



**IPCC WGII
Fourth Assessment Report
Climate Change Impacts, Adaptation and Vulnerability**
Expert Review of First Order Draft

Specific Comments

Chapter 9

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**.

IPCC WGII AR4 FOD Expert Review Comments

Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-0	A	0				<p>Co-chair and TSU comments</p> <p>Length: this chapter is slightly too long. It can easily be shortened by the necessary 4 pages. As noted below, although Section 4 on impacts is slightly too short, the other sections can be substantially shortened to highlight the material which is new since the TAR. The reduced-form headings have been used - well done, but the full title for Section 5 should be used, i.e., 'Adaptation: practices, options and constraints'. Section 9.7 should be headed 'Conclusions: implications for sustainable development' whereas at the moment the word Conclusions is missing.</p> <p>The Executive Summary is over-long, and contains much unnecessary material. What is needed is a clear statement of (i) what is new since the TAR and (ii) what are the key, headline, findings from the chapter. The reader wants to access the key, headline, statements in the Executive Summary, set out on not more than one page. Bullet points may help with this. One of the points which has emerged in the SPM, from reading all the chapters of the AR4, is that Africa is the most vulnerable region. Reading this Executive Summary, I do not get that message, and yet much of the material in Chapter 9 supports it. Do the authors feel able to make that statement?</p> <p>The chapter contains many general statements such as 'Increasing gas accumulations...are now understood...to have detectable effects on the global climate system' (first sentence from Exec. Summary) and 'Adaptive capacity is the ability of people and systems to adjust to climate change' (first sentence from Section 9.5.1. There is no room in a core chapter for such general statements, which are better made</p>	<p>Length – reduce</p> <p>Executive summary capture more key vulnerabilities not only climate related.</p> <p>NB – Africa is vulnerable because</p>

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						<p>elsewhere. All should be deleted.</p> <p>The chapter cites many pre-TAR references. The authors need to concentrate on what is new since the TAR. The strategy is to summarize TAR knowledge in Section 9.1, and then explicitly say what new work, and what new results, have emerged since then. Section 9.5.2 is a particularly bad example of this.</p> <p>Sources are not always given for Figures, for example, Figs 9.2 and Fig. 9.5.</p> <p>Section 4, on impacts, is around 11 pages in length, and the total chapter is around 43 pages. Thus, the balance isn't right. Section 4 needs to build, and the rest of the chapter needs to be cut. I do not think, for example, that it is very useful to have Figures 9.2 and 9.3. It would be much better if you could use this space to include some figures on impacts. Examples are Chapter 4 Figures 4.9 and 4.10. Fig. 4.9 is a map of the location of major impacts. Figure 4.10 is a sectoral burning embers diagram, but surely the concept could be applied at the regional scale. We want to include such material in the SPM and TS, but need the underlying evidence from the chapters.</p> <p>Tables 9.1 and 9.2 are useful summaries of impacts. It would be good if they could be extended, and if some number could be provided. There are two useful examples of tables in the FODs, and it would be great if the Africa chapter could produce something similar. First, Chapter 4 Table 4.5 shows impacts under different temperature increases. Second, Chapter 11 Table 11.11 looks at impacts (they call it risks, but in fact they are impacts) under different SRES scenarios at different points in time. Can Chapter 9 explore the feasibility of similar tables for Africa, or even some regions of</p>	<p>OK</p> <p>Think about references that were not quoted in TAR (only for important points)</p> <p>Explain the sources of the data. Maps / Tables needed. Burning Embers! Prefer – Combine with the UNEP figure / symbols. Decide on thethe figure of TAR for Africa.</p> <p>Table with some countries and number. Regional model / AIACC</p> <p>Where available Andrew (Health/Malaria) Belgis (Nat communication / Agriculture)</p>

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						<p>Africa? We want to include such tables in the SPM and Technical Summary, but need the underlying evidence from the chapters.</p> <p>The range of references cited is good. However, the papers are not always used to the most effective extent. In particular, they contain quantitative estimates of future impacts which could be used to construct tables of impacts per degree change in global temperature change (similar to Table 4.5 in Chapter 4) and of impacts under different SRES scenarios (similar to Table SPM-2 in the draft SPM which has just been circulated). Some useful references which are not cited include Tanser et al. 2004, Lancet 362, 1792-1798 on malaria in Africa, and a separate list has been sent. (Jean Palutikof)</p>	<p>NB – Andrew Tanser</p>

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9-1	A	0				General comment of chapter 9: the document needs to be carefully check concerning the references; Many references cited are not in the list of references and vice versa; I only list some of these references; abreviations have to be defined (AMANI Abou, AGRHYMET Regional Center)	Agreed.
9-2	A	0				The chapter once again is essentially built on english published litterature. Analysis barely take into account other languages litterature (French and Portuguez). Africa is politically divided into five (5) geographical regions:North Africa, West Africa, Central Africa, East Africa and Southern Africa. Each region has its own political and economic community where decisions are made. The Chapter does not clearly show climate related problems in each of the region to facilitate appropriate and good policy decision making by each political and/or economic community. (Ayite-Lo N. AJAVON, FDS/Universite de Lome)	Getting French/Portuguese references and literature. Central Africa data missing Regional approach : North, West, Central, East, Southern. (Decision Nepad)
9-3	A	0				Generally: there are substantial structural problems with this chapter. I have addressed some of them, but there is substantial repetition, wrong text under wrong headings and other problems. Why are there not more case studies from the AIACC program in this chapter? Overall, the language needs a good edit & proofread. (Emma Archer, University of the Witwatersrand)	AIACC case studies (Tony) agreed.
9-4	A	0				It is an exaggeration to speak about benefit of climate change under the strong	Balance

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						<p>projected warming. In Africa, plants growth is generally water stressed controlled. An increase in temperature above the normal plants' operating range has been shown to reduce stomatal conductance in most plants, especially C3 plants, and inhibits growth. See for example, Defries et al., 2002, 'Human modification of the Landscape and surface climate in the Next fifty years', climate change Biology (2002),8,438-458. And Defries and Bounoua (2004) 'Consequences of Land Use Change for Ecosystem Services: A Future Unlike the Past'. geojournal 61: 345-351, 2004 (Lahouari Bounoua, NASA Goddard Space Flight Center)</p>	<p>Check the references.</p> <p>Agreed, interaction between water and CO2 Benefits.</p>
9-5	A	0				<p>General Comments about the entire Chapter The outline of the Chapter is complete. Most of the ideas pertaining to climate change and how it would affect Africa are included. However, I felt that some points are not stressed well enough. Those points are:</p> <ol style="list-style-type: none"> 1 - The small uncertainties associated with climate change should not preclude action of mitigation and adaptation. 2 - The role of climate and climate related research is not advocated enough in the report. 3 - Interactions between research based knowledge and policy makers and development planners. 4 - Land cover , land use , deforestation and forest fires are not addressed properly in the report. <p>(Lahouari Bounoua, NASA Goddard Space Flight Center)</p>	<p>Research</p> <p>Science /Policy?</p> <p>Land cover,deforestation, fire. MA / FAO</p>
9-6	A	0				<p>The “socio-economic”and “political/policy”content and analysis is insufficient. This is the major shortcoming of the chapter.</p> <p>1 The sections on Economic and Social Vulnerability and Human Systems (Executive Summary p3 and 4 and Text) fail to indicate the important fact that Africans – farmers and herders – are actively involved in adjusting their systems to both the political & economic context, as well as to environmental conditions. The cited literature that addresses socio-economic issues is insufficient – most deal with wide area (region/continent) generalities; I count only 18 that address specific cases and only half of those are recent.</p> <p>The result is that the discussion of adaptation is almost entirely couched in terms of agriculture. The section on Food Security looks at population and food supply in the context of Africa feeding itself (and not being able to do so). It is accurate to say that Africa is heavily dependent upon subsistence agriculture to feed itself.</p>	<p>Agree</p> <p>Food security FARI Tables and Agreed – key push on this is needed.</p> <p>Agreed adaptation OK.</p>

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						<p>However, a majority of African households are diversified in terms of income sources, they have a foot in the cash economy also, frequently in the non-farm sectors of the economy. It is important to look at the implications of climate change for agriculture. However discussion of mitigating risks should not exclude discussion of opportunities in the wider national and international economy. An alternative perspective would look at world trade in food and look at the prospects of Africa developing in such a way that it could afford to import food. The chapter does not address issues of political economy, global interdependence etc. Even the multinational company ADM admits that there is no global food shortage and that the obstacles to feeding the world are political – so surely the scientific community should give space to the socio-econ-political in its evaluations.</p> <p>There is an intimation of the complexity and sophistication of coping strategies but this is so brief that it does a disservice both to the African communities who are engaged in an ongoing process of adaptation and mitigation and also to the scientific literature that has documented it.</p> <p>The authors should consider drawing upon Chapter 17 pages 5-6 and section 17.3 as this provides a conceptual framework for analyzing what real people do to adapt to and mitigate climate change - there is some indication of this in 9.5.1 and 9.6.1 but it is not sufficiently developed. Page 32 lines 5-16 makes an attempt but is not convincing. The last para of 9.2.1.1 and of 9.2.3.4 provide opportunities to correct this.</p> <p>The section on P22 lines 28-31 begins to get at the driving forces external to rural areas but there is nothing about coping strategies. The chapter does not address why understanding coping strategies might be important, or what might be learned from what people already do. What are the points of vulnerability? What are the opportunities for more effective adaptation? Yes, floods and drought have had a devastating effect in rural areas but why were these natural events able to trigger calamity? The answers lie not only in the intensity of the drought, or flood but also in the institutional and policy environments and land uses that respond to, and mediate them.</p> <p>Suggested references: For a detailed case study of how coping strategies are dynamic and change over time in response to local and external societal and biophysical drivers see: D. Campbell. 1999. "Response to Drought among Farmers and Herders in Southern Kajiado District, Kenya: A Comparison of 1972-1976 and 1994-1996." Human Ecology, 27,3, September: 377-416.</p>	<p>Mitigation risks / wider economy.</p> <p>Trade / Food Governance, distribution accessibility IFRI // Coleen / Isabella</p> <p>Chapter 17 – (5 – 6), 17.3</p> <p>Piers & Jabo – agriculture coping</p> <p>Institutional.</p> <p>Old references! Pre TAR!</p>

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						<p>Adams, A.M., J. Cekan, and R. Sauerborn, 1998. Towards a conceptual framework of household coping: reflections from rural West Africa. <i>Africa</i>, 68, 2:263-283.</p> <p>2</p> <p>Too much emphasis on population growth as a problem -- a Malthusian perspective. There is an established literature (eg Boserup) that shows that population growth is not inherently bad and that it can stimulate innovation and lead to sustainable livelihoods under particular circumstances (policy, distribution of resources, equity issues etc) – see the writing of David Harvey on this issue eg “Population, resources and the ideology of science.” Chapter 3 in <i>Spaces of Capital: Towards a Critical Geography</i>.</p> <p>This literature that suggests, at the very least, that population growth does not inevitably lead to degradation. The ‘malthusian’ perspective is characteristic of much of the ecological perspective on population-resources. However, there is a healthy literature that argues to the contrary – eg Ester Boserup, Julian Simon, Blaikie and Brookfield(1987). Studies in East Africa indicate that under increasing population people make efforts to safeguard the resource base (Tiffin, et al., 1994; Castro, 1995). This is a complex issue that requires careful consideration of ecology, history of land use, and of the interactions over time between locations and the broader economy in terms of economic policy, migration, trade, and peace and war (Olson, 1998). Similarly for West Africa see Raynaut 1997. (for Africa, see refs below).</p> <p>There is a need for balance in the presentation of the evidence on this issue.</p> <p>SOME REFERENCES:</p> <p>Blaikie, P. and H. Brookfield. 1987. <i>Land Degradation and Society</i>. London: Methuen.</p> <p>Castro, A.P., 1995. <i>Facing Kirinyaga: a social history of forest commons in southern Mount Kenya</i>. London: Intermediate Technology Publications Ltd.</p> <p>Mortimore, Michael. 1998. <i>Roots in the African Dust: Sustaining the Drylands</i>. Cambridge: Cambridge University Press</p> <p>Olson, J.M. 1998. Intensification processes and political bounds: a framework of land use change in the East African Highlands. Paper presented at Earth's Changing Land: Joint Global Change and Terrestrial Ecosystems and Land Use and Land Cover Change Open Science Conference on Global Change; March 1998; Barcelona, Spain</p> <p>Raynaut, C. 1997. <i>Societies and nature in the Sahel</i>. London ; New York : Routledge.</p> <p>Tiffen, M., Mortimore, M., Gichuki, F. 1994. More people less erosion:</p>	<p>Agreed – address</p> <p>Myths – etc – Reviewer / Editor?</p> <p>Agree but reference too old.</p> <p>Points valid but these are theoretical debates and references are all pre TAR.</p> <p>Pick in adaptation chapter.</p>

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						environmental recovery in Kenya. Nairobi: ACTS Press in association with the Overseas Development Institute, London. (David Campbell, Michigan State University)	
9-7	A	0		0		This is an informative Chapter. As could be expected for the world's least developed region, there is evident lack of data to comprehensively climate change impacts on key aspects of African life. This is particularly true of the health sector where malaria seems to be better illustrated than other less researched diseases like bilharzia and nagana. Regarding climate change modeling, given the very high spatio-temporal variability in Africa's climate, especially concerning rainfall, there is need to scale down GCMs to produce results that are closer to the many 'climate realities' of the African continent. Until this happens, African leaders will have little confidence in climate change projections. The Chapter needs to be thoroughly proof read to eliminate typos and ensure that the numbering of figures is consistent. Some of the typos and editorials picked up during the review are indicated below. Some cited references may be missing from the list of references, e.g. Midgey, 2005. (Raban Chanda, University of Botswana)	Agree. Andrew refs! Bilharzia Tropic Tse Tse True – downscaling. Downscaling should be matched to reality where we can.Documenting new current vulnerability,executive summary. Agree: (Sahel) – precip inc !!
9-8	A	0				Overall the chapter contains a good cross-section of literature from climate and African environment/development literature. Key uncertainties remain future direction of rainfall changes (and their detail, in terms of intensity and intra-seasonal changes), interactions between land surface and climate system (e.g. Sahel rainfall forcing) and future socio-economic trends that will provide the underlying vulnerability against which CC appears. I think it's important to stress the win-win pathways for adaptation - reducing vulnerability to existing variability and building capacity - critical question is how to maintain/develop effective governemnt delivery systems (this point is well made on page 9 line 14-17) and is worth stressing in the final section. (Declan Conway, university of east anglia)	Uncertainty rainfall key. Land – use cover change Agreed. Find case examples. Capacity building Governance key / agreed
9-9	A	0				This is a great FOD, congrats to the authors for putting together a very readable document. Overall, some sections lack the rigor of solid references to back up statements. While policy documents such as AMCEN, NEPAD and DFID reports maybe peer-reviewed, I worry that they offer policy prescriptions and suggestions for the way forward without the objectivity that is needed for the IPCC report. Overall there is ovedependence on global studies - Arnell, Parry etc that were done as part of global assessments. While the results are interesting when comparing continents, they lack the sub-regional flavor that studies conducetd at national/sub-	// references Depends on data availability, need to do sub-regional studies.

