Kayumov & Makhmadaliev is not included in the text. I am not a specialist in high altitude physiology, but I do know that the body responds to low pressure by producing more erythrocytes with more haemoglobin. I reallly doubt (though again, just a gut feeling) that the quality of life of people living at high altitudes will be impared if temperatures (currently much lower than at sea level) rise even by 5 degC. Last time I was in the Andes, I frozen to the bone! (Paul Reiter, Pasteur Institute)	Addressed.
8-863	A	29	36			Change "the Earth's" to just "Earth's" (Rosalie Woodruff, Australian National University)	Addressed.
8-864	A	29	40			The drying of glaciers also has the serious effect of drying up water supplis for millions of people, e.g. Lima, Peru: see Lynas M (2003), High tide, Picador Paperback Publ., New York (Tord Kjellstrom, Australian National University)	Addressed.
8-865	A	29	40			Specific mention of glacier lake outburst floods would be appropriate. See for example [DA Cenderelli, EE Wohl. Flow hydraulics and geomorphic effects of glacial-lake outburst floods in the Mount Everest region, Nepal. Earth Surface Processes and Landforms. Volume 28, Issue 4 , 385 – 407.] and [R Kattelmann. Glacial Lake Outburst Floods in the Nepal Himalaya: A Manageable Hazard? Natural Hazards. Volume 28, Number 1, 145 – 154.] and also mention the impact of reduced snowmelt in future on	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						surrounding regions as well as on downstream regions (often in other countries). (Rosalie Woodruff, Australian National University)	
8-866	A	29	41			direct impacts "on" floods instead of "with" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed.
8-867	A	29	44			couldn't find Kayumov & Makhmadaliev in references (or on medline). Presumably oxygen transport takes place at body temperature. Maybe this is a misquote. (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-868	A	29	45			the impact of a higher solar radiation on the occurrence of skin diseases (especially skin cancer) remains unmentioned (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-869	A	29	47	29	47	Delete period in title after "8.5" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-870	A	29	47			There are terminology issues with the word "cost." I would prefer the use of "monetary damages," reserving costs for the "cost of mitigation." I would prefer that "benefit" be used for monetized improvements from climate change policy. I would never use the term "damage cost." These usages align better with the economics literature (Alan Krupnick, Resources for the Future)	Addressed, but is common terminology
8-871	A	29	47			8.5 Costs: Health cost is poorly predicted. No information is shown as object, time, evaluation methods, and cost of options to escape the risk. The rate of insurance coverage and the object of insurance are practical risk information on cost issues. A table of costs per sector (country, community, company, individuals, elderly people, and handicapped) will indicate the risk more clearly than DALYs. (Akihiko SASAKI, Fukushima Pref. Authority)	Not yet addressed
8-872	A	29	47			8.5 Cost lacks detail. It may be put next to 8.6 Adaptation or within 8.6. (Akihiko SASAKI, Fukushima Pref. Authority)	Costs largely lack detail because the original text has been cut to under one page.
8-873	A	29	50			The statement that "in these studies, the health costs are underestimated" is very strong, and is only explained in the next sentence. I would prefer "Even so, these studies may underestimate the total health costs because they commonly omit some of the influences of climate on many different health outcomes." (J. Jason West, Princeton University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-874	A	30	10		15	Over what timeframe? (Peter Berry, Health Canada)	Not addressed
8-875	A	30	10	30	24	Choose consistent format for US dollar notation: US$ or USD? (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-876	A	30	10		12	These numbers do not include the gain from extending life in northern countries. (Thomas Moore, Stanford University)	I am not aware of that but it is likely he is right. However, this gain is unlikely to be big.
8-877	A	30	10			Mention the study carried out by TERI India on climate change impact and sea level rise on low lying areas in India.More information with me. (Alexander von Hildebrand, World Health Organisation)	There are a number of detailed studies like this. I am not sure we can mention them all. The claim that flooding studies do not generally include mortality costs remains correct.
8-878	A	30	13	30	15	There is a large literature on the ancillary health benefits of climate change mitigation, even in the last IPCC Assessment Report. This should be referenced here. (Alan Krupnick, Resources for the Future)	Addressed
8-879	A	30	17			the value fo life in the future could possibly be derived from time trends in GDP per capita or other scaling factors. The cost of reduced productivity due to lowered work ability in heat should also be mentioned. (Tord Kjellstrom, Australian National University)	Addressed
8-880	A	30	17	30	21	The VSL being used in these studies should be referenced, as well as how it has been adjusted for income differentials across countries. Whether for equity reasons the VSL should be a global average and how that average should be calculated are very big issues. Perhaps what is written here is too cryptic for the reader not familiar with these issues. (Alan Krupnick, Resources for the Future)	Addressed
8-881	A	30	17	30	23	Another paragraph that appears un-necessary. What is meant by "although climate change likely played a small role in past reductions in malaria incidence…"? What role? The climate has been in a warming trend since the Little Ice Age. How did this warming help reduce incidence? and what "larger role" is projected for the future range etc etc. And wht exactly does "it will be more challenging to identify pro-active adaption options for abrupt climate changes" really mean. Abrupt presumably means	??????????????????????????

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						fairly catastrophic? Will such options be real/practical in a disaster situation? (Paul Reiter, Pasteur Institute)	
8-882	A	30	21		22	I propose to insert the following new text piece: Such globally averaged estimates of "mortality costs" are to some extent meaningful. However more realistic estimates of population health damage in the monetary terms are needed for obtaining more meaningful results and for supporting different decisions. Firstly, morbidity as well as mortality should be considered in the health damage assessment. Besides this assessment should be made on the regional (local) level. Considered health effects themselves and corresponding economic parameters are country (regionally) specific. It is well known that health effects caused by environmental pollutions can depend on background health-demographic data. In this more detailed population health damage assessment not single value of statistical life but a set economic parameters are needed corresponding to a set of population health risk indices. The methodology and tools of health risk assessment including estimation of population health damage in the monetary terms were developed and used in North America, EU, Russia and other countries (see through Internet the respective materials of US EPA, EU ExternE project and, e.g. Abalkina et al., 2005) . For other countries mainly developing one's where the methodology has not yet developed and used the problem can be solved with the assistance of International organizations. One can refer to the activity of IAEA department of nuclear energy on the developing and distributing the methodology and tool SimPacts for environment and health risk assessment from different energy systems (see the Internet site www.iaea.org/ne/). (Vladimir Demin, Russian research center "Kurchatov institute")	Not addressed
8-883	A	30	23	30	29	Are first and second order damage/impacts widely understood? Maybe a brief clarification is in order. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-884	A	30	23	30	30	his paragraph seems ad hoc. Are these estimates of damages large or small? Some benchmarks are needed. (Alan Krupnick, Resources for the Future)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-885	A	30	27	30	29	This study from South Africa is not peer reviewed and with regards to malaria makes rash assumptions. It should not be cited. Other references to costs should also be evaluated critically. (Marlies Craig, Medical Research Council of South Africa)	Addressed
8-886	A	30	28	30	28	"R1 billion per year" ??? Not sure what "R1" means. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
8-887	A	30	28			8.6.1.1-8.6.1.4 should be merged to the action of individuals and the interaction of national policy to them, rather than present description that is not specific to health. These approaches make it possible to evaluate "other aspects of adaptation" which include information quantity, degree of understanding and freedom of action that modify the health impact. Box 8.3 Heat wave strategy is not an adaptation in 8.6.1.5. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. Sections rewritten
8-888	A	30	33	35	27	The document from section 8.6 onward is a jumble of ideas and subjects. There is no clear flow of arguments, it is thus difficult to keep track of what is being discussed. Suggested or cited adaptations should tie up clearly with the evidence, they should be specific, linked to particular diseases and regions. This would be more relevant than listing different levels / scales of responses, since, as per pg 33 line 41, "responses..will often cut across scales". Adaptations, responses and limitations are completely dependent on the health issue in question, and the part of the world you are talking about. This should be made clear in this section. It may make sense to re-organize using similar health-outcome specific headings as in section 8.2, this time discussing "practices, options and constraints" as per section heading 8.6, including discussions currently under the sections on sustainability and key uncertainties (as the latter relate again to particular health outcomes.This would allow both the past successes and limitations to be discussed under their particular health issue. The document should also be more critical re how realistic / possible / effective certain proposed respones / adaptations are bound to be. Again, this differs by health issue and region. (Marlies Craig, Medical Research Council of South Africa)	Addressed. Sections rewritten
8-889	A	30	33			The sub chapter- Adpatation, practices, options and constraints has been very well discussed. (Ramesh Dhiman, Malaria Research Centre)	No comment necessary
8-890	A	30	33	34		Adaptation. Maybe more emphasis would be needed on education and professionals training (health, metoerology, etc.) (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Addressed. Sentence added
8-891	A	30	33			8.6 Adaptation: This paragraph is not good in general. There is no definition and analysis on health adaptation before 8.6. They describe the difference of adaptation by	Addressed. Sections rewritten