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						national level would reveal. I would also caution using sources that are more than 8 years old, unless the findings were fundamental. The adaptation discussion is the weakest - what is needed is clear statement of what the major vulnerabilities are, linked to specific climatic hazards/risks/threats, then a survey of what the adaptations are. There is extensive knowledge of coping to various climatic threats from African scholars, this should have been reviewed. The section on Future Adaptation Options (section 9.5.3) is totally unacceptable. Instead of exploring what future adaptation options might be, and how these may be implemented, timed etc, the section jumps straight into a discussion of mainstreaming. Mainstreaming is planning, not an adaptation option, notwithstanding any merits for mainstreaming cc in developing planning. The other subsection is about costing adaptation. This is also not an adaptation option. This section needs to be re-written to provide guidance to the African readership about what to do with CC - how to adapt. I am also assuming section 9.8 is yet to be developed fully. A number of references are missing in the References section. (Paul Desanker, Penn State Univ)	Agreed vulnerability too weak.. Adaptation must be improved! Future adaptation – weak! X
9-10	A	0				Generally: 1-The report ignored important aspects of increased frequencies of dust storms and their widespread impact on other regions 2- specific options of adaptation to sea level rise for such important areas as the Nile delta and cities of Alexandria, Lagos and the small African islands is not covered 3- Aspects of loss of biodiversity of the highly diversified resources of coral reef and Mangrove is not covered in details (Mohamed El Raey, Institute of Graduate Studies and Research)	Key. Agreed Nile and lakes, Lagos! Need to check Small islands in chapter Check the literature.
9-11	A	0				References that may be useful: O'Brien K and Vogel, C. eds. 2003. Coping with climate variability. The use of seasonal climate forecasts in Southern Africa, Ashgate, Aldershot. Davies S 1993 Are coping strategies a cop out? IDS Bulletin 24 60-72. Adger W N, Huq S, Brown K, Conway D and Hulme M 2003 Adaptation to climate change in the developing world Progress in Development Studies 3 179-195. Homewood, K.: 1995, 'Pastoralist production systems and climate change', in T.E. Downing (ed.), Climate Change and World Food Security, Berlin, Springer, pp. 505-524.Christoplos I, Mitchell J and Liljelund A 2001 Re-framing risk: the changing context of disaster mitigation and preparedness Disasters 25 185-198. Leichenko, RM and O'Brien, KL, 2002. The dynamics of rural vulnerability to global change: the case of southern Africa. Mitigation and Adaptation Strategies for Global Change, 7, pp1-18. O'Brien K L and Leichenko R M 2000 Double	Michel Check the references See the more relevant

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						<p>exposure: assessing the impacts of climate change within the context of economic globalisation. Global Environmental Change 10.3 221-232. O'Brien K L and Leichenko R M 2003 Winners and losers in the context of global change Annals of Association of American Geographers 93 89-103. Roncoli C, Ingram K and Kirshen P 2001 The costs and risks of coping with drought: livelihood impacts and farmers' responses in Burkina Faso Climate Research 19 119-132. Ziervogel G 2004 Targeting seasonal climate forecasts for integration into household level decisions: the case of smallholder farmers in Lesotho The Geographical Journal 170 6-21. Eriksen, S, Brown, K and Kelly, M. 2005. The dynamics of vulnerability: Locating coping strategies in Kenya and Tanzania. The Geographical Journal, (In Press, December 2005). Eriksen, S. (2004) Building adaptive capacity in a 'glocal' world: Examples from Norway and Africa, ESS Bulletin 2 (2): pp. 18-26. Orindi, V. and S. Eriksen, 2005. Mainstreaming Adaptation to Climate Change in the Development Process in Uganda. Ecopolicy Series no. 15. Acts Press, Nairobi. ISBN 9966-41-130-5. Eriksen, S. 2005. The role of indigenous plants in household adaptation to climate change: The Kenyan experience. In Climate Change and Africa, ed. P.S.Low, Cambridge University Press, Cambridge pp. 248-259. Eriksen, S. and Næss, L.O. 2003. Pro-Poor Climate Adaptation: Norwegian development cooperation and climate change adaptation - an assessment of issues, strategies and potential entry points. Report 2003:02. CICERO, 75pp. Eriksen, S. and Lind, J. 2005. The impacts of conflict on household vulnerability to climate stress: evidence from Turkana and Kitui Districts in Kenya. Human Security and Climate Change. An International Workshop. Holmen Fjord Hotel, Asker, 21-23 June 2005. International Peace Research Institute PRIO, Centre for International Climate and Environmental Research, University of Oslo (CICERO) and The Global Environmental Change and Human Security Programme (GECHS). Owuor, B., Eriksen, S., and Mauta, W. 2005. Adaptation to climate change: Evidence from a dryland mountain in Kenya, Mountain Research and Development, In Press. Eriksen, S. 2003. Climate change and desertification: Physical processes and livelihood changes in the drylands. Annals of Arid Zone, 42. Eriksen, S and J Silva, 2003. The impact of economic liberalisation on climate vulnerability among farmers in Mozambique. IHDP Open Meeting, 16-18 October 2003, Montreal. www.ihdp.org. Eriksen, Siri, F. Norman Gachathi, Benson Ochieng, B. Muok and B. Owuor, 2005. Synergies in biodiversity conservation and climate change adaptation: The case of hilltop forests in Kitui, Kenya. In: Mistry, Jay and Andrea Berardi (eds.), Putting people back into nature. Lessons from savannas and dry forests. Ashgate. (Accepted).</p>	References very useful from Sin – Coleen to obtain integrate into chapter.

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						(Siri Eriksen, University of Oslo)	
9-12	A	0				<p>General comment: I am not sure that the structure of the chapter works well. The chapter appears repetitive and very descriptive. The structure does not appear to facilitate a clear argument or comprehensive discussion. Discussion of literature often remains superficial, even regarding issues that are scientifically controversial. The breadth of empirical evidence does not get the space it deserves.</p> <p>General comment: The discussion, particularly at the beginning of the chapter, appears to perpetuate old myths, focusing in particular on population growth and desertification caused by inappropriate practices by poor people as causes of vulnerability. There are few references to literature to empirically support such observations, nor is important literature that question these myths regarding people and environmental degradation (Leach, Mearns et al, Lambin et al 2001, Tiffen et al 1994) mentioned. I suggest that instead of recapitulating the debate on environmental degradation, population growth and desertification, the chapter should focus on literature that discusses the causes of vulnerability. See next comment.</p> <p>General comment: The chapter lacks a discussion of vulnerability. It seems to focus on impacts of climate change. Even when vulnerability is discussed, its significance in the context of the chapter is often not clearly distinguishable from impacts. The chapter has a very scenario-based and sectoral focus, possibly as a function of the structure. Recent advances in vulnerability research are therefore omitted from the chapter. In particular, the character of vulnerability for people (not sectors), people's ability and ways of securing a living and adjustments to livelihoods as a response to climatic changes and variability, and causes of vulnerability are not discussed. These are critical! Present vulnerability and the multiple stressors that are causing vulnerability are important starting points for understanding vulnerability to climate change. These are only mentioned in case studies at the end (9.6). They should be central to the review of current empirical evidence, not a case study at the end.</p> <p>General comment: The chapter lacks discussion of multiple stressors, which are important in recent advances in understanding vulnerability, in particular in Africa. The chapter should discuss for example how conflict, the spread of HIV/AIDS, globalisation, privatisation of resources, land reform, marginalisation of smallscale dryland farmers, etc interact to drive vulnerability (O'Brien and Leichenko 2002, Eriksen and Lind 2005, Eriksen and Silva 2003).</p> <p>General comment: The chapter does not cover recent understanding of how</p>	<p>Will be addressed.</p> <p>Need a table box. Refer to previous comment.</p> <p>Definition of vulnerability. ? – Impacts not vulnerability – agreed. People – livelihood issues not here.</p> <p>Agreed.</p> <p>- Conflict, HIV/AIDS etc</p> <p>Andrew will check references.</p>

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						<p>vulnerability as an inherent state manifests itself in Africa. There is little if any discussion of how vulnerability is differentiated between different groups within countries and at the local village level. Instead, some general assumptions are made that Africa is vulnerable due to poverty and dependence on natural resources. The chapter does not elaborate on which groups are vulnerable or why. Some women may be vulnerable for different reasons than some groups of men. Small scale rainfed farmers may be more vulnerable, or vulnerable for different reasons, than commercial irrigation farmers. All these groups are convoluted within the term 'agricultural sector' in most of the discussion in the chapter. Such a sectoral and macro approach also misses the fact that most people, also in the rural areas, as well as being farmers also operate outside the agricultural sector. For example, a loss of employment opportunities through closure of industries, reduction in civil servants, or restrictions on labour migration may be as critical to ability to cope with climatic stressors and adjust to change among some rural populations than changes in the agricultural sector itself.</p> <p>(Siri Eriksen, University of Oslo)</p>	<p>Differential vulnerability. Agree. Importance of present vulnerability not sectors/people.</p> <p>Differential vulnerability Contextual & 'outcome' vulnerability key.</p>
9-13	A	0				<p>First, I should say that I think that the authors have an extremely difficult task distilling a wealth of information down into only a few pages.</p> <p>Overall, I am concerned at the lack of detail in the summary of research post the TAR. For instance, the AIACC project should have produced a large number of reports and publications that would feed into this chapter, but there is little evidence of this. Perhaps there needs to be some direct soliciting of material from AIACC participants.</p> <p>(Mark New, University of Oxford)</p>	<p>AIACC to collect Agreed - Tony will do that.</p>
9-14	A	0				<p>General: One of the major weaknesses of the chapter is that there are a lot of repetitions in many sections - thus increasing the length of the chapter by 28 pages. I will indicate some sections where this is done. I am sure there are other places in the chapter which I did not pick up. In my view this chapter does not offer a dramatic improvement of the ZOD draft. The sentence structure is still poor and sometimes incomplete. The sentences in this chapter are too long - resulting in more pages than necessary. There are also a lot of references of old literature which is supposed to be covered in TAR. There is still a lot of work to be done for Second Order Draft i.e. spellings, sentence structure, repetitions etc I would recommend that the authors use one of the latest books on Climate in Africa i.e. "Climate Change and Africa" edit by PS Low published by the Cambridge University Press in 2005(August)</p> <p>(Todd Ngara, IGES)</p>	<p>To be addressed.</p> <p>Agreed</p>

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9-15	A	0				<p>The first order draft which is in reality the improved version zero order draft is a good one. It includes the same subtitles as the the zero order draft. I take this opportunity once again, to congratulate its authors for making this report better. As the zero order draft, this first version makes about fifty pages. It passes therefore about thirty advisable to the appendix 2. But to reading of this version, one understands that it has been illustrated a lot, comparatively to the zero order draft, in the mind of the commentaries brought. The volume of the number can justify itself therefore.</p> <p>Comments on figures and tables. Cite the page where the item is placed (not where it is mentioned in the text). Please be as specific as possible, e. g. by giving the relevant table-row and table-column (Lucien Marc Oyede, Department of Geology (U.A.C.) Benin)</p>	<p>True</p> <p>Agreed</p>
9-16	A	0				<p>Suggest a development by region and recent events like this year flooding in many countries. (Abdoulaye SARR, Direction Météorologie Nationale)</p>	<p>Regional approach!! (Refer WG 1) Grey areas. Flooding in some cases. Agreed with hygiene – OMM yearly assessment</p>
9-17	A	0				<p>add a reference on the potential implication of sahara aerosol and tropical cyclone and transport towards America (Ex Prospero) and Europe. (Abdoulaye SARR, Direction Météorologie Nationale)</p>	
9-18	A	0				<p>Many good stuff here and there but also many repetitions and lack of logical flow of reading. The bibliography is not consistent with the content of the chapter. (Youba SOKONA, Sahel and Sahara Observatory (OSS))</p>	<p>Repetition / Structure</p>
9-19	A	0				<p>My knowledge of Africa is limited, as is my working experience in the continent. But after reviewing the thirteenth chapter, on Latin America, and finding major deficiencies in its treatment of agricultural development, I thought I should take a quick look at the ninth chapter.</p> <p>In general, the latter's discussion of broad trends in the African countryside is satisfactory. However, I think more could and should be done to put into sharp relief the cycle of rural poverty, land degradation (resulting from depletive patterns of crop and livestock production), and deforestation that afflicts so much of the continent. The authors do a good job of describing the economic marginalization and miserable living standards of most of the rural population. Marginalization and poverty leave much of the population with little choice other than to subsist by exploiting two resources: their own muscle power and whatever fertility the land provides. In effect, subsistence farming in Africa and other parts of the developing world involves the mining of soil nutrients, which leaves the land unable to support as much vegetation and therefore exposed to the elements. Once the cumulative</p>	<p>Human / Social Poverty, land degradation – factors deforestation.</p>

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						<p>toll of erosion and other forms of degradation grows large enough, farmers move to other sites, clearing away trees and other vegetation to start the whole depletive process again.</p> <p>Indicators of the downward spiral of land degradation and deforestation are readily at hand. As reported in the World Bank’s World Development Indicators, fertilizer is applied at a lower rate in Africa than in any other part of the world. In all but a few countries, application rates are well below crop requirements, which means that nutrient depletion is widespread. [See Julio Henao and Carlos Baanante, “Estimating Rates of Nutrient Depletion in Soils of Agricultural Lands of Africa,” International Fertilizer Development Center, Muscle Shoals, 1999.] According to the FAO, deforestation as a portion of remaining tree-covered land is higher south of the Sahara than in any other part of the world.</p> <p>Putting an end to the cycle of rural poverty and resource degradation in the African countryside is an enormous challenge, involving human capital formation (broadly defined to include education and improved health services), infrastructure investments, agricultural research and development, trade liberalization, and many other things. It is a safe bet that organic farming will not be an important part of the solution. Because of livestock pests (noted in the chapter), the low nutrient content and high handling cost of manure, and other factors, chemical fertilizer is vastly superior as a rule to organic substitutes. I hope the authors find these observations useful.</p> <p>Overall, I think the chapter they have written is impressive. (Douglas Southgate, Ohio State University)</p>	<p>Fertilization etc. – Soil nutrients</p> <p>?? Adaptation option!!!</p> <p>True thanks</p>
9-20	A	0				<p>My general comments on the chapter as a whole are that: a) broad generalised statements regarding impacts are often repeated throughout the text; b) it does not reference enough case studies (what about the results from the many AIACC projects ?); c) discussions of adaptation often do not account for the spatial variation of projected changes in climate (and reference the previous sections detailing these changes) and acknowledge how this suggests a similar spatial variation in adaptation; d) only negative impacts are discussed and e) many references are not to be found in the bibliography. Perhaps the most glaring omission is that the majority of section 9.5, the heart of the chapter, only deals with adaptation in agriculture, neglecting the suite of other sectors. This is then followed by a very limited case study section which again is a very important section; it needs to present examples of how the adaptation options discussed in 9.5, and climate impacts given previously, come together in practice. It would be useful to</p>	<p>More balanced view.</p> <p>Coleen to help.</p>