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						region and sector, and consider the limit of counteractive options without integration between sectors. Discussion on adaptation should be done before 8.6.1 Approaches. Without analysis of impact assessment, they shift to option selection.The possibility of "no-way adaptation" (adaptation without any action) as "the baseline of adaptation" should be discussed as well as its criteria and certainty. It gives the definition of usual adaptation that "crash and loss when nothing was done" is "not adapted". Conversely, adaptation could be defined as the presence of several options and action to do it successfully to escape fatal condition and various methods to evaluate the level of adaptation determined by options. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-892	A	30	33			8.6 Adaptation is classified as various scales and discussed as options and constraints. Alternative question is which population is vulnerable, and which options are better. Because the heat wave 2003 in Paris deceived the idea of people who regarded living safe in developed countries. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. Included in another section
8-893	A	30	35	31	15	The paragraph is very long-winded, and many of the statements are redundant; all could be condensed into a few sentences. This is a problem with the Chapter: the VERBOSITY OF THE LANGUAGE is excessive and CLARITY OF LANGUAGE is a problem. Much of the text could be condensed and made more readable. For example, is it really necessary to write: "Although considerable public health efforts ....it is clear that more effective interventions are needed"? Surely, in the context of all that has gone before, this is redundant? Moreover, there is no place on earth where dengue control operations appear to have any sustained impact on transmission. As a matter of information: I have just returned from an emergency visit to Singapore, where I served as one of two Expert Consultants invited from overseas to review their current dengue epidemic. For at least 16 years, Singapore was essentially the only place in the world where there was clear evidence of sustained effective dengue control. This year they have had 11500 clinical cases, and the epidemic is likely to last for at least another two months. I will return there in January to advise on new research and approaches to control. (Paul Reiter, Pasteur Institute)	Addressed. Paragraph edited

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
8-894	A	30	35	31	23	8.6 Adaptation P30L35-P31L23: I do not evaluate this part and concepts such as degree of response, active management, and adaptation options which lack clear definition and logical meaning. I hope scales of adaptation, steps of adaptation, and sectors working in adaptation process (going up or down), to which any people can compare the state of adaptation and add information in a form of tables. Sectors such as medical facility, team or specialists may act beyond regional area and countries, and interact each other as the special role and action against health risks and damages. Supporting facility and system as well as private sectors and individualsconcerned will act with medical groups at various level and time. To consider adaptation in a area of meidical needs will include these factors as resource and flow velocity beyond distance and maintaining ability in the prolonged case over weeks and months. (Akihiko SASAKI, Fukushima Pref. Authority)	Sections rewritten
8-895	A	31	2	31	3	and also to clean water and sanitation (Roger Few, University of East Anglia)	Added
8-896	A	31	2			the statement "a prerequisite for adaptation is the universal access to primary health care" cannot be true, even though such access of course should be provided for other reasons. Most of the adaptation opportunities are not dependent on the health care system: improved housing and work-building construction with better natural ventilation and cooling, different work practices to compensate for hot weather, low water use agriculture, sea walls, river flood walls, better urban and rural planning and reduced poverty. (Tord Kjellstrom, Australian National University)	Sentence rewritten and additional information addede
8-897	A	31	6		23	delete. Not convinced there are 3 approaches. Confusing (Elizabeth Casman, Carnegie Mellon University)	Deleted
8-898	A	31	7		23	I don't understand the difference between the second and third approaches to adaptation options. The paragraph from lines 17-23 is particularly unclear. If one is identifying adaptation options due to a sudden and/or large change in prevailing weather conditions (e.g., double the number of heatwaves during a summer), how is this different from evaluating public health interventions in the context of current climate variability? Are these sudden and/or large changes the same as "abrupt" changes referred to in line 23? Also, the Malaria example and developed countries is a poor example as most	Deleted

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						researchers would agree that only a serious decline of public health infrastructure in developed countries would result in a significant increase in cases of Malaria. (Peter Berry, Health Canada)	
8-899	A	31	13			Add "and practices" following "programs". (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed
8-900	A	31	22	31	22	delete the article "the" before the word "determining" (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Deleted
8-901	A	31	22			no "the" before determining (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed. Deleted
8-902	A	31	23		23	"It will be more challenging to identify pro-active adaptation options…." It would be challenging to identify effective reactive adaptation options in a case of abrupt climate change as well, so suggest deleting "pro-active". (Peter Berry, Health Canada)	Addressed. Deleted
8-903	A	31	26			Section 8.6.1 has an odd balance of material and use of examples (e.g. 8.6.1.2 implies that the only national level response is early warning) and the rationale for what is included is not necessarily clear (some examples are not explicitly related to climate change). 8.6.1.4 and 8.6.1.5 are both particularly short (despite their impoprtance) - there are many further examples possible for both e.g. health system preparedness plans or health facility design to withstand hazards. (I realize there are severe space limitations but at present the section has a rather 'edited-down' feel) (Roger Few, University of East Anglia)	Not enough space for a comprehensive discussion
8-904	A	31	26	31	26	Delete period in title after "8.6.1" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-905	A	31	26			8.6.1 Approaches at different scales discuss surveillance, early warning system, living methods and environment, behavioral adaptation according to the levels (WHO/UN, country, region, and individuals). However, they do not indicate adaptation level shown in a table. (Akihiko SASAKI, Fukushima Pref. Authority)	Not enough space for a comprehensive discussion; table in TAR
8-906	A	31	28			why not mention R&D and direct aid? (Elizabeth Casman, Carnegie Mellon University)	Added

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
8-907	A	31	34	31	35	"Survceillance programs, in particular surveillance systems, will be needed..." (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-908	A	31	34	31	35	Delete "Surveillance programs" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-909	A	31	35	31	35	delete "In" between "progams" and "particular" and then replace with "in" (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-910	A	31	35			"In" to be replaced by "in". (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-911	A	31	49	32	24	Section 8.6.1.2 - Including an example of a functional heat wave early warning system (i.e. Portugal's ICARO) is needed here as well as lessons learnt from the 2005 hurricanes in the US. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Added heatwave reference; not enough space in this section to discuss Katrina
8-912	A	31	49	31	49	Move section 8.6.1.2 title line to top of next page for clarity (Kim Knowlton, Mailman School of Public Health, Columbia University)	Will have to wait for final layout
8-913	A	32	1	32	9	I am interested to learn what early warning systems have been implemented for malaria outbreaks "based on climate annd environmental projections". I am a participant in a project in Niger (MIT/Harvard/CERMES/Institut Pasteur) and am part of a proposal international propsal; both seek to understand the relation between climate variables and transmission in areas of epidemic malaria. This is an important point: "outbreaks" occur in regions where malaria is unstable (again, this should have been explained at the start of the discourse). Transmission in areas of stable transmission is totally predictable, by definition, and requires no warning. Transmission in much of sub-Saharan Africa is stable. The important issue is: what factors result in epidemic transmission in areas of unstable transmission. In some areas they are understood but in many, there is no clear answer, and many non-climatic factors may be involved. This is a very important question, and cannot be answered by modelling, or at least, not by modelling alone. The next sentence is surely un-necessary? "The effectiveness … depends on ….and a disease prediction model …. And timely". And again, "an early warning of a potential outbreak ...specific intervention plan" is un-necessary, not to mention unlikely,	References added