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						<p>hear of positive as well as negative adaptation studies, as was suggested in the sahel study i.e I want to know what has and hasn't worked. This can then feed into the final section on research gaps and priorities by suggesting demonstrated successful adaptation measures (that can be used now), and where more research is needed (perhaps linking to the section on future adaptation). Although I realise this is perhaps a wishlist to some extent, I do think the chapter can go much further in this direction than it currently does.</p> <p>(Mark Tadross, University of Cape Town)</p>	<p>Agreed True and negative issues key.</p>
9-21	A	0				<p>This chapter presents the factors of the dynamics of the water resources in Africa. But, it gives very little example of West Africa which knows an increased hydrological dryness since the years 1970. The amplification of the pluviometric falls of the last decades in the surface and underground water resources is not well highlighted. The weight of the falls of rainfall of the wet seasons in the total fall will have to be to study like (Houndénou and Al, 2005) in order to making forecasting at 2050 horizon compared to becoming water resources. The role of the human pressure in the fall of the water resources through the installation and the activities of the populations is not shown enough. Moreover, no stress is laid on the underground resources. It will be necessary to highlight the behavior different from the water resources on the impermeable and permeable geological formations for better appreciate degre to drying up of the surperficial and underground reserves. It will be necessary finally, to set up obviousness, of surface qualities in the dynamics of the water resources in Africa for better appreciating the change</p>	<p>Wakin resource. Check what happened after the TAR. Look at all regions</p> <p>Role of water – population pressure we need to be careful not only population pressure – Malthusian view – check with Review Editor.</p>

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						(Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-22	A	0				There needs to be a section concluding the chapter and highlighting some of the key points/challenges. (Gina Ziervogel, University of Cape Town)	Agreed.
9-23	A	1	0			<p>Please see the following references:</p> <p>MAHE G., OLIVRY J.C., 1995 : Variation des précipitations et des écoulements en Afrique de l'ouest et centrale de 1951 à 1989. Rev. Sécheresse. 6(1), 109 - 117;</p> <p>TAPSOBA D., (1997). Caractérisation événementielle des régimes pluviométriques ouest - africains et de leur récent changement. Thèse de Doctorat, Université Paris XI (ORSAY), 300 pages.;</p> <p>VISSIN E., BOKO M., PERARD J. et HOUNDENOU C., 2003 : Recherche de ruptures dans les séries pluviométriques et hydrologiques du bassin béninois du fleuve Niger (Afrique de l'Ouest), publication de l'Association Internationale de Climatologie, vol 15, Besançon, 368-376.</p> <p>HOUSOU C.S., HOUNDENOU C., VISSIN E.W., BOKO M. et PERARD J., 2004 : Recherche de tendances dans les séries pluviométriques du bassin béninois du fleuve Niger (Bé, Afrique de l'Ouest) , Publications de l'Association Internationale de Climatologie, 17, 171-174;</p> <p>VISSIN E.W., HOUSOU C.S., BOKO M. et HOUNDENOU C., 2004 : Impact des fluctuations pluviométriques sur les écoulements dans le bassin béninois du fleuve Niger (Bénin, Afrique de l'Ouest), Publications de l'Association Internationale de Climatologie, 17, 385-388;</p> <p>HOUNDENOU C., VISSIN E.W. et PERARD J., 2005 : Mise en évidence du poids des "mois humides" dans la péjoration pluviométrique du bassin de la Sota (Bénin, Afrique de l'Ouest) , Publications de l'Association Internationale de Climatologie, 18, (Gênes, 271-274).</p> <p>VISSIN E.W., BOKO M., PERARD J., 2005 : Sécheresse hydrologique et tarissement dans le bassin de la Sota (Bénin, Afrique de l'Ouest) , Publications de l'Association Internationale de Climatologie, 18, (Gênes, 337-339).</p> <p>(Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)</p>	<p>Pre TAR</p> <p>References</p> <p>Boko to get.</p>
9-24	A	3	0			<p>General comments about the executive summary: I suggest that the opening paragraph of this summary gives the general trend of the climate change in Africa. For example, along the summary it is implicit that climate change is associated with warming all over Africa and reduction in rainfall. That way the remainder of the summary flows better.</p> <p>(Lahouari Bounoua, NASA Goddard Space Flight Center)</p>	<p>General climate overview.</p> <p>Agreed – Get from Bruce Hewitson.</p>

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9-25	A	3	0	5		<p>The executive summary ignores essentially all information on adaptation options. The main text at least mentions a few, which should be summarised in the exec summ. The main text highlights the inextricable mesh of interactions among the effects of climate change, land-use practices and social, economic and political developments. This is of central importance and should be reflected in the exec summ. Another core message from the main text is that climate change is likely to have a net negative impact on people and natural resources in the region, but that too little is known to date to specify the different probable local (subregional) impacts in any detail. This message should probably be made explicit as well.</p> <p>(Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)</p>	<p>Agreed.</p> <p>NB – agreed – Interaction physical //social ...key</p> <p>Climate change – ve impact – exacerbating local problems.</p>
9-26	A	3	0	5		<p>It would be preferable to delete all citations from the executive summary, in view of its intended readership, and place any missing ones in the main text. Some statements in the exec. summary I did not find in the main text; the exec summ should be fully and demonstrably based on the main text I think.</p> <p>(Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)</p>	OK
9-27	A	3	0			<p>There is a fair amount of redundancy in the Executive Summary and in the Current sensitivity sections. If there is an issue of making the chapter shorter then some editing is in order here.</p> <p>(Kathleen Galvin, Colorado State University)</p>	
9-28	A	3	0			<p>Executive summary is very comprehensive but a bit long. I don't think it is necessary to have references in this summary - but make sure the references are in the text ?</p> <p>(Mark Tadross, University of Cape Town)</p>	Agreed. No references in summary.
9-29	A	3	1	5	47	<p>Executive summary. This section is unclear to me. It does not appear to summarise all of the chapter but discusses TAR and sensitivity.</p> <p>(Siri Eriksen, University of Oslo)</p>	Agreed. Rewrite needed.
9-30	A	3	1	7	10	<p>It is noted that vulnerability to diarrhoeal disease is not addressed although this seems to be relevant for Africa.</p> <p>(Klaus Radunsky, Umweltbundesamt GmbH)</p>	
9-31	A	3	1	40		<p>Chapter suffers throughout from vague references to regions - e.g. southern, northern Africa. There doesn't seem to be consistency between sections as to what actual area authors mean by these descriptors</p> <p>(Chris Reason, University of Cape Town)</p>	<p>Regions need to be clarified upfront. – agreed // Perhaps map needed previous one – update Africa (MAP DONE!). If sections still not clear will try and improve but see comments made later on</p>

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9-32	A	3	1	40		Chapter suffers throughout from incomplete referencing of the literature and emphasis on some of the key interests of the authors rather than providing a more comprehensive view of the continent, its pronounced regional differences and sensitivities (Chris Reason, University of Cape Town)	Tried to overcome this – got in a new CAs to assist with various sections, but will refer to general comments. Clearly we cannot possibly hope to capture everything written of relevance.....but will try with reviewers guidance, including sections but only those refs that are post TAR.
9-33	A	3	3	3	10	This is the opening paragraph of the executive summary and needs to stand on solid ground. The first sentence should be between quotation marks as it is taken word for word from a published literature. Furthermore, the reference to (Hulmes et al., 2001) is actually attributable to (Santer et al. 1996) and should be (Hulmes et al., 2001 and references therein). The sentence 'Climate change will impact negatively ...welfare' is generic and not supported by evidences. Be specific about the climate changes in question and provide references. Also what type of climate change is considered and what benefits will it bring? I suggest you provide general trends of climate change in terms of change in temperature and rainfall so that you prepare the reader to the following sections. A sentence about uncertainties will be more than welcome. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Agreed. Will work on this.
9-34	A	3	3	3	5	Does this belong in a regional chapter? (Paul Desanker, Penn State Univ)	
9-35	A	3	5			(Hulme et al.,2001) (Effiom Antia, University Of Calabar)	
9-36	A	3	12	3	24	I wonder if it is necessary to have a summary of the TAR in the executive summary of the FAR ? Maybe this can be removed. (Mark Tadross, University of Cape Town)	Required by IPCC check – Again what are reviewers TOP
9-37	A	3	13	3	14	State period of rainfall decrease in Sahel, rainfall increase in east and central Africa (Chris Reason, University of Cape Town)	We do mention problems with rainfall attribution in Sahel so not sure how to address this. There is disagreement on this in the literature...again wait to see what is in WG1
9-38	A	3	13	3	14	Please, add the reference for this statement (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-39	A	3	15	3	15	Please, add the reference for this statement (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-40	A	3	18	3	19	Equatorial east Africa is generally known to have two main rain season; MAM and SON. So if the authors wish to refer to the DJF and JJA seasons, then the region being referred to should be defined more precisely	Region NB – show regional variation – agreed!

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						(Richard Anyah, Rutgers University)	
9-41	A	3	22		24	The factors in this sentence are not the same as those in line 48 to 50 on the same page. They should be the same and inclusive (Kathleen Galvin, Colorado State University)	Check
9-42	A	3	30	3	31	the increasing of rainfall in west africa in the semi-arid region is not consistent and can't be generalized (AMANI Abou, AGRHYMET Regional Center)	To be checked.
9-43	A	3	30		31	Increase in precipitation in semi-arid W Africa: statement is erroneous and in conflict with line 14 and with p.7 lines 41-44. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-44	A	3	30	3	32	check increase in precip in west africa (Declan Conway, university of east anglia)	
9-45	A	3	30	3	30	Replace "increase...West Africa" with "decrease... West Africa." Replace the citation (Nicholson 2001) with a citation to a more recent and extensive analysis (Dai, Lamb, et al. 2004). Reference: (Dai, A., P.J. Lamb, K.E. Trenberth, M. Hulme, P.D. Jones, and P. Xie. 2004. The recent Sahel drought is real. International Journal of Climatology 24: 1323-1331.) (Patrick Gonzalez, The Nature Conservancy)	Agreed!
9-46	A	3	30	3	32	"Current sensitivity" I really do not think that one attends a rise heights of rain of the semi-arid areas of West Africa. Résultats of (TAPSOBA, 1997); (MAHE G, OLIVRY J.C., 1995) and (VISSIN and al, 2003) prove a significant fall of precipitations since the years 1970. (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-47	A	3	31	3	31	rephrase 'increasingly wetting' - is it a wetting trend that is increasing or is it getting wetter ? (Mark Tadross, University of Cape Town)	
9-48	A	3	32	3	34	"Current sensitivity" This downward trend to rainfall of the wet season is also highlighted by (VISSIN and al., 2004 and HOUNDENOU and al., 2005) in the Niger basin of Benin in West Africa. One attends an stationnarity of the pluviometry of a dry season. (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-49	A	3	36	3	36	The word "controlling" doesn't seem appropriate. You may consider other word or delete it. (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-50	A	3	37	3	37	Dai and Wigley, 2000 not on the references list (AMANI Abou, AGRHYMET Regional Center)	

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9-51	A	3	37	3	39	I'm not sure that this report does state this and I have not seen extensive evidence for such increases - it may be that it is the socio-economic impacts that have increased (Declan Conway, university of east anglia)	
9-52	A	3	37	3	40	I don't understand this sentence (Siri Eriksen, University of Oslo)	
9-53	A	3	37			Should cite other ENSO papers such as Lindesay, 1988; Ogallo, 1988; Reason et al, 2000 (Chris Reason, University of Cape Town)	Old references – disagree. Again terms of reference to reviewers!!
9-54	A	3	42	3	50	the notion of very high population growth rate for Africa is overplayed. How about the impact of HIV/AIDS? I would suggest adding TB to HIV and malaria on line 48. Possibly meningitis, given high risk as reported on page 4 line 20. (Paul Desanker, Penn State Univ)	I agree rest of group don't!
9-55	A	3	42	3	50	Other stressors that should be mentioned included political instability, globalisation, market competition with other low wage countries in Asia (Chris Reason, University of Cape Town)	Agreed. But then different focus for chapter. Much done to amend this in this version!~see for example new section 9.2.2
9-56	A	3	44		47	This statement, copied from p. 29, should be balanced by a statement about the frequent occurrence of conflicts as indicated on p. 8. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-57	A	3	50	3	50	Sokona, 2001 not on the references list (AMANI Abou, AGRHYMET Regional Center)	
9-58	A	3			58	There are many References within the text but are not actually on the reference list. There are also references cited on reference list but are not within the text. These are all listed and the document will be attached separately. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-59	A	4	1	4	25	The distinction between 'natural' and 'human' systems is insufficient, and there is some overlap. This should be clarified. (Emma Archer, University of the Witwatersrand)	Agreed must be brought out!
9-60	A	4	1		12	Suggest you add a few lines here to show that desertification is the result of demands for the ecosystem services. Part of deforestation goes to satisfy domestic energy needs and building material. Kindly check the figures on the per capita African water as well as the global average which does not carry units. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	Desertification – ecosystem goods and services.
9-61	A	4	1	4	12	The desert ecosystem and desertification problems are missing. An increase of the frequency of dust storms is expected (Mohamed El Raey, Institute of Graduate Studies and Research)	Substantive desert ecosystems missing – need literature (Pius) Desertification.

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9-62	A	4	2			..comm. enterprises and dev. of tourism: statement is useful but these specifics should be added on p.9 lines 38-39. For balance, medicine or human health should be mentioned there as well. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-63	A	4	2	4	2	it is not true that rich and diverse biological resources have enormous value for local populations - I would suggest rewording to reflect that these resources do have enormous value for global biodiversity (Paul Desanker, Penn State Univ)	- need to rephrase - disagree
9-64	A	4	3	4	4	Insert "Population increase" after the word pressure in line 3. (Nadir Awad, Partners in Environmental Sustainability)	
9-65	A	4	4	4	4	Midgley, 2005 not on the reference list (AMANI Abou, AGRHYMET Regional Center)	Midgley
9-66	A	4	5	4	6	The rate of deforestation in Africa which was ~78% during 1990-2000 period needs a supporting reference(i.e FAO,2001: The State of the World's Forests) (Richard Anyah, Rutgers University)	Deforestation reference. See the FAO report.
9-67	A	4	5	3	6	The statement about deforestation needs a reference. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Agreed.
9-68	A	4	6		12	This detailed statement is based on the single brief sentence on p. 9 lines 48-49. The short and long texts should probably exchange places. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-69	A	4	6	4	7	"Current sensitivity" To indicate that the inadequation between availability and the demand for water are much more remarkable in the arid and semi-arid areas. (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-70	A	4	7	4	12	"Current sensitivity" In general, African industries are very little developed and are still embryonic so that their consumption affect the water resources. The bad management of atmospheric water can be a reason of reduction to the contributions. It would be also good concerning the culture irrigated to moderate its participation in the fall of water, because certain countries do not practise it (example to Benin), but know the water shortage. (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-71	A	4	9	4	11	This statement is not clear (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-72	A	4	10			Cubic metres per capita please! Not 5000 cu Km water per person per year. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	

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9-73	A	4	10	4	12	cubic km per year should be cubic metres (Declan Conway, university of east anglia)	
9-74	A	4	10			Please correct 5000 cubic km by 5000 cubic m (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	
9-75	A	4	14	4	25	This paragraph is rather on health issues than huma systems. In any case the last phase of the paragraph is not consistent with the rest (Youba SOKONA, Sahel and Sahara Observatory (OSS))	Surely related.
9-76	A	4	14	4	25	In this section, you may need to add few lines aboutfamine and loss of lives due to drought. (Tsegaye Tadesse, University of Nebraska-Lincoln)	???
9-77	A	4	16			Rift valley fever should be deleted here or added in main text p 11 lines 11 ff. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-78	A	4	18		19	The estimated deaths of 155 000 - 310 000 deaths occur over what time period. It would be better to specify the approximate period for the deaths. (Todd Ngara, IGES)	
9-79	A	4	19	4	19	Eves et al, 2004 not on the reference list (AMANI Abou, AGRHYMET Regional Center)	
9-80	A	4	19			155,000-310,000 deaths- over what interest? (Effiom Antia, University Of Calabar)	
9-81	A	4	19			please add "per year" to deaths (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-82	A	4	19			write Eves and al., 2004) Cholera (punctuation and spacing) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-83	A	4	21		25	This statement should be elaborated in the main text (p 12 lines 11 ff) or deleted. Related comments p 12 line 11 ff and p 19 line 28 ff. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-84	A	4	21	4	25	Mahé G., Olivry J. (1999). Assessment of freshwater yields to the ocean along the Atlantic coast of Africa. Comptes Rend. de l'Académie des Sci., 328, 21-26. this is a comprehensive review of these changes - current reference is grey literature. See also Magistro work in Climate Research (2001) on adapting to these changes (Declan Conway, university of east anglia)	
9-85	A	4	24	4	24	The use of the word limiting in the sentence is unclear. The authors could consider replacing it with a less ambiguous word such as "adverse"	

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						(Richard Anyah, Rutgers University)	
9-86	A	4	28	4	28	It should be noted that the uncertainty in precipitation projections over Africa still makes it difficult to assess future vulnerability to food insecurity given the overdependence on rain-fed agriculture. In fact a number of GCM ensemble simulations of the contemporary climate have a consistent northward shift of the ITCZ and associated regions of maximum convection(precipitation), and this bias is likely to increase the uncertainty in the AOGCM projected precipitation patterns and amounts over Africa (e.g the Sahel;Copola and Giorgi, 2005; Anyah and Semazzi, 2005) (Richard Anyah, Rutgers University)	Agreed good point. – Preface whole chapter!! Take into account the uncertainty. Serazzio to contribute.
9-87	A	4	28	4	37	This is an important section and may be misleading if not made clear to the general reader. The word 'most' in the first sentence is vague in this context. There are models which simulated different results. Because of space limitation, I suggest to add at least one sentence stating that other GCM's indicated less intense warming thought under slightly different scenarios. Also it needs to be clear that these are model simulations and are associated with uncertainties. While model simulations are in lines in terms of trends of temperature they differ in their projected values. The simulated precipitations are less certain. The sentence 'consistent with sensitivity ...' is not clear. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Agreed – models uncertainties NB modelling uncertainties.
9-88	A	4	28	4	28	global' needs to be replaced by 'general'. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-89	A	4	28			temperature values projected (9° C and 7°C) for respectively northern and southern africa for maximum warming seems high and no reference? Are they from AR4/PCMDI? Compared with what indicated in Chap 11 of WGI projected temperatures in the same areas from GCM are smaller. Results from dynamical downscaling are between 3 to 5°C for the maximum values. Indications on the scenarios used will be useful for comparison. Impacts could be very different (Abdoulaye SARR, Direction Météorologie Nationale)	Cross check with Chp 11
9-90	A	4	30	4	30	These values for temperature increases seem high. I wonder if they are for a single GCM predicting the maximum increase under an A2 scenario ? Even so, given the text states that the RCM projections are considerably lower, and given that this executive summary is perhaps the only thing some policy makers will look at, I suggest quoting a broader range of values in the executive summary e.g. 3-9 degrees. The impacts of a 1 degree increase are scary enough in themselves, nevermind 9 degrees ! (Mark Tadross, University of Cape Town)	Range of increase – temperature. Need to get facts straight.

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9-91	A	4	32	4	32	JAS has to be precise (July-August-September) (AMANI Abou, AGRHYMET Regional Center)	
9-92	A	4	32			decline in JAS(needs to define JAS) (Effiom Antia, University Of Calabar)	
9-93	A	4	32		36	Neither sea surface temperatures nor the references are mentioned in the main text (p 13-14), but should be. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	Agreed.
9-94	A	4	32			JAS in full please in exec summ. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-95	A	4	32	4	32	Please clarify the wording "decline in JAS over sub-Sahara" (Klaus Radunsky, Umweltbundesamt GmbH)	
9-96	A	4	33	4	33	Bader and Latif, 2003 not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-97	A	4	35			1995-1999 climatology: blur, not clear, give more information (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-98	A	4	36	4	36	Paeth and Hense, 2004 not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-99	A	4	36			(Paeth and Hense, 2004; Hoerling) (Effiom Antia, University Of Calabar)	
9-100	A	4	36	4	37	Please, add the reference for this statement (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-101	A	4	37	4	37	There is no southern African monsoon - this basic error in Hoerling et al 2005 should not be promulgated (Chris Reason, University of Cape Town)	To check with WGI NB – No SA monsoons
9-102	A	4	39	4	40	Suggest rewording this sentence so it doesn't sound like we need to know the future before we can understand vulnerability - we of course cannot know the future. Scenarios do not allow us to know the future. (Paul Desanker, Penn State Univ)	
9-103	A	4	42		43	Important, but missing in main text (p. 14-16): deserves clear mention there. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	NB
9-104	A	4	42		43	This sentence is not clear to me. (Todd Ngara, IGES)	
9-105	A	4	44			SRES(needs to define	

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						(Effiom Antia, University Of Calabar)	
9-106	A	4	49	5	3	A Southern African projection should be included as an example here as well. (Emma Archer, University of the Witwatersrand)	Will try.
9-107	A	5	6		7	Sentence "Direct links ..." can be deleted: not directly relevant, not in main text. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-108	A	5	7	5	7	Add the following after the word "waves" : " in addition to air pollution episodes induced by the increased atmospheric stability over some mega cities " (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-109	A	5	8	5	14	The paragraph should start with: For example, model projections. The first sentence is too long. The words 'altitudinaly' can be replaced with 'with altitude' and 'intensified' can be replaced with 'increased'. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-110	A	5	8		10	As far as I know the long and short rainy seasons occur in East Africa but this is not clear from the sentence since two other regions are also mentioned.` (Todd Ngara, IGES)	
9-111	A	5	10			A reference is needed to support the claim about intensified frequencies of events (Chris Reason, University of Cape Town)	This was queried with TSU.....also to wait more inputs from WG1 on this.
9-112	A	5	10	5	11	intensification of disease with increasing el-nino refers to east africa ?? If so this should be made plain in the text (Mark Tadross, University of Cape Town)	
9-113	A	5	11	5	12	This is bold statement. Could you add reference? (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-114	A	5	16	5	26	Cross reference to chapter 5. (Emma Archer, University of the Witwatersrand)	
9-115	A	5	16	5	26	The FAO/IIASA GAEZ studies are amongthe most comprehensive, yet they are given a cursory mention in this section and the underlying main text. There is a wealth of detail about projected changes in ag production by region that should be reviwed a lot more. I would also suggest adding many local studies to add context. Same thing for coastal zones section below, are these global studies the best sources of information?? (Paul Desanker, Penn State Univ)	Local data. Need for numbers look for local studies.
9-116	A	5	18	5	18	Gitay et al, 2001 not on the list of reference (AMANI Abou, AGRHYMET Regional Center)	
9-117	A	5	19	5	26	The sentence has some redundancies. Consider : The negative impacts of climate change on marginal lands, together with shortage of resources may have serious consequences on poor rural communities resulting in loss of income, migration and	

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						possibly political unrest. Increased temperatures caused by possible climate change may lengthen the growing season in some areas. The warming will likely (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-118	A	5	21		26	This brings unbalanced emphasis into exec summ. Suggest delete here, but keep in main text (p 22 lines 13-15). To balance, the piece in the exec summ could best be replaced by sentences on livestock and fisheries summarized from p 22 lines 19-40. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-119	A	5	21		26	These lines are repeated exactly on page 22 lines 13 - 17. (Todd Ngara, IGES)	
9-120	A	5	28		30	Cairo is a megacity but is it a coastal one. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-121	A	5	28	5	36	Cairo is not a coastal city. Mention the Nile delta region and coastal cities of Alexandria, Rosetta and Port Said (Mohamed El Raey, Institute of Graduate Studies and Research)	Look for paper from Nile.
9-122	A	5	29	5	33	Cairo is a megacity but it is not a coastal one. It is on the Nile's bank. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-123	A	5	29		30	This sentence is poorly structured. (Todd Ngara, IGES)	
9-124	A	5	31	5	31	Omit the word "coastal" (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-125	A	5	38	5	38	There should a statement on the climate chnage impact and vulnerability of the largest freshwater lakes in Africa(Tropics) such as Lake Victoria Lake Tanganyika, Lake Malawi and the tropical rainforest as these represents some of the largest ecosystems in the continent that are also quite sensitive to climate variability/change(e.g O'Reilly et al.(2003) in Nature, 424, 766-768; Song and Semazzi, 2001) (Richard Anyah, Rutgers University)	
9-126	A	5	46	5	46	Flower et al, 2001 not on the list of reference (AMANI Abou, AGRHYMET Regional Center)	
9-127	A	5	50	5	50	Expand the abbreviation "TAR" as it is used for the first time. (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-128	A	6	0	45		Many citations are not supported by the References list, and some are inaccurate in authors' names or date. For example, none of the 7 citations on p. 29 appear in the References, and 9 out of 11 items cited on p. 8 lines 25-50 are missing there. Parts of the text suffer from vague, imprecise or infelicitous wording: random examples from p 7 lines 29-30: "probably"- delete; "extent...zonal"- longitudinal	

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						extent?; "experiences strong shifts of climate ..." (temporal?!)- has a wide range of climates (The decadal shifts discussed in the case study on drought in the Sahel are very minor compared with statement "... from humid tropics to hyper-arid Sahara".) (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-129	A	6	1	6	17	This is an excellent summary of the TAR assessment and model projections. However, each component needs a reference. It would be useful if the vulnerability caused by climate change was compared to the other factors in term of proportional role played by climate. Also, among those factors listed, HIV/AIDS can be replaced by health issues. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-130	A	6	2		13	Almost the whole paragraph is repeated on page 3 , lines 13 - 24. (Todd Ngara, IGES)	
9-131	A	6	3	6	4	It is stated on page 3 line 30 to 31 that precipitation has increased in the semi-arid regions of West Africa through the twentieth century and here the oposite is stated. (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-132	A	6	4		5	This is redundant as it is a repeat of what was said in line 15 on page 3. I understand there is the summary and there is the text but there seems to be a fair amount of redundancy throughout the chapter that a good editor can catch and cut. (Kathleen Galvin, Colorado State University)	
9-133	A	6	9		14	This was said in line 22 and 23 on pg 3 and on page 3 line 48-50. This statement is really important and sets the stage for the rest of the document so should be stated similarly throughout. (Kathleen Galvin, Colorado State University)	NB
9-134	A	6	11			write factors including (space enters the two words) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-135	A	6	12		12	Inequitable land distribution. I find this description rather biased for a neutral report. Land systems have evolved through long history. A better and neutral description would be perhaps different systems of land tenure, some of which could unequitable to the small producer. A similar refernce to land tenure had occurred in chapter 5, page 3, line 29 using a better description.... more secure land tenure. It may also be added that equitable land distribution alone may not necessarily be agurantee for good production and improvement of livelihoods. Other factors come into play, such as credit and marketing.If these are not forthcoming possession of land alone will not feed people. It would be useful if the report uses a unified description.	

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						(Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-136	A	6	19	6	24	One of the key impacts on climate change on water resources in Africa, apart from reduction in soil moisture in the sub-humid regions, which would ultimately lead to reduced precipitation, is the fact that the ground water recharge will also be severely reduced. Consequently there will be increased demand for water for irrigation over the Nile Basin and this would lead to increase in water-right conflicts and also slow economic growth in countries such as Egypt, whose economy is driven significantly by the Nile water resources. (Richard Anyah, Rutgers University)	
9-137	A	6	19	6	24	Please be consistent. Sub-regions where you stated that there has been an increase in rainfall can not experience low level of water in reservoir storage of dams (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-138	A	6	31			in the frequency "of the forest fires" and (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	
9-139	A	6	34	6	34	The impact of climate change on cereal production in Africa need to be more explicitly highlighted since it presents a critical issue of future food security/insecurity in the continent since a majority of people depend on cereal crops for subsistence. Cereal production is likely to be highly affected in a more variable and changing climate(See for example Jones and Thornton(2003): "The potential impacts of climate change on maize production in Africa and Latin America in 2055: Global Environmental Change). Furthermore, climate change is likely to lead to diminution of cereal production in many parts of Africa in part due to increase in crop pests which will have got opportunies to multiply in a warmer a climate. (Richard Anyah, Rutgers University)	Agreed. Tony and Tabo.
9-140	A	6	34	6	37	Add a note that certain climate change impacts could also affect the access component of food security. (Emma Archer, University of the Witwatersrand)	Agreed – how is another issue.
9-141	A	6	35	6	35	How food importing countries will be at greater risk if there will not be a food shortage at global level? A given country can develop a food security strategy based only on importing food. (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-142	A	6	36		37	Under severe drought, the two East and Central African rift valley lakes of Malawi and Tanganyika would have their waters receded substantially due to excessive evaporation thereby leaving behind substrate suitable for breeding and production of phytoplankton and zooplankton necessary for early life stages of some fish such	Need more on Fish etc. Lakes Malawi / Tanganyika. Tony address upwelling and fisheries.