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						(Paul Reiter, Pasteur Institute)	
8-914	A	32	1	32	24	8.6 Adaptation : In case of years of impact, what kind of adaptation is possible either within a country or beyond? IF several regions and countries had serious impact, WHO can help them? The adaptation problem may be not undernutriton and death but war (physical or ecnomic) and terrorism including illegal migrants. (Akihiko SASAKI, Fukushima Pref. Authority)	This assumes that WHO has the financial and technical resources to help; climate change may overwhelm response capabilities
8-915	A	32	17			need to justify not very large. Table 12.5 suggests otherwise. (Geoffrey Levermore, Manchester University)	Deleted
8-916	A	32	22	32	24	There should be a reference here; an interesting observation, but surely hard to document? (Paul Reiter, Pasteur Institute)	Reference is Hamnett, as stated in the paragarph Reference to be added
8-917	A	32	23	32	23	Consistency throughout with word "micronutrient", whether to hyphenate or not (Kim Knowlton, Mailman School of Public Health, Columbia University)	Deleted
8-918	A	32	25			why not mention infrastructure investment: education, transportation, communication, flood control, public health, water supply and sanitation etc.? (Elizabeth Casman, Carnegie Mellon University)	The stakeholders did not recommend these
8-919	A	32	27	32	27	Insert hyphen after "Community" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-920	A	32	27			See work by Kris Wernstedt (RFF) and others for perhaps some better examples of community level responses, in this case, hydroelectric planning. (Alan Krupnick, Resources for the Future)	This is not directly related to health
8-921	A	32	29			Examples form other countries in urban populations could be included, e.g. response in France ot heat wave, response to Katrina floods, etc. (Tord Kjellstrom, Australian National University)	Not enough space for a comprehensive discussion
8-922	A	32	37	32	38	better: "adaptation measures include taking bottled...." (Thomas Kistemann, Institute for Hygiene and Public Health)	Edited
8-923	A	32	41			Mention the FAO supported IPM programme, more at www.ipmcommunity.org. Also mention the UNEP/FAO/WHO supported community based participatory integrated pest and vector management initiatives in Sri Lanka, workshop report February 2006. More information with me. (Alexander von Hildebrand, World Health Organisation)	Not enough space for a comprehensive discussion

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
8-924	A	32	49	32	49	Insert hyphen after "Individual"; move title line to top of next page for clarity (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-925	A	33	0			It would be useful in all of section 8 to be given some idea of how much adaptation can mitigate damage and what the cost of adaptation might be. Otherwise this section seems a bit empty. (Alan Krupnick, Resources for the Future)	Don't have the data; this will be included as a research recommendation
8-926	A	33	1		6	Adaptation at the individual level is critical and as such, this section should be expanded. Many national, regional and community adaptation policies and activities will be uneffective if individuals do not change their behaviours to protect themselves (e.g., smog alerts, heat alerts, preparing for extreme weather events, mosquito repellant for West Nile Virus etc). Should indicate the importance of the individual in this regard and discuss some current challenges to individual adaptation (e.g., poor risk communication, poor awareness etc) (Peter Berry, Health Canada)	Addressed. More information added
8-927	A	33	1	33	6	In USA air conditioning use have been found to reduce dengue transmission risk [Texas Lifestyle Limits Transmission of Dengue Virus 2003 Paul Reiter, Sarah Lathrop, Michel Bunning, Brad Biggerstaff, et al. Emerging Infectious Diseases 9: 86-89]. Also it could be related to 12-17 pg 35; but only in rich countries. (Anibal E. Carbajo, Universidad de Buenos Aires)	Not enough space for a comprehensive discussion
8-928	A	33	2	33	4	Refer to specific built-environment adaptations after "by modifying environments" e.g., installation of air conditioning or passive ventilation (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-929	A	33	5			Important to note again the impact of heat on physical exercise activity, childrens play and work output. (Tord Kjellstrom, Australian National University)	Some information added; not enough space for a comprehensive discussion
8-930	A	33	10			"are" instead of "is" or "is the adaptation" (Thomas Kistemann, Institute for Hygiene and Public Health)	That is not correct
8-931	A	33	10	33	10	On p.8 line 44, word was hyphenated as "cross-cutting, please make consistent (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-932	A	33	10	33	14	8.6 Adaptation : I hope more detail and discussion as a table. (Akihiko SASAKI, Fukushima Pref. Authority)	Not enough space for a comprehensive discussion; table was included in TAR

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
8-933	A	33	12	33	12	Add one space before "However," (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-934	A	33	18	33	22	In Box 8.3 and throughout, be consistent: do not hyphenate "heat-wave" (see p.34 line 5 & elsewhere in Chapter 8 where it is not hyphenated); lower case initial "h" in "European Health" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Will be done in final edit of chapter
8-935	A	33	23	33	23	Transpose comma and quotation to read "unforeseen," (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-936	A	33	25	33	25	Substitute "understaffed" for "under strength" (Kim Knowlton, Mailman School of Public Health, Columbia University)	We actually mean under staffed
8-937	A	33	29	33	29	Delete comma after "plans" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-938	A	33	30	33	30	Section 8.6.1.5. A description of the first version (2004) of the French Heat Health Watch Warning System is presented in : Laaidi, K., M. Pascal, M. Ledrans, A. Le Tertre, S. Medina, C. Caserio, J.C. Cohen, J. Manach, P. Beaudeau, P. Empereur-Bissonnet, 2004: Le système français d'alerte canicule et santé (SACS 2004): Un dispositif intégéré au Plan National Canicule. Bulletin Epidémiologique Hebdomadaire, 30-31/2004, pp.134-36 So it should be useful to add this reference in the text (line 30/page 33) after "warning system (Laaidi et al., 2004)". (Pascal EMPEREUR-BISSONNET, National Institute of Public Health Surveillance (InVS))	Addressed
8-939	A	33	31	33	31	Add one space before "Other"; lower case m on "Ministries" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-940	A	33	33	33	33	Insert hyphen after "heat" to read "heat-health" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-941	A	33	39			8.6.2 Integration of responses such as "win-win" story and ecology movement does not indicate efficiency and risk reduction as long-term adaptation. The effectiveness of assignment of responsibility and the rules for possible lack and escape from it should be assessed to demonstrate the long-term adaptation specified as integrity and stability of systems and technology (in contrast to 8.7 Sustainability of economy, population, and	Addressed. Section rewritten

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						resources). (Akihiko SASAKI, Fukushima Pref. Authority)	
8-942	A	33	41	33	49	The paragraph doesn not really make explicit how these responses relate to scales. (Roger Few, University of East Anglia)	Addressed. Paragraph rewritten
8-943	A	33	41	33	49	8.6 Adaptation : This is largest factors of adaptation. But, opportunistic "smart mitigation" will be no use actually. I hope serious (tragedic) consideration like Lloyd's. (Akihiko SASAKI, Fukushima Pref. Authority)	I hope that smart mitigation is effective; only the future will tell
8-944	A	33	45	33	45	Delete "to" after "such as"; insert hyphen after "heat" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-945	A	33	47			for further details see Chap 6 WGIII (Geoffrey Levermore, Manchester University)	Will incorporate after next draft from WGIII
8-946	A	33	48			Is "energy efficiency" the correct phrase here? Not something architectural? (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-947	A	34	2		8	Is the reference here to greenhouse gas mitiation targets? (Peter Berry, Health Canada)	Addressed
8-948	A	34	11			8.6.3 Limits to adaptation is cited separately. I considered to combine 8.6.2-8.6.4 and to describe 8.6.3 as a part of 8.6.2. Adaptation limits could express the impact velocity and diversity, and the extent of saved population. Then, people can understand the meaning of adaptation more strictly and comparatively with other countries and regions. Local cause-effect relationship needs to be expressed practically and selected for lowering risk of next generation. It may change sexual behavior of African people suffering from HIV. (Akihiko SASAKI, Fukushima Pref. Authority)	Not enough space for a comprehensive discussion, therefore have general discussion on limits separately
8-949	A	34	13	34	50	This whole page is repetition of statements made several times before, and a very long-winded statement at that. I hate to be so disparaging, but I believe the whole textcould be condensed into a short paragraph. (Paul Reiter, Pasteur Institute)	Addressed. Page rewritten Section 8.6 has been condensed
8-950	A	34	13	34	19	8.6 Adaptation : Please describe views other than barriers which are based on the aspects of developing countries. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. Added
8-951	A	34	17	34	19	This statement is very dangerous, for policy makers and decision makers think in term	Addressed.

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						of mandate duration. It could mean that there is nothing to do for poverty alleviation or reduction in the short and mean terms!!! (Michel Boko, Université d'Abomey-Calavi)	Statement changed
8-952	A	34	18		19	"Public awareness is needed to mobilize resources" How exactly will public awareness mobilize resources for adaptation activities in developing countries - this does not seem to have occurred through UNFCCC processes as adaptation funds for developing countries are still quite limited. (Peter Berry, Health Canada)	Addressed. Deleted
8-953	A	34	21		28	Since vaccines for malaria and dengue may never exist, this paragraph is misleading. Delete the whole thing. (Elizabeth Casman, Carnegie Mellon University)	Addressed. Deleted
8-954	A	34	21			The concept of "barriers of climate change" is problematic. Effectiveness is certainly important, but it is not like this is an "either-or" proposition. Rather there are degrees of effectiveness and degrees of limitations, most often delineated by the cost of implementing various approaches. So, I would say that there is a range of approaches to adaptation, some more cost-effective than others. This section (8.6.3) seems not to have much of a point. I would want to see a discussion of win-win situations as well as lose-lose. For instance, control of air pollution is likely to reduce GHGs, as are attempts to increase energy security. I see that relevant examples come later in this chapter, but I am not clear why or what the underlying organizational logic is (e.g., why are these examples under a section (pg 35) titled "sustainable development"?). (Alan Krupnick, Resources for the Future)	Addressed. Section rewritten
8-955	A	34	21	34	8	This problem of vaccination is controversial. References should be indicated. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed. Deleted
8-956	A	34	23	34	28	This section belies a lack of familiarity with the subject. Several dengue vaccines are under testing at the present time. Malaria vaccines are much futher into the future, if ever. A highly effective, very safe Yellow Fever vaccine has been available for several decades. The problem is not the vaccine, it is the implementation of vaccination campaigns. During the colonial period, and for some years afterwards, the French government effectively vaccinated all vulnerable populations in French West Africa. Today, very few people are vaccinated, until an epidemic is under way.	Addressed. Deleted

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						(Paul Reiter, Pasteur Institute)	
8-957	A	34	27			"as" after "such" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed. Deleted
8-958	A	34	27	34	27	Insert "as" before "special" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed. Deleted
8-959	A	34	30	34	39	Among local constraints, there are cultural and even religious and ones. (Michel Boko, Université d'Abomey-Calavi)	Addressed. Added
8-960	A	34	30	34	39	increasing awareness and knowledge diffusion are of fundamental importance. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed. Added
8-961	A	34	31	34	32	I would substitute the following for the sentence that startrs with "Adaptation measures…": Some adaptation measures may have DETRIMENTAL consequences. IN THESE CASES, LOCALITIES WILL HAVE TO MAKE THEIR OWN DETERMINATIONS REGARDING THE CORRECT BALANCE BETWEEN PUBLIC HEALTH AND ENVIRONMENTAL WELFARE BASED ON THE BEST KNOWLEDGE AVAILABLE TO THEM." (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed. Information added
8-962	A	34	39			This comment on cultural difference could perhaps be made slightly stronger. Some cultural practices and 'social customs' may undergo massive change if extreme adaptation strategies forces communities to leave land they have lived on for thousands of years. These massive cultural shifts are likely to impact the overall 'health' of these communities. For example many residents of Tuvalu (and other low lying Pacific Islands) are already planning adaptation strategies which include immigrating to New Zealand. Refs Barnett, J 2001 Security and Climate Change working ppr #7(Tyndall Centre for Climate Change Research). This point brings issues of equity into discussion and would be a useful addition to concerns of limits of adaptation in this para. Ref Ikeme, J 2003 'Equity, environmental justice and sustainability: incomplete approaches in climate change politics' in Global Environmental Change 13 (2003) 195-206 Ref Thomas, D and C Twyman 2005 'Equity and justice in climate change adaptation amongst natural–resource-dependent societies' in Global Environmental Change 15 (2005) 115-124.	Addressed. References added and statement edited; Nnt enough space for a comprehensive discussion

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						(Donna Green, CISRO)	
8-963	A	34	46			It might be helpful to insert a statement and corresponding reference here about the technical trade-off between equity and efficiency in the distribution of health resources. E.g Gilson L. In defence and pursuit of equity. Soc Sci Med 1998;47:1891-6 (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed. References added
8-964	A	34	48		50	In fact, many of the policies needed to adapt to future and current climate change are already in use in many jurisdictions and to different degrees (e.g., surveillance, public alerts, health emergency preparedness, vaccines etc). This is why discussions about "adaptation" can be so confusing for public health officials. The text here implies that communities will need to identify mostly new actions to protect human health which is false. In fact, they will need to begin, or further integrate weather and climate change related data (where available) about health risks into their current and future public health risks management activities and planning - this will likely result in revising, re-orienting or expanding already existing policies (e.g., has a community that expands its health emergency preparedness measures to include greater trauma counselling developed a new adaptation action?) Of course, given the state of health systems in some developing countries adaptation may indeed mean the development of new policies and programs, but this will be much less the case in developed countries. We need to get the messaging and guidance for health decision makers right or they will not and cannot proceed with taking action to protect people from climate change risks. (Peter Berry, Health Canada)	Addressed. Section rewritten
8-965	A	35	4			8.6.4 Health implications of adaptation strategies are vague in meaning. The rationality to deal with the issue depends on whether it causes large difference in risk and limits selective options. A table may make the comparison clear. Time factors and its management are not specific to this paragraph, but common to the entire health chapter. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. Section rewritten; not enough space for a comprehensive discussion
8-966	A	35	6			insert "negative" before "consequences" (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-967	A	35	6		17	Maybe another line on energy use and air conditioning or heating homes could be useful here (Alvaro Osornio-Vargas, Programa Universitario de Medio Ambiente, UNAM)	Addressed

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
8-968	A	35	6	35	27	8.6 Adaptation : This is off focused. Responsibity and role of policy should be written in the context of prefious part (8.6.2-3). (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. Section rewritten
8-969	A	35	8	35	12	this is a good example of side effects of development programme. However it is not directly related to climate change. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed. Sentence added to clarifiy.
8-970	A	35	14	35	14	Two other recent & salient references on air conditioning use: O'Neill MS. 2003. Air conditioning and heat-related health effects. Appl Environ Sci Public Health 1(1):9-12. O'Neill MS, Zanobetti A, Schwartz J. 2005. Disparities by race in heat-related mortality in four US cities: the role of air conditioning prevalence. J Urban Health 82(2):191-197. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed. Good references, but not relevant to point
8-971	A	35	14	35	17	The suggestion that we use air conditioning in Europe is immediately qualified by the down side: greenhouse gas emission, increased urban heat island effect, and "reduced acclimatization". I don't believe that 'reduced acclimatization' is a problem in the United States? This is another problem with the chapter: when discussing an issue for which their are arguments both for and against, there should be an attempt TO STATE THE ADVANTAGES AGAINST THE DISADVANTAGES. Granted, this is often difficult, but it should be not be avoided for that reason. For example, the text could read: "Energy expenditure on air conditioning during summer exceeds expenditure on winter heating in many parts of the United States. xxx million people in the United States live in air-conditioned homes, work-places and vehicles, enabling them to live and function effectively in summers that are considerably warmer and more humid than in many tropical regions, and certainly far hotter than in the weeks of the 2003 heat wave that affected some countries in the west of Europe. At present, most of the electrical energy for air-conditioning is derived from fossil fuels, producing large tonnages of carbon dioxide. Nevertheless, air conditioning is a technology that has enabled large regions of the US to develop and prosper; the rapid growth and improved living conditions of many of the southern States would have been inconceivable without it. Moreover, although there are health problems associated with air-conditioning, such as Legionnaires Disease and other respiratory conditions, they must be weighed against the health benefits: in addition to elimination of the physiological problems associated with temperature and humidity stresses, these include reduced prevalence of infection—	Addressed. Section rewritten