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						as <i>Oreochromis</i> spp. In Lake Malawi. Prolonged hot season and the shortening of winters on these two rift valley lake could lead to a semi permanent stratification of the lake while also disturbing the south –easterly winds (trade winds) that is the driving force for the mixing of the various water layers (upwelling). The shorter period of upwelling would lead to low primary production and therefore low fish production due to disturbance of the food chain. (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	Need references.
9-143	A	6	40			write inadequate and (not spacing enters the two words) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-144	A	6	49			This statement about desertification is too simplistic - what about land surface feedbacks, human and animal interactions ? (Chris Reason, University of Cape Town)	This has been attended to ...see refs to work on this in various sections (e.g. Galvin and others work!). Also new CA added in sections on land use and climate, see end 9.3.1.
9-145	A	7	3	7	7	This is not clear. Is the problem of inadequacy related to current technologies or the capacity of the African countries to cope with clamatic stresses? (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-146	A	7	4	7	7	This sentence is a little hard to follow. Suggest splitting it to make it more manageable (Mark Tadross, University of Cape Town)	
9-147	A	7	8	7	8	The word report should clearly indicate that it is refering to the TAR (Richard Anyah, Rutgers University)	
9-148	A	7	13	13	23	9.2 I think the chapter may need an introduction to guide the reader through the material presented, structure, objectives and argument. Such an introduction could also define or explain vulnerability in the context of the chapter. The chapter uses vulnerability in very many (mostly undefined ways), sometimes appearing to signify impact, sometimes appearing to signify a state, sometimes signifying sources of vulnerability, and sometimes causes of vulnerability. (Siri Eriksen, University of Oslo)	Definition of vulnerability. NB – vulnerability contextual / outcome vulnerability.
9-149	A	7	13			Please introduce under Current sensitivity a new paragraph as "The arid and semi arid regions of the North Africa and particularly the steppes are today more than before under the threat of desertification. Near the half of the steppe area, covering about 40 million hectares, is already strongly degraded. (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	Agreed – desertification needs more emphasis.
9-150	A	7	19	8	21	This section about Climate is poorly written. While it is true that African climate is influenced by the three ocean basins, it is not controlled by the Hadley cell ! The statement ' its climate is controlled by the Hadley cell which is symmetrically located	To be rewritten. Climate section? Role and contribution of Washington?

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						' should be omitted or rephrased. The statement: " The sahel is a key location for strong land surface-atmosphere feedbacks, probably due to a large cross latitude albedo and the extent of these condittions zonal' is not clear. May be the authors want to refer to the importance of the sahel in the African regional climate through the latitudinal contrast of land cover characteristics extending all over west Africa ? The statement " Africa experiences strong shifts Sahara" may be rephrased as " Africa presents several regional climate regimes ranging from humid tropics to hyper arid Sahara". (Lahouari Bounoua, NASA Goddard Space Flight Center)	Getting relevant chapters from WG1
9-151	A	7	24	7	24	CLIVAR, 1999 , not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-152	A	7	24	7	24	Again the climate can't be controolled by the Hadley cell. You may need other words such as influenced, impacted, ..etc. (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-153	A	7	25	7	25	the Hadley cell is 'symmetrically located'. Symmetrical about the equator or a particular line of longitude ? - the statement needs to specify which. I am not convinced by this; applied to the southern Hadley cell it implies that both the ITCZ and sub-tropical highs have similar strengths and locations in both the Atlantic and Indian Oceans adjacent to southern Africa. The ITCZ has a much more southerly position in the Indian sector and the relative strengths of the sub-tropical highs are key determinants of southern African climate variability i.e one is often stronger than the other. (Mark Tadross, University of Cape Town)	WG1
9-154	A	7	26			Mepta should be Mpet (Chris Reason, University of Cape Town)	Writers climate section to check!
9-155	A	7	28			add a reference on the potential implication of sahara aerosol and tropical cyclone and transport towards America (Ex Prospero) and Europe. (Abdoulaye SARR, Direction Météorologie Nationale)	
9-156	A	7	30			Zonally(instead of Zonal) (Effiom Antia, University Of Calabar)	
9-157	A	7	30	7	30	The words 'extent of these conditions zonal' should be reordered to read " the zonal extent of these conditions" (Richard Anyah, Rutgers University)	
9-158	A	7	30			What does strong shifts in climate mean ? Gradients ? A reference is needed (Chris Reason, University of Cape Town)	Climate needs checking., section was revised
9-159	A	7	31	7	34	This sentence appears very deterministic. I'm not sure that climate controls economic development more than a range of other, non-climatic, factors.	

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						(Siri Eriksen, University of Oslo)	
9-160	A	7	37	7	37	Kruger and Shongwe, 2004, not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-161	A	7	37	7	39	This sentence does not make any geographic distinctions for these two seasons. Is this statement true for the whole African continent as it implies ? (Mark Tadross, University of Cape Town)	
9-162	A	7	41			Differentiation (Effiom Antia, University Of Calabar)	
9-163	A	7	41	7	41	There should be a period after the word differentiation. (Richard Anyah, Rutgers University)	
9-164	A	7	41	7	46	Reference to papers on recent Sahel rainfall would be useful here; Dai et al 2004/05 IJC and L'Hôte et al; L'Hôte, Y., Mahé G., Somé, B. and Triboulet, J.P. (2002) Analysis of a Sahelian annual rainfall index from 1896 to 2000 ; the drought continues. Hyd. Sci. J. 47, 563-572. Dai, A.D., Lamb, P.J., Trenberth, K.E., Hulme, M., Jones, P.D. and Xie, P. (2004) The recent Sahel drought is real. Int. J. Climat. The points made by Chappell and Agnew are well refuted by Dai et al and I don't think Chappell paper needs to be mentioned here. Conway (Conway, D. (2005) From headwater tributaries to international river basin: adaptation to climate variability and change in the Nile river basin. Global Environmental Change 15, 99-114.) shows slight increases in rainfall over lake victoria region from 1960s and a recovery in rainfall over Ethiopia from around 1990 following dry 1980s decade. (Declan Conway, university of east anglia)	
9-165	A	7	43	7	43	Replace the citations (Nicholson et al. 2000 and Nicholson 2001) with citations to more recent or extensive analyses (Hulme, Doherty, et al. 2001; Dai, Lamb, et al. 2004). References: (Dai, A., P.J. Lamb, K.E. Trenberth, M. Hulme, P.D. Jones, and P. Xie. 2004. The recent Sahel drought is real. International Journal of Climatology 24: 1323-1331); (Hulme, M., R. Doherty, T. Ngara, M. New, and D. Lister. 2001. African climate change: 1900–2100. Climate Research 17: 145–168.) (Patrick Gonzalez, The Nature Conservancy)	Nicholson observed. Check and compare.
9-166	A	7	44	7	44	the question of Chappell and Agnew (2004) o the reality of the rainfall decline in the sahel is not consistent. There is in the same journal the article comment by Peter Lamb et al, on Chappell and Agnew article. This must be considered (AMANI Abou, AGRHYMET Regional Center)	
9-167	A	7	44	7	44	Delete the phrase "...even though...Sahel" because Dai, Lamb, et al. 2004 effectively demonstrated the statistical significance of the 1930-2003 decline in Sahel rainfall. Reference: (Dai, A., P.J. Lamb, K.E. Trenberth, M. Hulme, P.D.	

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						Jones, and P. Xie. 2004. The recent Sahel drought is real. International Journal of Climatology 24: 1323-1331). (Patrick Gonzalez, The Nature Conservancy)	
9-168	A	7	44	7	44	even though' should be just 'though' ? (Mark Tadross, University of Cape Town)	
9-169	A	7	46			It should be noted that Richard et al's results were obtained after averaging over a large area - this may mask trends evident over smaller areas of southern Africa (Chris Reason, University of Cape Town)	Climate needs checking.
9-170	A	7	50	7	50	Mchugh and Rogers, 2001 not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-171	A	8	2	8	3	Aren't the sst anomalies refered to in lines 2 and 3 of page 8 related to ENSO ? There are no studies linking NAO to rainfall variability in Africa and if so provide reference. In general this section could be shortened and better organised. I suggest : a) Provide the fact about African climate both observed and modeled by region. Specifically state where there is drying and warming and where climate change is more important than climate variability. African economies mostly depend on water availability which is controlled by rainfall. Interannual variability in African rainfall is a marked climate feature. It is my opinion that this factor be the main issue about African climate. The role palyed by land cover change on African climate is not well served. (Lahouari Bounoua, NASA Goddard Space Flight Center)	There are studies – Isabelle to provide. Good point to highlight. Take into account link between rainfall variability and rural population. Addressed.
9-172	A	8	2			Be more specific about SST influences e.g. tropical SE Atlantic (Hirst and Hastenrath, 1983; Rouault et al, 2003), South West Indian Ocean (eg Reason and Mulenga, 1999), tropical South Indian Ocean (eg Behera and Yamagata, 2001; Reason, 2001) (Chris Reason, University of Cape Town)	Again pre TAR refs being called for will check re Roualt ref.....for final version if relevant.
9-173	A	8	4			ENSO references are needed - Lindesay, 1988; Ogallo, 1988; Reason et al, 2000 (Chris Reason, University of Cape Town)	Others pre- TAR Monthly weather review – Sahel.
9-174	A	8	6	8	8	"The recurrent drying of the Sahel region since the 1970s seems to be linked with a positive trend in the equatorial Indian Ocean sea surface temperatures (Giannini et al.,2003)." This particular modeling study is an anomaly--most modeling studies link the Atlantic oceans to the Sahel precipitation, and see no relationship between the Indian Ocean and the Sahel, thus this result is likely to be model sensitive and not robust. Thus, either leave out this sentence, since the proceeding sentences cover this more generally or change the sentence to be more general: :The recurrent drying of the Sahel region since the 1970s may also be linked to changes in sea surface temperatures (Folland et al., 1986)" also Palmer, 1986 and Rowell	Convincing synthesis agreed. Accepted. Degree of confidence. Check with WG1 Isabelle (see Boko for papers in French)

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						et al., 1995: Folland, C. K., T. N. Palmer, and D. E. Parker, 1986: Sahelian rainfall and worldwide sea temperatures 1901-1985. Nature, 320, 602-607. Palmer, T. N., 1986: The influence of Atlantic, Pacific, and Indian Oceans on Sahel rainfall. Nature, 322, 251-253. Rowell, D, C.Folland, K. Makell, and N. Ward, 1995: Variability of summer rainfall over tropical North Africa (1906-92): Observations and modelling. Q.J. R. Meteorol. Soc., 121, 669-704. (Natalie Mahowald, NCAR)	
9-175	A	8	6	8	6	recurrent drying since the 70's' implies that it is still drying today. I can't remember exactly but I thought the drying trend reversed sometime in the 90's ? (Mark Tadross, University of Cape Town)	Drying / check Sahel!
9-176	A	8	8	8	10	What sort of role more specifically? (Siri Eriksen, University of Oslo)	
9-177	A	8	9	8	9	Wang and Eltahir, 2000 not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-178	A	8	9	8	10	Add two key citations on vegetation feedback: (Zeng, Neelin, et al. 1999; Zeng 2003). References: (Zeng, N. 2003. Drought in the Sahel. Science 302: 999-1000); (Zeng, N., J.D. Neelin, K.-M. Lau, and C.J. Tucker. 1999. Enhancement of interdecadal climate variability in the Sahel by vegetation interaction. Science 286: 1537-1540.) (Patrick Gonzalez, The Nature Conservancy)	Feedbacks NB
9-179	A	8	12	8	21	Aren't there more recent references on this? E.g. WMO brief? (Emma Archer, University of the Witwatersrand)	
9-180	A	8	12	8	13	Are these meteorological, hydrological or agricultural droughts? Are the causes only climatic changes or may there be socio-economic causes? (Siri Eriksen, University of Oslo)	
9-181	A	8	17		19	This is an odd statement since the rest of the section talks about what is going on now. Prehistory is interesting but does not fit in well here unless there is more explanation. I would suggest getting rid of it. (Kathleen Galvin, Colorado State University)	Delete pre-history Agreed
9-182	A	8	19	8	20	ENSO and Indian Ocean Dipole linked with major floods in East Africa causing wide-ranging socio-economic damage - Conway, D. (2002) Extreme Rainfall Events and Lake Level Changes in East Africa: Recent Events and Historical Precedents. In E.O. Odada and D. O. Olago (eds.) The East African Great Lakes: Limnology, Palaeolimnology and Biodiversity. Advances in Global Change Research V. 12. Kluwer, Dordrecht. pp. 63-92. (Declan Conway, university of east anglia)	Check the reference Sunazzi will give info – Isabella to handle Agreed

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9-183	A	8	20	8	21	the last sentence gives the wrong impression that flooding is unusual in dry areas. Reword. (Paul Desanker, Penn State Univ)	In some cases Agreed
9-184	A	8	21			If you want a southern African example, Namibia can be added (eg Reason and Keibel, 2004) (Chris Reason, University of Cape Town)	OK.....missed this...will re –check if relevant
9-185	A	8	23	9	33	This sub-section on "Economic and social vulnerability" has made very important observations that deserve underlining. Climate change or the vagaries of climate may compound Africa's problems of underdevelopment and poverty, but they may, and often are, not the key drivers of these problems. As correctly observed in the subsection and subsequent ones, Africa lacks not only sufficient institutional and legal frameworks but also capacity to implement policy and legal instruments. Policy and institutional failure in the implementation of many projects, be they for development or environmental management, are therefore commonplace. Rent-seeking behaviour, poor governance, inefficient bureaucracy and political instability worsen an already bad socio-economic context. Again, the subsection is right in arguing that mitigating the impacts of climate change which are long-term may not, and in fact is not, prioritized over the more urgent and immediate socio-economic issues of basic development and poverty alleviation. In such a situation, the incentives to conserve the natural resource base are weaker than the immediate rewards from 'mining' the resource base. Africa needs to be lifted from this socio-economic quagmire first or else climate impact mitigation should prioritize those strategies that are strongly and demonstrably linked to poverty alleviation and/or basic economic development, e.g. promotion of drought and pest resistant and affordable staple crops (such as from the NERICA biotechnology). (Raban Chanda, University of Botswana)	Positive Strengthen Agreed NB Tony/
9-186	A	8	25	9	33	9.2.1.2. The link between these socio-economic factors and vulnerability needs to be explained here. The section is too descriptive, and there is little explanation of how these factors affect vulnerability and how people adjust (or are unable to adjust) to climate change. Instead of discussing vulnerability, this section seems to instead actually argue that population growth and poverty cause environmental degradation, which causes vulnerability. Controversial issues surrounding such an argument need to be raised. Multiple stressors, such as conflict, globalisation, HIV/AIDS etc etc (see comment 4) need to be discussed comprehensively as equally important causes of vulnerability, not mentioned in passing as leading to environmental degradation. This section needs to discuss present vulnerability and its drivers more comprehensively.	Very important!! OK can do – but then focus shifts quite dramatically.

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						(Siri Eriksen, University of Oslo)	
9-187	A	8	30	8	30	Amoako, 2003, FARA, 2004, Sachs, 2005 not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-188	A	8	30			(Amaoko,2003;FARA,2004;...) (Effiom Antia, University Of Calabar)	
9-189	A	8	30	8	30	The reference is not in the bibliography (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-190	A	8	30			write Amoko, 2003; FARA, 2004; Sachs, 2005 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-191	A	8	33	8	33	Conway and Toenniessen, 2003 not on the list of references (AMANI Abou, AGRHYMET Regional Center)	
9-192	A	8	34	8	34	The statement beginning with "Not only these problems will", should be reworded to read "Not only will these problems" (Richard Anyah, Rutgers University)	
9-193	A	8	35			et al.,2003 (Effiom Antia, University Of Calabar)	
9-194	A	8	36	8	36	There should be an explicit statement of the HIV/AIDS pandemic which has now gone on in the continent for at least the past two decades unabated and will likely increase the economic and social vulnerability to a majority of the people to future climate change as the ravaged economies are not likely to recover quickly from the devastation even if the global community manages to control its spread in future. In addition, HIV/AIDS with its attendant devastation of (burden on) many sub-Saharan African economies, leaves many people with little coping capacities to possible climate change impacts as explained in the preceding setense (Richard Anyah, Rutgers University)	Again I agree. Isabella – figures. Zimbabwe – HIV/Agriculture Malawi
9-195	A	8	37	8	37	Comparing Africa's growth rate with a global average is a pointless comparison - (Paul Desanker, Penn State Univ)	
9-196	A	8	46			Cadisch et al.,2002 (Effiom Antia, University Of Calabar)	Agree
9-197	A	8	50	8	50	You might add the following reference as it provides a case study of conflict over resources between farmers and herders: D. Campbell, H. Gichohi, A. Mwangi, and L. Chege. 2000. "Land Use Conflict in S.E. Kajiado District, Kenya." Land Use Policy, 17, 4: 337-348. (Note I could not find the references to Kiki or to Lee and Moore in the references) (David Campbell, Michigan State University)	NB
9-198	A	9	0			Land Cover Modification: Soil erosion leads to siltation of water bodies and drying up of some lakes (e.g. Lake Chad). This changes water balance and albedo.	

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						(Mwakio Tole, Kenyatta University)	
9-199	A	9	2	9	9	Statistics on science and technology investment by some African countries and by NEPAD should be quoted. This is really a bit absolute and pessimistic - progress in this area should also be highlighted (Emma Archer, University of the Witwatersrand)	Agree.
9-200	A	9	2	9	9	On the economic and societal vulnerability, it is important to emphasize the lack of scientific research on climate science, the inadequate level of confidence that climate is an important factor in the economy and the lack of communication between the science based knowledge and policy making. (Lahouari Bounoua, NASA Goddard Space Flight Center)	? – Constraint to adaptation then Yes! African Report – Fred // Pius – Copy of research
9-201	A	9	2	9	33	This does not really fit in a section on socio-economic and social vulnerability (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-202	A	9	4	9	6	Sweeping comment about irrigation efficiency - because of reuse of return flows (e.g. Egypt) levels of efficiency can be much higher than often quoted - perhaps an example is needed to back this up. Poor efficiency also related to weak management and scheduling and uneven access to timely water, e.g. in Egypt problems are strongly related to institutional weaknesses - Radwan, L.S. (1997) Farmer responses to inefficiencies in the supply and distribution of irrigation requirements in Delta Egypt. Geographical Journal 163, 78-92. Irrigation has important national / local role in many parts of Africa and should come in later in the chapter as a potential adaptation - but with caveats about it's high water demands - it is also exposed to climate variability and change - increasing irrigation in Egypt for example can be considered mal-adaptive from a climate change perspective Conway, D. (2005) - see above comment. (Declan Conway, university of east anglia)	NB – Institutional dimensions impacting CC. NB Irrigation – Adaptation Agreed//Medany
9-203	A	9	6		8	This reference is too dated for a variable that is changing very rapidly. For just one year later, Jensen estimated 1 in 160, and 5 to 8 million users in Africa (http://www3.sn.apc.org/africa/afstat.htm). More recent data should be available, but might be obtainable only against payment. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-204	A	9	7			write Jonson, 2001 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-205	A	9	11	9	17	Some success stories should be mentioned too.	

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						(Emma Archer, University of the Witwatersrand)	
9-206	A	9	14	9	17	Insert "inefficient and poorly trained civil servants" after the words "public service delivery". (Nadir Awad, Partners in Environmental Sustainability)	
9-207	A	9	14	9	17	The last sentence may be rephrased. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-208	A	9	19	9	22	Some statistics on conflict and environmental refugees would be a useful addition here. (Emma Archer, University of the Witwatersrand)	Agreed Tony Environmental refugees.
9-209	A	9	19		22	Separate armed conflicts from environmental disasters. The idea of environmental refugees is also repeated on page 13, lines 15 -16. (Todd Ngara, IGES)	Disagree – Coleen, Tony Michel
9-210	A	9	20	9	25	Geological Processes: There are copious natural emissions of carbon dioxide in the East African Rift Valley, which have had very little research done on amounts and impacts on world carbon dioxide balance (Mwakio Tole, Kenyatta University)	
9-211	A	9	21			McLeman and Smit,2005 Myers,2001 (Effiom Antia, University Of Calabar)	
9-212	A	9	21			the reference Meyers 2001 is listed in references as Meyers 2002 (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-213	A	9	21			write Smit, 2005 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-214	A	9	21			write Myers, 2001(problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-215	A	9	31	9	33	Suggest delete this sentence - it goes the wrong impression that effects of cc will only be felt 30-100 years from now, why? By all accounts, cc effects are being felt already. (Paul Desanker, Penn State Univ)	
9-216	A	9	38	10	43	9.2.2 How specifically is climate change affecting biodiversity? This section seems descriptive and most of the information is repeated in later sections. Indigenous biodiversity is critical as a safety net in coping with climatic stresses (Eriksen 2005a), but reduced access through privatisation of land, erosion of customary rights, and exclusion of people from protected areas are as important for human vulnerability as loss of biodiversity as such (Homewood 1995, Eriksen et al 2006, Owuor et al 2005). (Siri Eriksen, University of Oslo)	Access to land, erosion of customary rights Michel (Fisheries) // Sensitivity Plus
9-217	A	9	43		44	It would make informative reading if the specific sensitivities for the various	

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						natural systems mentioned (savannahs, tropical forests etc) could have been elaborated. (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	Sensitivities for different ecosystems
9-218	A	9	48	9	49	What is the source of the rate of deforestation? What do other estimates show and what are sources of uncertainty? (Siri Eriksen, University of Oslo)	
9-219	A	9	48	9	48	midgley reference missing from bibliography (Mark Tadross, University of Cape Town)	
9-220	A	10	1	10	5	Are there references for this WHO/Mali statements? Similarly for bullets on lines 33 to 43. This examples are way too generic and hide the local context that can be shown through properly cited local examples. For example, are alien invasives only a major problem for L Victoria and on islands?? (Paul Desanker, Penn State Univ)	References Used 'including' ClearMedany – check UNEP – 2002 Africa / GEO
9-221	A	10	2		5	These two statements deserve citation of a reference (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-222	A	10	2			Invasive species: include water hyacinth e.g. in Lake Victoria, which changes water balance, changes albedo, and upon dying, generates green house gases (methane, carbon dioxide) (Mwakio Tole, Kenyatta University)	
9-223	A	10	5	10	5	reference? (Emma Archer, University of the Witwatersrand)	
9-224	A	10	9	10	9	The retreat of ("tropical") mountain glaciers , especially over eastern Africa(Mt. Kilimanjaro, Mt. Ruwenzori and Mt. Kenya) is a classic example of some of the most subtle sensitivity of Africa's ecosystem to climate change/variability and should be included as a separate bullet. (Richard Anyah, Rutgers University)	Retreat Mt Glaciers Pius//alt Glaciers Reaffining TAR – since.
9-225	A	10	29		43	The current sensitivities listed do not seem to relate well with the major ecosystems of the continent (terrestrial ecosystems: rain forests, tropical forests, velds, mountain forests aquatic ecosystems: oceans, deep inland lakes, endoreic lakes, river systems etc). I feel it would be more interesting to identify the major ecosystems and for each list the current sensitivities. (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	Agreed – major ecos – then sensitivity Ecosystems, MEA – Biodiversity//Africa – Belgis
9-226	A	10	29			Fig 9.1 Ecosystems vulnerability does not show vulnerability of Egypt to SLR nor any of the other low lying deltas in Africa (Mohamed El Raey, Institute of Graduate Studies and Research)	Not in right section – inappropriate comment
9-227	A	10	29			Figs 9.1 & 9.6. The culling of such figures from UNEP publications seems rather	Belgis//Update

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						lazy to me - the FAR is meant to summarise new research results, and maps such as these should summarise the contents of the chapter, not a single organisations' take on the issue. Their use is powerful in showing the Geography of climate impacts of climate vulnerability, so I encourage the drafting of such maps by the authors to summarise their own conclusions. (Mark New, University of Oxford)	
9-228	A	10	32	10	43	A note on the rationale for these bullet points being selected as priority concerns would be useful. (Emma Archer, University of the Witwatersrand)	Agreed
9-229	A	10	32		43	This bullet list presumably is extracted from UNEP 2002. A reference should be cited. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-230	A	10	32	10	43	did not include sensitivities of African coasts to sea level rise and particular references to Nile delta region, Lagos and small islands in Africa (Mohamed El Raey, Institute of Graduate Studies and Research)	Nile, Lagos / Key vul – vulnerability section
9-231	A	10	35	10	36	Insert "and land use conflicts" after the word "cultivation". (Nadir Awad, Partners in Environmental Sustainability)	Agreed
9-232	A	10	35		36	The encroachment of humans and cultivation results in fragmentation of these systems which is a priority concern (Kathleen Galvin, Colorado State University)	Cultivation role
9-233	A	10	40			Over harvestingplants and "forest fires" (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	
9-234	A	10				fig 9.1 Please add the symbol "forest loss" in the north of Algeria (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	Belgis, to follow up – Check refs. AMOEN – assessment UNEP – Grey literature
9-235	A	10				Figure 9.1 is not announced in the text (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-236	A	11	2	11	24	Could be expanded given the importance of ag in Africa. In fact, whole section could be re-written to actually talk about Agric and not land degradation. (Paul Desanker, Penn State Univ)	Rainfed, subsistence – land use management Husbandary – land degradation Loss of biodiversity Delete impacts only
9-237	A	11	4	11	24	In the agriculture subsection we need to add the international context characterized by the fact Developed countries give subvention to their farmer and this is forbidden by them to those from developing countries in general and in the section Africa. This is a major disadvantage.	Strongly agree – Agricultural - Coleen

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						(Abdoulaye SARR, Direction Météorologie Nationale)	
9-238	A	11	4	11	5	mendelsohn paper is 2001 in text and 2000b in biblio (Mark Tadross, University of Cape Town)	
9-239	A	11	9	11	9	The words, "and availability of inputs" ..., should be replaced with , "lack of adequate inputs" (Richard Anyah, Rutgers University)	
9-240	A	11	15			These citations are not in the References as are many others. Someone needs to give the chapter a good editing, including the references. (Kathleen Galvin, Colorado State University)	
9-241	A	11	15			Please add after environmental degradation "desertification" (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	
9-242	A	11	15			write (Fiki and Lee, 2005; Moore, 2005) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-243	A	11	20	11	20	The reference here is not in the bibliography (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-244	A	11	29			is 124,748,180: (Effiom Antia, University Of Calabar)	
9-245	A	11	29			Population at risk 125 million, estimated to the nearest ten persons? Such spurious exactitude will make readers doubt the realism of the statement. Other examples p 19 line 47, p 24 line 48. Authors please significant digits only. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-246	A	11	29	11	29	The figure 124,748,180 is too precise to be an estimation (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-247	A	11	29	11	31	first sentence needs rephrasing I think. Are these figures per annum ? (Mark Tadross, University of Cape Town)	
9-248	A	11	30			Furthermore, out of the 12.4 million cases of malaria due to epidemics, an estimated 155,000-310,000 cases result in death (Worrall et al., 2004) (Effiom Antia, University Of Calabar)	
9-249	A	11	31			deaths: please add per year (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-250	A	11	32	11	33	highlands of Eastern Africa and western Kenya seem redundant ? (Chris Reason, University of Cape Town)	This health section was revised....much debate on this whole section however.
9-251	A	11	33			Githeko and Ndegwa, 2001) (Effiom Antia, University Of Calabar)	