Chapter – Comment	Batch	From Page	From Line	To Page	To Line	Comments	Notes of the writing team
						particularly of the skin—plus psychological and behavioural problems (including violence) associated with prolonged heat stress. Lastly, a study during a dengue outbreak in Laredo/Nuevo Laredo, a city that straddles the Texas border, demonstrated that populations of the mosquito Aedes aegypti were considerably higher on the Texas side, whereas dengue incidence was much higher on the Mexican side. The difference was attributed to a difference in contact with the vector in air-conditioned buildings (Reiter et al. 2003). With the develpment of cheap, non-polluting methods of energy production, and increases in living standards around the world, it is conceivable that air conditioning will provide major health benefits, particularly if climates continue to warm. (Paul Reiter, Pasteur Institute)	
8-972	A	35	15	35	15	Delete "in Europe" since possible feedbacks between energy use for cooling & increased GHG emissions applies anywhere (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-973	A	35	16		16	Add "and air pollution" after "greenhouse gas emissions…." (Peter Berry, Health Canada)	Addressed
8-974	A	35	20	35	20	Insert "see" before "Chapter 3" or consistent format (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-975	A	35	27	5	27	Suggest inserting "and adaptation" after "control" to broaden point about applications in developed vs. other settings. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed. Sentence deleted

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-975	A	35	27	5	27	Suggest inserting "and adaptation" after "control" to broaden point about applications in developed vs. other settings. (Kim Knowlton, Mailman School of Public Health, Columbia University)	Eds
8-976	A	35	30	37	17	This section 8.7 is not well structured. The introduction describes mostly different adaptation examples; so, it seems better placed in section 8.6. Next a case is discussed, but there is no a clear message from the text. One gets the impression that changing fuels should be the only action to be taken, while no attention is paid to the urbanization problems, poverty, inequalities in the access to public services ... and other factors which are key for a sustainable development. In my view, this section should be completely rewritten. (Ricardo García-Herrera, Universidad Complutense de Madrid)	To be discussed in Merida
8-977	A	35	30			8.7 Sustainable development: I cannot understand to describe clean energy 8.7.1 here. To include "promotion" into risk assessment is questionable either as policy message or evaluation methods. It should be separated as cross cutting issue with WGIII. There are many references but they give no answer to the basic issues. The questions are whether global health levels and the population size and quality would decrease, and whether wars would increase. The discrimination points of them should be proposed in number, place, time, and the reasons. The need of sustainable development is not self-evident. What is the sustainable development, and what contents people could expect as consensus? Large difference exists about energy policy of USA, ex-nuclear policy of Germany, and strongly production-oriented policy of China. For example, people want to know how much the consumer movement not to buy Chinese products would influence on global environment and their health risk. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed. I agree
8-978	A	35	30			8.7 Sustainable development is too opportunistic. Practical description will help people to understand the specific vulnerability of their living system. The risk should be compared if specific combinations of religion, season, war, and infectious outbreak increase the risk, and compared between people with non-infectious disease and without, which is the major bias of disease burden both in developed and developing countries. War and resource depletion are not discussed as health risk due to climate change. The possible health impact due to migration beyond national boundaries and	Space?

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						continents is not discussed practically. (Akihiko SASAKI, Fukushima Pref. Authority)	
8-979	A	35	32	35	34	In the near to medium term (i.e., for most of the remainder of this century), the contribution of CC to even climate-sensitive public health problems (e.g., malaria, dengue, diarrhea), will be smaller than that due to other factors (Goklany 2000, 2003, 2005). Over this time frame, it would be much more effective (and economic) to address the total (CC plus non-CC related) problems than through efforts to address only the CC-related components. There are two general approaches, which are not mutually exclusive, whereby this can be achieved: (a) reduce vulnerability to these problems (because they are urgent today and might be exacerbated by future climate change) and (b) broadly advance sustainable development (particularly in developing countries since that would generally enhance their adaptive capacity to cope with numerous problems that currently beset them, including climate-sensitive problems). But meeting the MDGs is what the second approach is all about. Thus, for the next several decades, it is more likely that the failure to meet the MDGs will make it harder to cope with climate change, rather than that CC will inhibit sustainable development (Goklany 2005). It is important to know which is the cart, and which the horse. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Addressed. Ok needs restructuring
8-980	A	35	32	35	35	What exactly does "undermine the three pillars of sustainable development" mean? It should be explained. Also, "put at risk our on earth life sustaining systems" does not sound like science to me. (Paul Reiter, Pasteur Institute)	Accepted
8-981	A	35	32	36	27	Is this is really part of the "Human Health" chapter in the context of climate change? (Paul Reiter, Pasteur Institute)	
8-982	A	35	33			name the 3 pillars (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-983	A	35	33	35	33	Briefly mention what the 3 pillars of sustainable develpoment are (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-984	A	35	34			no "our" between "risk" and "on" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-985	A	35	34			. is missing after the bracket	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Thomas Kistemann, Institute for Hygiene and Public Health)	
8-986	A	35	34	35	34	Insert semicolon after "(Health Canada, 2003)"; insert hyphen after "on" to read "on-earth" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-987	A	35	35		38	Health doesn't contribute to extreme poverty. Poor health does. Fix sentence. (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-988	A	35	35	35	35	Make notation consistent thru chapter, in some places "Millenium Develpoment Goals" spelled out & in other places "MDGs" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-989	A	35	42		44	This sentence is much too alarmist. It is extremely unlikely that climate change will cause irreversible damage to life support systems. (Thomas Moore, Stanford University)	Addressed
8-990	A	35	43			"life support system" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-991	A	35	45			insert "adversely" before "affected" (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-992	A	35	49			The general argumentation here about the relationship between climate change, human health and sustainable development is very confused in these sections. It is not clear whether it is being suggested that climate change will impacts human health and therefore impede sustainable development (e.g., more deaths and illnesses retard economic development or environmental protection) or that climate change will have direct effects on the environment (and possibly economy) and therefore impede sustainable development or that climate change simply means people in developing countries are more vulnerable to impacts. There are many important messages here but they need to be restructured so that the argumentation is clear. (Peter Berry, Health Canada)	Make clearer but it is both
8-993	A	35	49	35	50	I am not sure that this statement is true. We don't know that in the future because of increasing adaptive capacity, the share of climate change related diseaes may not diminsh. Note that virtually none fo the studies have accounted fro change in adaptive capacity. See Goklany (2005a). Iwould start this para with the first new sentence on the following page.	He is incorrect

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Indur Goklany, Office of Policy Analysis, Department of the Interior)	
8-994	A	35	49	35	50	Delete one extra space after "change" in line 49; delete "s" at end of "illustrates" in line 50 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-995	A	36	1		27	Of course, it needs to be recognized that first step for adaptation for developing countries is meeting their basic public health and health sector needs. However, there is a danger in providing a long list of priority current basic immediate social and health care needs as a pre-requisite for adaptation in that the goal turns out to be a bit overwhelming. Is it likely that all of these needs will be met in the short-term? If they are not, should developing countries and supporters from developed countries give-up on adaptation efforts? If all of the goals are, or cannot be met in the short-term what are the priority actions that would be most protective of climate change and health impacts? (Peter Berry, Health Canada)	Good point
8-996	A	36	1	36	1	Change cross-reference "2" to "1", should read "(see 8.2.1)." (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-997	A	36	2	36	2	delete hyphen in "ill-health" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-998	A	36	8			"programs" instead of "programmes" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-999	A	36	12			no comma before "and" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-1000	A	36	12	36	12	delete comma before "ensuring" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1001	A	36	15		17	"A limitation to the involvement…..are the several other current basic immediate social and health care needs which press governments to take action". This misses the point that adaptation should not be differentiated from regular health and social programs and policies. Would we not want governments to use weather and climate information, to whatever degree possible given technical knowledge and resources, when they develop these basic social and healthcare policies (e.g., new sewage treatment facilities, infectious disease control etc)? Also, these passages imply that all developing countries are at the same level of social, economic and environmental development and so have	Yes this needs reflection and discussion and he is correct

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						very similar needs in this regard. My understanding is that this is not the case - as such, opportunities for adaptation would be quite different as well. This needs to be captured in the argumentation. (Peter Berry, Health Canada)	
8-1002	A	36	15		18	make subject and verb agree in number (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-1003	A	36	15	36	15	Delete extra space before "implementation" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1004	A	36	17			a comma is missing after "context" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-1005	A	36	17	36	17	Insert comma after "context" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1006	A	36	19	36	19	delete "especial" between the words "deserve" and "attention" and then replace with "a special"… (Julius Fobil, School of Public Health, College of Health Sciences, University of Ghana)	Addressed
8-1007	A	36	19			a comma is missing after "countries" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-1008	A	36	19			"special" instead of "especial" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-1009	A	36	19	36	19	delete "e" to make "especial" read "special" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1010	A	36	20	36	20	What does mean the concept “ethnically differentiated”? (Michel Boko, Université d’Abomey-Calavi)	Addressed
8-1011	A	36	20			"differentiated" doesn't quite convey discrimination (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-1012	A	36	20			Add mountain dwellers as part of the most vulnerable groups (Alexander von Hildebrand, World Health Organisation)	Addressed.
8-1013	A	36	21	36	21	Insert "and" before "natural resources-dependent…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-1014	A	36	21			communities instead of “communites”. (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-1015	A	36	25			an example might clarify this sentence. (Elizabeth Casman, Carnegie Mellon University)	This would require a whole box?
8-1016	A	36	26	36	26	Delete one extra space before "resources" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1017	A	36	29			How much confidence do we have that variability will increase? Is this indicated by recent trends? (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Not relevant here as we do not state that we have confidence in increase of climate variability
8-1018	A	36	30	36	30	Delete "be" and "ing" in "depending", to read "…will very much depend on…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1019	A	36	31	36	34	There is an unfortunate misperception on the part of some of the public that the Indian Ocean tsunami was caused by climate change. While this text is correct in using lessons from that disaster in its assessment of the risks of cliamte change, a clear statement is needed that the tsunami was not a climate-related related event, but offers useful lessons for evaluate climate risks. Large scale climate events, such as tropical cyclones or floods, occur on a much slower timescale, with much more opportunity for warning, than do tsunamis. (Lenny Bernstein, IPIECA)	Do not think this is needed?
8-1020	A	36	31	36	32	The tsunami of 2004 did not kill millions of people. The deaths were in the range of 70,000 (Andrew Githeko, Kenya Medical Research Institute)	Typo
8-1021	A	36	32			Tsunami killed millions of persons: Need to correct and supply a reliable reference. (Carlos Corvalan, WHO)	Typo
8-1022	A	36	32	36	32	Delete "has" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Typo
8-1023	A	36	32	36	32	The tusunami did not kill 'millions'. USGS estimate = c275,000. (Christopher Thomas, Durham University)	Typo
8-1024	A	36	32			Correct: The tsunami killed hundred of thousands, not millions (Alexander von Hildebrand, World Health Organisation)	Typo
8-1025	A	36	34	36	34	Move comma from before "e.g." to after "e.g."; add an "s' to "flood" to read "…e.g.,	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						floods, …" (Kim Knowlton, Mailman School of Public Health, Columbia University)	
8-1026	A	36	36			"most" societies? Too quantiative. Try "many" (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-1027	A	36	39	37	16	Presumably the issue of climate protection through clean energy is one of the core messages of the IPCC? Tagging on a paragraph or two at the end of the chapter on health is unsatisfactory. Presumably this issue will be discussed in detail elsewhere in the report. (Marlies Craig, Medical Research Council of South Africa)	Addressed. I agree
8-1028	A	36	39			This para should come earlier in the text, please. It is paramount, but it looks a little peripherical here. (Alexander von Hildebrand, World Health Organisation)	Not possible
8-1029	A	36	43	36	43	Substitute "from" instead of "for" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1030	A	36	43		46	There is a distinction made that climate mitigation reduces PM through co-emitted pollutants, with consequent benefits, but that the co-benefits for ozone come only through methane mitigation. In fact, ozone can also decrease due to co-emitted pollutants, even if co-benefit studies have not emphasized ozone. (This is implicitly in West et al 2004, since we accounted for emission reductions of ozone precursors, even if we didn't calculate benefits). I would prefer "Climate policies that reduce fossil fuel combustion ... often also reduce emissions of co-emitted pollutants, which can improve air quality (such as for PM and ozone) and directly benefit health. Such air quality improvements have been linked to quantifiable benefits. In addition, actions to reduce methane emissions will decrease global concentrations of ozone." Also, rather than Barker (Chap. 9), I suspect that you want to reference Hourcade (Chap. 8) which I think did a good job of reviewing the literature on co-benefits. (J. Jason West, Princeton University)	Sentences we have could be clearer
8-1031	A	36	45			We have a new paper that is currently under review and focuses specifically on health: West, J. J., A. M. Fiore, L. W. Horowitz, and D. L. Mauzerall (submitted) Mitigating ozone pollution with methane emission controls: global health benefits, Proceedings of the National Academy of Sciences.	Ask for

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(J. Jason West, Princeton University)	
8-1032	A	36	49			Mention the need to reduce climate forcing GHG emissions in developed economies, as a priority measure. (Alexander von Hildebrand, World Health Organisation)	Opinion based statement – no
8-1033	A	36	50	36	50	delete 2 commas (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1034	A	37	0			8.8 Key uncertainties are not concrete. (Akihiko SASAKI, Fukushima Pref. Authority)	Ok
8-1035	A	37	1	37	1	Insert "to" after "contributing" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1036	A	37	4		5	For improved clarity, try "Total human exposures to these pollutants within homes are large in comparison with outdoor air quality exposures." (J. Jason West, Princeton University)	No
8-1037	A	37	6		16	Causal relationship between biomass fuel and pneumonia is not demonstrated yet. Can only say biomass burning increases the risk of lower respiratory infections in children. (Elizabeth Casman, Carnegie Mellon University)	This is not true the work done by Smith proofs the association
8-1038	A	37	6			Are these CIs around a point estimate? I did not find this in the reference provided (Carlos Corvalan, WHO)	This is in references?? No they are not around point estimates
8-1039	A	37	9	37	9	Delete "Thus" at beginning of sentence since preceding argument does not support the statement (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1040	A	37	17		18	What about possible human health implications of greenhouse gas mitigation technologies (both benefits and risks)? For example, We must understand the health benefits and costs of new technologies or processes introduced to reduce greenhouse gas emissions. These measures can offer important health co-benefits but also have unanticipated health effects (risks to health from increased ethanol use, carbon capture and storage, clean coal technology etc). Greenhouse gas reduction initiatives may provide opportunities to improve the health by contributing to more sustainable and liveable communities which are supportive of healthy lifestyles. Governments are spending billions of dollars on climate change initiatives which will likely include such things as renewing urban infrastructure (e.g., bicycle paths, public transit, etc) energy	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						efficiency for large industry) greening communities (e.g. planting of trees, water treatment etc) and education and awareness (e.g., active living to reduce car use). If design with human health and well-being considerations in mind, a number of these initiatives would be supportive of efforts to achieve health gains in a variety of health areas including , children's environmental health, air / water quality, mental health, active living/obesity, seniors health, and the health of northern populations. (Peter Berry, Health Canada)	
8-1041	A	37	19	37	44	I find that the section 8.8 is not properly organised and that the content is very poor. It provides a non-systematic and vague description of uncertainities, but without discussing which could be the most relevant sources in the uncertainty to assess impacts of climate change in human health. No new information is provided. In my view, it needs to be written again. If a general discussion can not be done, some case examples could be used, such as the impacts of high temperatures on mortality. García-Herrera et al 2005 provides an example of these uncertainties. García-Herrera R., J. Díaz, R.M. Trigo and E. Hernández, 2005. Extrem summer temperatures in Iberia: Health impacts and associated synoptic conditions. Annales Geophysicae 23, 239-251. (Ricardo García-Herrera, Universidad Complutense de Madrid)	Addressed.
8-1042	A	37	19			Section 8.8. This would be a good place to sum up what the authors feel are the most likely health problems associated with climate change and those most likely to be ameliorated by actions. Otherwise, there will be no take home message. (Alan Krupnick, Resources for the Future)	Session needs redrafting
8-1043	A	37	19			8.8 Key uncertainties: Catastrophe should be cited in 8.3 or 8.6. Expected messages are medical research, medication/remedy environment, behavioral risk, responsibility of the country and individuals, and ecological relationship. These will become the driving force to influence future health. (Akihiko SASAKI, Fukushima Pref. Authority)	Addressed.
8-1044	A	37	21	37	44	Much of this is a repetition of previous statements. A better format would be bulleted list of single sentences to summarize the key uncertainties. (Paul Reiter, Pasteur Institute)	
8-1045	A	37	21	37	44	This whole section might benefit from better linkages with the challenges listed on page 7	Addressed.