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9-252	A	11	34		1995;Connor et al.,199) (Effiom Antia, University Of Calabar)	
9-253	A	11	34	11	34	What is a malaria epidemic? Should this be an outbreak? (Paul Desanker, Penn State Univ)	
9-254	A	11	34	11	36	This statement needs a reference I think. (Mark Tadross, University of Cape Town)	
9-255	A	11	34			write Cannor et al., 1999) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-256	A	11	35			March-April and June(MAJ and (Effiom Antia, University Of Calabar)	
9-257	A	11	35			"areas that have two rain seasons" I assume you mean equatorial Africa ? This should be stated. (Chris Reason, University of Cape Town)	
9-258	A	11	35			The first rain season is from April, May and June (AMJ) or March, April and May (MAM) (not forget the month of May!) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-259	A	11	38			to increase (Effiom Antia, University Of Calabar)	
9-260	A	11	39	11	39	"Increases" should read "Increase". (Raban Chanda, University of Botswana)	
9-261	A	11	40		40	The sentence portrays malaria infection as a continuous and long illness similar to HIV. I suggest that it should be changed to reflect the fact that malaria is an intermittent illness. The sentence should therefore read: A significant population of individuals in Africa is also at times co-infected with (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	Andrew co-infected to checkl
9-262	A	11	40	11	44	The link between malaria and HIV is cited, but needs more explanation to assess confidence in this link. Not convinced it should be given the prominence that it has. (Paul Desanker, Penn State Univ)	// Check points
9-263	A	11	41	11	42	I think a reference here might also be appropriate (Mark Tadross, University of Cape Town)	
9-264	A	11	43			observed that (Effiom Antia, University Of Calabar)	
9-265	A	11	43	11	43	the second word 'than' should be replaced with 'that' (Richard Anyah, Rutgers University)	
9-266	A	11	43			that rather than than (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-267	A	11	46	11	48	There is a word or words missing in the sentence as it ends (....,dusty and	

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						conditions.) (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-268	A	11	47			very low humidity, and dusty conditions (Effiom Antia, University Of Calabar)	
9-269	A	11	47	11	48	Rewrite the sentence as "and dusty conditions" instead of "dusty and conditions". (Nadir Awad, Partners in Environmental Sustainability)	
9-270	A	11	47			Presumably the word hot is missing at the end of the line (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-271	A	11	49			-2003 (Effiom Antia, University Of Calabar)	
9-272	A	11	49	11	50	Instead of citing the study about wind speed and meningities, give a descriptive sentence. Did increase in winds contribute to an increase in meningities occurrences and where ? (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-273	A	12	2	12	9	STRUCTURAL question: why is this section on disasters under 'health' ? (Emma Archer, University of the Witwatersrand)	Coleen.
9-274	A	12	2	12	3	The sentence sounds incomplete and needs rephrasing. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-275	A	12	3		3	Insert the words "occurring as" between the words "usually.....a" (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	
9-276	A	12	3			Please add "floods" (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	
9-277	A	12	4		5	This sentence is not clear to me. (Todd Ngara, IGES)	
9-278	A	12	11	13	23	These two sections are largely ignored in the exec summ. Some highlights should be inserted there (cf comment p. 4 lines 21-25). (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	NB
9-279	A	12	13	12	44	This section discusses Africa's vulnerability in term of energy production and consumption. However as presented the section is a mere list of generalities. Africa's household energy relies on more than 90 % on biomass fuel. The impact of climate change on biomass production is much less than that resulting from a rational use of the resources, yet nothing is said about disciplined used of resurces. Land cover degradation is an important part of the biomass production. There is enough evidence that Africa's largest forests are being degraded in almost all	Fatima Denton Harold Wicker Tony to follow Mitigation,

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						regions yet the section does not bring these issues upfront. The discussion about subsidence and heat island effects and their relations to the energy and hydrological cycles seems too technical in this section. After reading the section the reader is left without conclusion as everything seems to be inter-related. The alternative solutions proposed are not realistic and not consistent with what was said in earlier section about Africa's ability to develop on its own without international help. Some of these technologies are not yet implemented in rich countries, leave alone putting it in the NEPAD framework. While developing alternatives solutions, Africa should introduce a strategic land use corresponding to projected future climate that maximises the utilisation of natural resources. (Lahouari Bounoua, NASA Goddard Space Flight Center)	S.Africa Tony
9-280	A	12	13	12	44	long section on energy - could cut from lines 39-44 (Declan Conway, university of east anglia)	
9-281	A	12	13	12	21	I think there needs to be references in this paragraph. The argument that disruption of the hydrological cycle will result in less biomass isn't necessarily true; regions which experience more rainfall, coupled with potential increases in net primary productivity (due to elevated CO2) would suggest more biomass. Perhaps this is referring to regions which are drying, if so this should be clearly stated and preferably have a reference to indicate that the drying dominates the response of net primary productivity. (Mark Tadross, University of Cape Town)	
9-282	A	12	23			Is the phrase "rainfall continues to decline" necessary? (Todd Ngara, IGES)	
9-283	A	12	23	12	27	These sentences on rainfall and land-surface feedbacks could do with referencing if possible but I also think they are more appropriate to a discussion on desertification, rather than energy. (Mark Tadross, University of Cape Town)	
9-284	A	12	26	12	26	It should be stated clearly here that increase in surface albedo as a result of factors listed in lines 23 through 25, will have a negative feedback on rainfall thus leading to further decline in precipitation. (Richard Anyah, Rutgers University)	
9-285	A	12	27	12	44	Again I think that more references are needed for some of this discussion, otherwise it sounds like a thought exercise. (Mark Tadross, University of Cape Town)	
9-286	A	12	29	12	31	How continuing explosive growth of big cities in Africa will imply an increasing heat stress in rural areas? (Youba SOKONA, Sahel and Sahara Observatory (OSS))	

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9-287	A	12	34	12	34	Is it a realistic option in Africa to produce electricity with new small scale biomass driven technology for small communities? Do you have any examples of such in Africa? (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-288	A	12	35			Mansur et al.(2005) (Effiom Antia, University Of Calabar)	
9-289	A	12	35	12	37	Electricity produced from which source of energy? Electricity can not be substitute of all kind of energy uses (i.e. transport in many cases) (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-290	A	12	37		44	This statement should be shifted to section 9.5 (adaptation) (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-291	A	12	38	12	44	introduction of wind, solar pvs etc is being presented here as a new solution - a few projects have already been attempted in Africa, how about offering a critical assessment of their success in providing sustainable energy?? Reference to an integrated energy system for the sub-region under NEPAD says nothing to me - what does this statement mean? (Paul Desanker, Penn State Univ)	Energy – alternatives Adaptation option?
9-292	A	12	50			(Ruth and Kirschen,2003;Sokona and Denton,2001) (Effiom Antia, University Of Calabar)	
9-293	A	12	50			To choose between & “or” and “by” in order to standardize (I suggest and) for example: Ruth and Kirshon, 2003 (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-294	A	13	4			et al.,2001;Karanja et al.,2004;Davidson et al.,2003;Benson and Clay,2003;Denton et al.,2001) (Effiom Antia, University Of Calabar)	
9-295	A	13	4			write Karaya and al., 2004 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-296	A	13	4			write Davidson and al., 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-297	A	13	4			write Benson and Clay, 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-298	A	13	4			write and al., 2001 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-299	A	13	4			Denton and al., (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-300	A	13	5	13	12	I don't think any of these relationships should be assumed - this is oversimplistic.	

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						(Emma Archer, University of the Witwatersrand)	
9-301	A	13	6			(Ruth,2003) (Effiom Antia, University Of Calabar)	
9-302	A	13	8			2030(UN-Report,2004) (Effiom Antia, University Of Calabar)	
9-303	A	13	8			write 2030 (ONE....) (space enters the two words) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	MINOR – editorial editing
9-304	A	13	9			(-et al.,2003) (Effiom Antia, University Of Calabar)	
9-305	A	13	9			write Davidson and al., (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-306	A	13	11			et al.,2003 (Effiom Antia, University Of Calabar)	
9-307	A	13	11			write Plessis and al., 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-308	A	13	16			write Smit, 2005 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-309	A	13	16			write Myers, 2001; (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-310	A	13	17	13	21	suggest rewording this sentence as it is confusing in its present form (Mark Tadross, University of Cape Town)	
9-311	A	13	21	13	21	The sentence beginning with , "This throws up", should be replaced with a more explicit word in order for the context of the statement to be clear. (Richard Anyah, Rutgers University)	
9-312	A	13	26			The subtitle 9.3 (Assumption about future trends) described the different scenarios of climate change and its impacts The climate change impacts on socioeconomic environment, water, energy, health, agriculture, ecosystems, ... are not described always according to the same canvas. For example : * For the subtitle 9.4.3. (Health), one could present, as for the subtitle 9.4.1. (Water), a figure showing the results of MARA/ARMA model used by Christopher and al. It will help well the readers to surround the ideas developed in this subtitle. * The subtitle 9.4.2. (Energy) could be supported by an example as the subtitle 9.4.1. (Water). (Lucien Marc Oyede, Department of Geology (U.A.C.) Benin)	Isabella Contact with Cas Find examples Contract with CA Energy Coleen/Tony

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-313	A	13	28	14	36	I don't see what is the point of starting the paragraph by saying : " the climate of Africa is highly variable and unpredictable ... ". All climates are variables and difficult to predict and Africa's climate is no exception. This section about climate change scenarios is a difficult sections as it entails projections results from different climate models which for many parts have different parametrizations and in most cases lead to different conclusions. Models provide results based on the logic on which they are built and it is important to recognize their limitations if we don't want to repeat our own mistakes. It is my opinion that this section should summarize the trends in climate change as given by well documented models, their implications on the vulnerabilty and adaptative measures for the African continent as a whole. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Trends in climate examined Reworked with reference to Chp 11/WG1 Agreed Table//Illustration Regions definedsub-regions Try to be clear.
9-314	A	13	30	14	36	9.3.1 Do scenarios also describe future trends in coastal cyclones? (Siri Eriksen, University of Oslo)	Check the literature and WG1 – Isabella
9-315	A	13	30			The same conclusion is indicated in page 13 (as with my comment on Page 4 line 28). (Abdoulaye SARR, Direction Météorologie Nationale)	Will adapt this
9-316	A	13	32	13	32	What is AOGCMs? (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-317	A	13	37			This is a good example of too-vague reference to Northern and Southern Africa. Do you mean everywhere north and south of the equator respectively, or something else ? (Chris Reason, University of Cape Town)	Agreed. African regions according to NEPAD
9-318	A	13	41			Did Hudson and Jones look at the ocean areas south of Africa ? It says 45S but the land ends at 34-35S The statement about better predictability of climate v ariability - has this been proved, or is it speculation ? I believe that regional models will show rather different results based on how well they resolve the tight SST, vegetation and topographic gradients in the region (Chris Reason, University of Cape Town)	Agreed.
9-319	A	14	6			et al,2001;- et al.,2003) (Effiom Antia, University Of Calabar)	
9-320	A	14	6			write Ruoteenoja and al., 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-321	A	14	6			write Giorgi and al., (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-322	A	14	7			Another vague reference to northern and southern Africa (Chris Reason, University of Cape Town)	

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9-323	A	14	12			10-20S/eastern Angola is tropical not subtropical. What about modulations to the Angola low, Congo air boundary ? Whatevidence is there (Chris Reason, University of Cape Town)	CA – Richard Washington
9-324	A	14	19	14	20	It is important to note that the projected increase in precipitation over the Sahara/Sahel region is shrouded by the inconsistencies seen in the current AOGCM simulations with the fact that the current AOGCMs have a consistent northward shift in the ITCZ location over African (e.g Copola and Giorgi, 2005; Anyah and Semazzi, 2005) (Richard Anyah, Rutgers University)	Richard Anya – CA. Climate modelling.
9-325	A	14	21		24	Bullet of marginal importance, suggest delete (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-326	A	14	26	14	29	add a recent paper in GRL from Reindert et al. 2005 which mostly predict an increase and it's theory is consistent with the sahara warming projected by most of the models. (Abdoulaye SARR, Direction Météorologie Nationale)	
9-327	A	14	27	14	27	Add one key citation to GCM analyses that project precipitation decrease in the Sahel (Hulme, Doherty, et al. 2001). Reference: (Hulme, M., R. Doherty, T. Ngara, M. New, and D. Lister. 2001. African climate change: 1900–2100. Climate Research 17: 145–168.) (Patrick Gonzalez, The Nature Conservancy)	
9-328	A	14	27	14	27	Held et all paper not in the bibliography (Mark Tadross, University of Cape Town)	Refs – MINOR
9-329	A	14	28			;Kamga et al.,2004..et al., (Effiom Antia, University Of Calabar)	
9-330	A	14	28			write Hoerlign and al., (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-331	A	14	29			et al.(2004) (Effiom Antia, University Of Calabar)	
9-332	A	14	29			write Kanga and al., (2004) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-333	A	14	33	14	33	is this a reduction by or a reduction to 2.9 degrees ? (Mark Tadross, University of Cape Town)	
9-334	A	14	39			Section 9.3.2. Socio-economic scenarios. I suspect that quite a few people would argue that the socio-economic scenarios are as a group, too optimistic, where real GDP/capita has stagnated (as seen in the first decade of Figure 9.2). An equally plausible scenario that should be entertained is that current levels of economic	Tony – GDP Good point – no growth – stagnation