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	
8-1046	A	37	23			Section 8.8. Key uncertainties. The sentence in line 23 is not clear: ´Uncertainties include… (Xavier Rodo, University of Barcelona)	Addressed.
8-1047	A	37	23	37	25	Consider reworking (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed.
8-1048	A	37	24			"improved" instead of "improve" (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-1049	A	37	24	37	24	Delete "be" and "ing" in "depending", to read "…will very much depend on…" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1050	A	37	24			improved instead of “improve” - 39: “that” to be deleted (Yola Verhasselt, Royal Academy of Overseas Sciences)	Addressed
8-1051	A	37	25	37	28	Could add here that there is a need for better understanding of how people cope with health risks associated with climate variability and extremes, and what the barriers are to protective behaviour. (Roger Few, University of East Anglia)	
8-1052	A	37	32	37	32	WAIS should be explained; besides West Antartic Ice Sheet, it stands for Wide Area Information System, Wechsler Adult Intelligence Scale, Wide Area Information Server, and other things... (Antonio Humberto GUERRA, I. Medicina Tropical Alexander von Humboldt, UPCH)	Addressed
8-1053	A	37	36	37	40	Different levels of uncertain exist. The degree of uncertainty is vastly greater for diseases in which climate effects are more indirect. This should be made clear. I see this is one of the proposed structure elements in Appendix 2 in the guidance notes for expert reviewers. For direct effects DALY's lost due to climate change can probably be estimated with a certain degree of confidence. For more indirect health effects the uncertainty rises. Furthermore, uncertainties are propagated and multiplied down the chain of causality: uncertainties in future climate scenarios - lead to even greater uncertainties in health effects - then DALY's - populations - technology and socio-economics - and finally actual costs. The document should be more specific and critical in this aspect, the more so the further down this chain you go. Thus predictions relating	To be discussed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						to cost should be viewed with greater suspicion than predictions relating to number of heat stroke victims. On pg 17, line 41 the words "cautiously inferred" are very appropriate. (Marlies Craig, Medical Research Council of South Africa)	
8-1054	A	37	38			Section 8.8. Key uncertainties. The sentence in line 38 is not clear: (Xavier Rodo, University of Barcelona)	Addressed
8-1055	A	37	39	37	40	the sentence neAddressed a different ending "...requires that better models,... developing countries are available" or something like that (Thomas Kistemann, Institute for Hygiene and Public Health)	Addressed
8-1056	A	37	39	37	39	Delete "that" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1057	A	37	42			spell out West Antarctic Ice Sheet (Elizabeth Casman, Carnegie Mellon University)	Addressed
8-1058	A	37	42			While these events are labeled "catastrophic" and "abrupt", the sea level rise associated with them is projected to occur over centuries. It's not that we'll have a giant tsunami happen all at once. Given that, why should that have large effects on public health? In fact, the relatively slow sea level rise allows human beings to get out of the way. Their property may not be that lucky, although it might be best to abandon property that needs to be replaced/renewed. (Indur Goklany, Office of Policy Analysis, Department of the Interior)	Interesting point
8-1059	A	37	42	37	42	Help clarify "WAIS" acroynm means "West Antarctic Ice Sheet" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-1060	A	37	42		44	This paragraph is much too alarmist. The probability of catastrophic and abrupt climate change is extremely unlikely over the next century. Beyond that is too far and too uncertain to predict or even discuss. (Thomas Moore, Stanford University)	This is a question of risk perception
8-1061	A	37	42			´Considerable uncertainties….´ Also, in line 42, please define WAIS. (Xavier Rodo, University of Barcelona)	Addressed.
8-1062	A	37	45			isn't a key uncertainty the medical advances that may occur in the next 50 years? Hard	May be we should distinguish better the

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						to believe there will be no relevant progress. (Elizabeth Casman, Carnegie Mellon University)	dif levels of uncertainty
8-1063	A	37	45			this would be a better place for the summary which starts on page 22, line 50 and ends on page 23, line 18 (Thomas Kistemann, Institute for Hygiene and Public Health)	To be discussed
8-1064	A	38	0			Table 8.1. reports about principal diseases…and Protein-energy malnutrition is referred as one of them. A table linking diseases, epidemiology and climate variability would help understanding how scenario=based estimates in Table 8.2 can be made. (Xavier Rodo, University of Barcelona)	Change title of table 1
8-1065	A	38	0			table 8.1: can protain-energy malnutrition be considered as a disease like the others mentioned in the table? (Yola Verhasselt, Royal Academy of Overseas Sciences)	Change title of table 1
8-1066	A	38	1			Table 8.1: The reference give has different numbers. Note that WHO did not include dengue. (Carlos Corvalan, WHO)	Sari please either correct to the 2002 numbers or correct reference
8-1067	A	38	8			Table 8.2 – Title – Is this table only for the infectious diseases listed on table 8.1? this is not clear. (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Not addressed. Disagree
8-1068	A	38	8			Table 8.2. For projected increase in Transmission windows of maalria refe of Dhiman et al 2003 may be cited (Ramesh Dhiman, Malaria Research Centre)	Not addressed. To be searched for
8-1069	A	38	8			Table 8.2: Add horizontal rules throughout table to help clarify entries; see previous comments on format for "falciparum"; in column 6, row 2, if the two number "90m" and "200m" mean "million", please spell out for clarity that this is not a reference to meters, since altitude is part of discussion of malaria; see row 5, which breaks across pages 38 and 39 and consider beginning it at top of p.39 instead (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-1070	A	38	8			Table 8.2. There are two different MARA/ARMA models. The model used by Tanser et al., 2003 is the seasonality (of falciparum transmission) model whereas the model used by Thomas et al., 2004 and Hartman et al., 2002 is the suitability (for falicparum transmission) model. This model is used to define stable transmission when the	Addressed. Important

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						suitability value >0.5 and can in these papers be correctly referred to as the MARA model of stable falciparum transmission. (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	
8-1071	A	38	8			Table 8.2 is a good attempt at assimilating findings from a large number of studies into a single useful table. There are however, some inconsistencies in the presentation of the findings which if rectified could improve the table further. In some of the models, the time slices are listed and others not. [The time slice could possibly be included as a separate column?] In some models, very specific results of outcomes are listed (e.g. Hales et al., 2002) whereas in others the results are mentioned in very general terms (e.g. Calheiros and Casimiro, 2002). I would advocate the listing of the important specific results for each model where possible. (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed. Good point
8-1072	A	38		42		Tables are difficult to judge as they print in portrait - at the momnet they are crowded but might work in landscape? (Andy Morse, University of Liverpool)	
8-1073	A	39	0			Table 8.2 - The information on the table for the assessment in Portugal needs to be corrected to reflect that - it used two RCM, one being PROMES (with a future scenario time line = 2040s) and the other HadRM2 (with a future time line = 2080s). In addition, the reference author names are mixed around. "Calheiros and Casimiro" should read "Casimiro and Calheiros" (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Addressed.
8-1074	A	39	0			Table 8.2 continued: add horizontal rules throughout to clarify entries; col.6, row 1: insert period after "An" and italicize for consistency within chapter ; column 3, row 4: consider whether to italicize "An.Farauti s.l."; col.5 row 5, delete period after "None"; col.7, rows 6-9 make "et al." consistent throughout table i.e., should be italicized throughout; col.2, row 8, add period after "A" in "A egypti" and consider italicizing for consistent format; col.3 row 8, add period after "et al."; col.3, row 9 change word "form" to "from"; col.5, row 9 delete period at end of "SRES population growth; consider beginning row 9 entry at top of p.40 since it now breaks across 2 pages (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-1075	A	39	8			In Table 8.2: "Dengue Australia" include WRE 450ppm under heading climate scenarios, and under "main results" change the text to - Potential transmission are moves southwards to include regional towns by 2050s and down to Brisbane or Sydney by 2100. Under the reference column, include [Woodruff RE, Hales S, Butler C, McMichael AJ (2005) Climate Change Health Impacts in Australia: Effects of Dramatic CO2 Emission Reductions. Report for the Australian Conservation Foundation and the Australian Medical Association; pp. 44.] (Rosalie Woodruff, Australian National University)	Addressed.
8-1076	A	40	0	40	1	Table 8.2 continued: add horizontal rules throughout to clarify entries; col.7, row 2 make "et al." italic; what does asterisked footnote in row 1 refer to, looks like the sentence is incomplete & needs final text after "fluctuation between" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1077	A	41	0			Table 8.4: row 2, col.2: substitute "related" for "attributable"; row 2 col.4, add after "MM5" ". 2050s."' row 2, col.5: cmake spelling of "aging" consistent thru chapter; row 2, 6: delete period after "By 2050s", delete "s" at end of "increases", add "-related" after "ozone"; Consider starting Table 8.4 at top of p.42 so that information does not break across 2 pages (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-1078	A	41	0			Table 8.3: row 2, col.2-3, delete periods at end of entries; row 3, col.3, delete period at end of entry; row 4, col.1 add period after "Sydney" and after "Christchurch"; in cols.2&6, substitute "65 yrs age" for "65s"; in col.4,add period after "ECHAM4"; consider adding (Hayhoe et al., 2004) summary of California impacts on heat-related deaths in California before 2100 (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed.
8-1079	A	41	0			In Table 8.4 give confidence intervals for the 4.5% increase in ozone deaths due to climate. (Xavier Rodo, University of Barcelona)	See comments of Knowlton below
8-1080	A	41	0			Table 8.3 Under the Australian heat section, and in the column called Model, change "observed monthly" to "observed daily". Under the column Main Results, change "large in temperature cities" to :large in temperate cities". Change "fewer reductions in cold-related mortality" to "Cold-related mortality already minimal at baseline".	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Rosalie Woodruff, Australian National University)	
8-1081	A	42	0			Table 8.4 continued: row 1, col.3: add period after "Quality model"; row 1, col5: before "precursors-" add "A2-consistent anthropogenic ozone"; delete words "assumptions not clear" [The two sets of assumptions for anthorpogenic ozone precursor emissions were: (1) no change from the US EPA 1996 national emissions inventory (2) A2-consistent increases in NOx (29.5%) and VOCs (8%) by the 2050s.]; Row 1, col.6: substitute "ozone" for "O3"; row 2, col.6: delete period after "may increase" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1082	A	43	2		3	If proposal # 7 is adopted, the following reference should be added: Abalkina, I.L., V.F. Demin, S.I. Ivanov, S.M. Novikov, B.N. Porfir'ev, 2005; Economic parameters of health risk assessment for estimation of damage caused by different harm sources. Problems of risk assessment (Russian journal), 2(2), P. 132 – 138. (Vladimir Demin, Russian research center "Kurchatov institute")	Not addressed To be asked for
8-1083	A	43	3	64	12	Reference: For Peak Oil Scenario: 1) Campbell, C. J., 2002: Forecasting global oil supply 2000-2050. Hubbert Center Newsletter 2002/3. M. King Hubbert Center, Colorado School of Mines, Colorado, USA. For Adaptive Options to Prevent Health Impacts by Global Warming: 2) Ando, M., S. Yamamoto, K. Wakamatsu, 2004: The impacts of global warming on human health and adaptation. Japanese Journal of Biometeorology, 40(s), pp. 317-328. (Mitsuru ANDO, Toyama University of International Studies)	Not Addressed
8-1084	A	43	17	43	17	Missing info on Ahasan et al. journal, insert "Work Study 51(4):" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1085	A	44	1	44	7	Need to cite Armstrong et al. twice as a, b? (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1086	A	44	42	44	36	Two identical references (Shilu Tong, queensland university of technology)	Addressed
8-1087	A	45	50	45	50	Reference author names are mixed around. "Calheiros and Casimiro" should read "Casimiro and Calheiros" (Elsa Casimiro, SIM-IDL, Faculty of Science, University of Lisbon)	Addressed
8-1088	A	48	3		4	If proposal # 1 is adopted, the following reference should be added: Demographic yearbooks of Russia, 2000,…,2004.	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Vladimir Demin, Russian research center "Kurchatov institute")	
8-1089	A	48	28			Levermore G and Chow D. Cooling buildings in a warming climate. Climate change-a focus on cooling, A Future Buildings Forum, International Energy Agency, 21-22 June, 2004, Sophia Antipolis, France. This is a presentation, probably not acceptable for IPCC ref. A paper on thius has been submitted but there is an earlier paper that refers to cooling: Chow D, Levermore G, Jones P, Lister D and , LaycockP. Extreme and near-extreme climate change data in relation to building and plant design. CIBSE BSERT, Vol 23, No. 4, pp 233 - 242, 2002. (Geoffrey Levermore, Manchester University)	Addressed
8-1090	A	49	36	49	38	No journal title (Shilu Tong, queensland university of technology)	Addressed
8-1091	A	51	32			Huynen et al. (and not Huynen AND et al) is cited as WHO 2003 in chapter 1, page 108, line 30. See also the corresponding citations in text chap. 8, p 15, line 23 and chap 1, p 67, line 32. (Bernard Clot, MeteoSwiss)	Addressed
8-1092	A	52	50	53	1	If proposal # 4 is adopted, the following reference should be added: Kislitsin, V., S. Novikov, N. Skvortsova. Moscow smog of summer 2002. Evaluation of adverse health effect. In proseed. of country case studies and presentations from the WHO/EEA-Meeting "Extreme weather events and Public Health responses", Bratislava, Slovakia, 9 - 10 February 2004. (Vladimir Demin, Russian research center "Kurchatov institute")	Not addressed
8-1093	A	53	41	53	41	Insert "s" in "Lesons" to "Lessons" (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1094	A	54	8	54	9	Book or journal? (Shilu Tong, queensland university of technology)	Addressed
8-1095	A	56	19	56	19	Mickley et al. 2004 in Geophys Res Lett has an incomplete citation of vol/no/pages (Kim Knowlton, Mailman School of Public Health, Columbia University)	Addressed
8-1096	A	56	24	56	25	Incomplete reference (Shilu Tong, queensland university of technology)	Addressed
8-1097	A	58	14	58	15	Incomplete reference (Shilu Tong, queensland university of technology)	Addressed

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
8-1098	A	58	24	58	25	under references, paper of Mitra et al 2004 is incorrect and incomplete. It should be read as : Mitra, A.P., Bhattacharya, S., Dhiman, R.C., Kumar K. K. and Sharma, C. 2003. Impact of climate change on Health: A case study of Malaria in India. In: Climate Change and India: Vulnerability Assessment and Adaptation. Universities Press. , Hyderabad. Pp.360-388. (Ramesh Dhiman, Malaria Research Centre)	Addressed
8-1099	A	58	30	58	31	Incomplete reference (Shilu Tong, queensland university of technology)	Addressed
8-1100	A	59	50	59	50	Incomplete reference (Shilu Tong, queensland university of technology)	Addressed
8-1101	A	61	30	61	31	Incomplete reference (Shilu Tong, queensland university of technology)	Addressed
8-1102	A	61	34	61	35	This paper is published in the Lancet not Lancet Infect diseases as listed (Frank Tanser, Malaria Research Lead Programme, Medical Research Council)	Addressed

Later comments added 2 May 2006.

644	Accepted
645	NA
648	English to be revised
649	NA
651	NA
652	NA
657	English to be revised
658	NA
663	NA
665	Accepted
669	English to be revised
672	NA
673	NA
674	Accepted

677	English to be revised
679	English to be revised
682	NA
687	English to be revised
690	NA
693	NA
698	NA
700	NA
708	NA
714	Accepted; Change already made
715	English to be revised
717	"Rate of warming" is the correct
720	No need to go into these details. No one would advocate an increase in CO_2 emissions in order to get some "benefits" in the long term
725	rewording needed
726	NA
730	NA
732	NA
736	Responded before
741	Accepted. Replace "Evidence since the TAR..." By "models developed since the TAR…"
743	NA
744	NA
745	NA
749	NA
752	Rewording needed
753	Quotations checked
759	NA
761	There is no space in the text for these details
779	Rewording of the sentence to be done
790	NA
811	NA
814	Responded before (NA)
820	NA

834	NA
839	NA
862	NA
881	NA
893	NA
913	NA
916	Reference to be added
949	Section 8.6 has been condensed
956	NA
971	NA
980	Accepted
981	NA
1044	NA