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						stagnation continue and that there is no increase in real GDP/capita. (Mark New, University of Oxford)	
9-335	A	14	41	15	5	Can be reduced in length (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-336	A	14	41	14	41	"shows" should read "show". (Raban Chanda, University of Botswana)	
9-337	A	14	41	16	26	What do these scenarios entail for vulnerability? Unless clear implications for vulnerability of these macro scenarios can be explained, I suggest focusing more on possible future development of stressors (which should be identified in the previous section, see comment 12). Do GDP and population growth meaningfully indicate any aspects of vulnerability to climate change? (Siri Eriksen, University of Oslo)	Good point Final paragraph – vulnerability Tony Key vulnerability
9-338	A	15	3		3	Insert the word “how” between the words “describethe” (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	MINOR
9-339	A	15	3	15	3	Insert "how" between "describe" and "the". (Raban Chanda, University of Botswana)	MINOR
9-340	A	15	4			write Annel and al., (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	MINOR
9-341	A	15	11	15	11	"Figure 1" should read "Figure 9.2". (Raban Chanda, University of Botswana)	MINOR
9-342	A	15	11		11	Figure 9.2 is written as figure 1 in the text. (Todd Ngara, IGES)	MINOR
9-343	A	15	11	15	11	should be figure 9.2 (Mark Tadross, University of Cape Town)	MINOR
9-344	A	15	11			write in figure 9.2 (not figure 1) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	MINOR
9-345	A	15	13		16	The potential for population stagnation or even decline in Africa is real. In Malawi for the first time in the 1998 population census, actual population fail short of projections due to high mortality from HIV/AIDS. (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	NB – decline in population Population projectors CV Plus National Commission
9-346	A	15	13	15	13	"Figure 3" should read "Figure 9.3". (Raban Chanda, University of Botswana)	
9-347	A	15	13	15	13	should be figure 9.3 (Mark Tadross, University of Cape Town)	
9-348	A	15	13			write in figure 9.3 (not figure3) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-349	A	15	19	15	41	(figure 9.2) the indications of the y-axis are unreadable after printing (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-350	A	15	42			in figure 9.2, legend reads 'south africa' which may be misleading if it is meant to be 'southern africa' (same for figure 9.3) (Mark Tadross, University of Cape Town)	
9-351	A	15	42			write for "Africa areas SRES" (not "using SRES") (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-352	A	16	1	16	25	(figure 9.3) the indications of the y-axis are unreadable after printing (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-353	A	16	25			check caption for figure 9.3. Are these not regional level ? Is it A1/A2, B1 ?? (Mark Tadross, University of Cape Town)	
9-354	A	16	25			write Downscaled areas (not Downscaled country) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-355	A	16	36			Section 9.4: Use of summary tables. I like the use of summary tables, but it would be good to see these repeated for each section of 9.4, so that there is a quick look-up table of impacts in each sector. The table could then also list sector specific studies - meaning that more material could be referenced than is possible in the word limit of the main text. (Mark New, University of Oxford)	Future impacts Use of tables Tasks: Medany. Table.
9-356	A	16	36			Section 9.4.1. (Impacts) Arnell's work and that of Vorosmarty et al [Vorosmarty, C. J., P. Green, et al. (2000). "Global water resources: Vulnerability from climate change and population growth." Science 289(5477): 284-288.] provide good illustrations of the spatial variability within nations - crucial for demonstrating that national scale assessments hide as much as they show. Please also note that Martin de Wit at University of Cape Town Geology department is doing some very interesting work on the impacts of climate change on perennial river flows: changes in the proportion of rivers that have perennial flow may be as important as changes in total runoff. Suggest lead author Vogel contacts de Wit for more information. (Mark New, University of Oxford)	Check – Vogel Agreed. Done – heterogeneity of Africa
9-357	A	16	36			Section 9.4.1. In this section and elsewhere, there is often a blurring in the text between climate change impacts and impacts due to socio-economic scenarios. Arnell's work is useful in that it exactly quantifies (for his model-specific analysis) the relative importance of socio-economic and climate changes, and quite clearly shows that the climate changes are small compared to population changes. If second-order factors were included (access, management, etc) climate change would probably be even less of a factor. One of the things the authors could usefully do is try and separate out climate and non-climate effects.	If material are available – (Missing info) Research gaps

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						(Mark New, University of Oxford)	
9-358	A	16	36	19	50	It is not clear how climate change will impact water and energy in Africa (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-359	A	16	38	19	25	9.4.1 Perhaps privatisation of water sources, lack of investment in water provision, increased abstraction from irrigation need to to be discussed as causes of vulnerability or threats to future access by vulnerable groups. What are implications of existing water treatments and SADC processes on international boundaries for human vulnerability in the context of climate change? (Siri Eriksen, University of Oslo)	Good point! – Will check
9-360	A	16	38	28	4	9.4 The distinction between impacts and vulnerability needs to be clearer; in particular, implications for different vulnerable groups (or winners from climate change) need to emerge. Some sub-sections discuss vulnerability, some vulnerabilities, and some do not discuss only impacts. (Siri Eriksen, University of Oslo)	Agreed will be done.
9-361	A	16	39	16	50	Arnell water estimates are based only on HadCM3 GCM - previous section on rainfall highlights the discrepancies across GCMS for many parts of Africa - this uncertainty needs to be highlighted. Conway (2005 - see above) found no clear signal in GCMs for the Nile Basin and therefore no clear signal for future runoff (although Tate, E., Sutcliffe, J.V., Conway, D. and Farquharsen, F. (2004) Water balance of Lake Victoria: update to 2000 and climate change modelling to 2100. Hydrological Sciences Journal 49, 563-574. found an increase in levels but, again, only using HadCM3. The point could be made that the increases in temperature produced in the GCMs drive much of the drying trends. Is Huq et al a modelling study - how were results achieved? This report is grey literature. (Declan Conway, university of east anglia)	CA's Richard Washington Attach uncertainty value on work Agreed – check Limitation in study – only used 1 model.
9-362	A	16	41	17	7	" Section 9.4.1. It is not exact to say that from here 2050, the model envisages an increase in the flow in the semi-arid areas the sub-Saharan and to still project the increase in the number of conflicts around water. It will be necessary to also specify the behavior of the rivers of tropical West Africa which know a pericstant draining." (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-363	A	16	43			Arnell(2003,2004) (Effiom Antia, University Of Calabar)	
9-364	A	16	43			write Arnell (2003 and 2004) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-365	A	16	46			Do you mean southern Africa here or the Republic of South Africa ? (Chris Reason, University of Cape Town)	The comments with refs to water section were revised and so many may fall away.....

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9-366	A	16	46	16	46	is this a result for South or southern Africa ? (Mark Tadross, University of Cape Town)	
9-367	A	17	2	17	4	it is important to add at the end of the sentence the fact that climate change variation on water resource is not take into account. Only the population growth is considered in that 2025 projection. (AMANI Abou, AGRHYMET Regional Center)	
9-368	#N/A	17	10	17	12	"Section 9.4.1. One also observes in the Niger basin to Benin in West Africa the same phenomenon of nonlinear fall of the flow (HOUSSOU and al., 2004 and VISSIN and al., 2005) " (#N/A)	NB
9-369	A	17	14			0.006 (Effiom Antia, University Of Calabar)	
9-370	A	17	14			write 0.6% (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-371	A	17	17	17	42	Much of this repeats the previous section - this should be acknowledged and better integrated. (Emma Archer, University of the Witwatersrand)	
9-372	A	17	23	17	23	should be figure 9.4. An interesting result in this figure is that the A2 scenario leads to more people with water stress than the B2 scenario in north africa, yet the pattern is reversed for southern Africa. Is there a simple explanation for this ? It might be worth commenting on, especially if it highlights the different factors that are important in northern/southern Africa ? (Mark Tadross, University of Cape Town)	Explore! Roland Schulze. Arnell.
9-373	A	17	23			write figure 9.4 (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-374	A	17	27	17	31	It is difficult to relate water quality an water intensive industries in this context. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-375	A	17	27		43	These vulnerability issues, incl risk of (more) conflicts, are too important to be largely ignored in the exec summ. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	Agreed.
9-376	A	17	27			There are already water related diseases, etc so climate change will lead to increased water related diseases... (Kathleen Galvin, Colorado State University)	
9-377	A	17	27	17	31	" Section 9.4.1. To explain how under the climatic change, one would attend the deterioration of the quality of water." (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	

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9-378	A	17	33		43	Perhaps the water interdependency of West Africa could be elaborated on in a Box to show the mode of sharing water. Here there is a lesson to be learned. Despite the lack of legal framework, etc, the experience is valuable and could be developed to cater for and respond to future climatic variability. Countries of East Africa stand to learn from this experience. It might also be useful if the 90% dependency of Mauritania and Niger is illustrated. The case of Egypt is well known and the addition of a case of interdependency in the same Box would be useful for comparison. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	Water Resource assessment in Africa / Isabella Will try and where possible
9-379	A	17	33	17	43	Within this paragraph one would have expected a few lines on the Nile Basin because of its magnitude and the transboundary nature as 10 countries share this basin. Again the Nile Basin Initiative is an important undertaking that should have somehow been related to the subject. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	Pius// debatable (CV)
9-380	A	17	33		34	"in Africa" at the end of the sentence is not necessary. (Todd Ngara, IGES)	
9-381	A	17	34	17	34	the 17 countries in West Africa have to be specified (ECOWAS members add Chad, Mauritania) (AMANI Abou, AGRHYMET Regional Center)	
9-382	A	17	35	17	35	"ration" should read "ratio". (Raban Chanda, University of Botswana)	
9-383	A	17	35	17	35	"Nisaa" should read "Niasse". (Raban Chanda, University of Botswana)	
9-384	A	17	35	17	35	Niasse, 2005 and not Nisaa, 2005 (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-385	A	17	41	17	43	this comment needs substantiating - apart from small-scale local conflict between water users (generally pastoralists/agropastoralists) over access to water I am not aware of any national level conflicts over water in Africa - why should more conflict be expected to happen under climate change? What about areas where rainfall increases? (Declan Conway, university of east anglia)	
9-386	A	17	44	17	44	The vulnerability of populations within the Nile Basin in a changing global climate should be allotted adequate discussion in the summary, as well as in the main report given the enormous impact the Nile has on the economies of the riparian countries. In deed the current water sharing arrangements among the Nile Basin countries drafted during the colonial periods cannot withstand the current pressures(demands) on the water resources over the Nile Basin. Furthermore, although there have not	Nile key!! Nile Basin

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						been many climate studies(I have come across) which have comprehensively examined the impact of climate change on the Nile flow and/or its major sources, the Nile Basin is such a classic example where millions of people will be impacted very negatively due to climate change. (Richard Anyah, Rutgers University)	
9-387	A	18	1	19	26	Why is all this material on water in a section on vulnerability ? (Emma Archer, University of the Witwatersrand)	Again confusion!
9-388	A	18	10			Locations of Mt. Kenya and Mt. Kilimanjaro wrongly placed (Mwakio Tole, Kenyatta University)	
9-389	A	18	20	19	25	Could Box 9.1 be expanded to include the case of Mauritania and Niger as water stressed countries together with the well known case of Egypt? (Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-390	A	18	22	19	24	" Section Box 9.1. This Egyptian situation is not specific, it is also observed in other countries except for some differences. " (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-391	A	18	29	18	29	It would be worth noting, explicitly, that the increase in water demand for irrigation in Egypt in a future climate change scenario is likely to open more frontiers for water-rights' wars among Nile Basin countries as other countries upstream would also increase their use of the Nile waters. (Richard Anyah, Rutgers University)	Irrigation / Nile
9-392	A	18	31	18	41	The table is not titled nor not announced in the text; Which year or period do the data of the table (lines 31-41) go back to ? Specify ! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-393	A	18	37		49	write Domestic on the 2nd column and 5th line of table (not Demotic) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-394	A	18	38	18	38	"Demotic" should read "Domestic". (Raban Chanda, University of Botswana)	
9-395	A	18	47	18	47	The word 'reversed' in the second sentence should be replaced with the words 'resulted into' (Richard Anyah, Rutgers University)	
9-396	A	18	47			Delete "reversed" or replace by something like "in its turn," (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-397	A	18	47		47	This sentence is not clear to me. (Todd Ngara, IGES)	
9-398	A	18		19		Good to use Nile as a case study - this section could also reference findings from;	

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						Strzepek et al. (2001) using models they found a propensity for lower Nile flows (in 8 out of 8 scenarios). The wet scenario only produced moderate increases from the 2040s onwards, whilst 3 (4) of the flow scenarios produce large and rapid changes in flows of the order of 40-50% (20-40%) reductions in flow by 2025 (2020) and over 60% (roughly 30-60%) by 2050. Conway (2005- see above reference) considers a wider range of GCMs and finds no clear signal but notes that the large areas of lakes, wetlands, reservoirs and irrigation mean higher temperatures could have major effect on Nile flows. Egypt's ongoing expansion of irrigation is maladaptive from a climate change perspective as it reduces 'headroom' or flexibility to cope with future fluctuations in flows. (Declan Conway, university of east anglia)	NB!! Chapter 20 Mauritania
9-399	A	19	7	19	7	SLR not defined (Mark Tadross, University of Cape Town)	
9-400	A	19	8			write could beautiful lost; (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-401	A	19	9	19	10	how does an increase in crop water use efficiency due to elevated CO2 compare to this expected reduction, or is this a net reduction, including any expected increases due to CO2 ? (Mark Tadross, University of Cape Town)	
9-402	A	19	10			write uses efficiency; (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-403	A	19	11			Irrigation demands what? (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-404	A	19	11			"incensement" ? Do you mean "incentives" ? (Chris Reason, University of Cape Town)	
9-405	A	19	12	19	12	Add the following after the word "10%" : " could be the mean of the projected" (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-406	A	19	14	19	21	the figure is very fuzzy and very unreadable after printing (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-407	A	19	15			write all sectors; (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-408	A	19	16			Water bodies? (Effiom Antia, University Of Calabar)	
9-409	A	19	16			Please replace "institutional water buddies" (sic) by a generally understood term, preferably the actual designations of the concerned entities. (Robert Brinkman, Food and Agriculture Organization of the United Nations,	Confusion here??

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						Rome)	
9-410	A	19	16			When you say buddies are you referring to bodies or something else? (Kathleen Galvin, Colorado State University)	
9-411	A	19	20			write and rural areas; (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-412	A	19	21			write management; (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-413	A	19	28		50	Highlights from this section should appear in the exec summ. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-414	A	19	28	19	50	9.4.2 In the face of dwindling coping options for rural populations and poor bargaining position, dryland areas are subsidising urban energy use through producing cheap charcoal. This is a process perpetuating vulnerability among rural groups that do not have access to remittances or income from the formal sector (Eriksen et al 2005). (Siri Eriksen, University of Oslo)	NB Role of cross-subsidization rural / urban Economies
9-415	A	19	30	19	36	this paragraph is the same from section 9.2.3.3 from line 23; to harmonize (AMANI Abou, AGRHYMET Regional Center)	Structure repeats - check
9-416	A	19	30	19	36	Some repeats - should at least say "as mentioned in section...." (Emma Archer, University of the Witwatersrand)	Structure repeats - check
9-417	A	19	30	19	36	I don't think any of these relationships should be assumed - this is oversimplistic. (Emma Archer, University of the Witwatersrand)	Structure repeats - check
9-418	A	19	30		30	Better identify for the sake of clarity those parts of the African region(s) where there would be increased demand on biomas. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	Structure repeats - check
9-419	A	19	30	19	36	This paragraph is basically a repeat of first paragraph 9.2.3.3. Furthermore, the transition between drier climate and rainfall declines does not flow well with the explosive urban growth. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Structure repeats - check
9-420	A	19	30		36	I wonder how important this issue of cooling is to the continent. With most of the people in poverty, even in urban areas, I would guess that air conditioning will not be a major factor in energy use. If it is so, then you need references to the case. (Kathleen Galvin, Colorado State University)	Structure repeats - check
9-421	A	19	30		35	Parts of that paragraph are repeated on page 12 lines 23 - 35. (Todd Ngara, IGES)	
9-422	A	19	30			"parts of the region" Be more specific (Chris Reason, University of Cape Town)	

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9-423	A	19	30	19	36	This paragraph is repeating statements in 9.2.3.3. Suggest cutting it. If it is kept, the statement 'continued declining rainfall' should be qualified by stating which region it refers to. (Mark Tadross, University of Cape Town)	MINOR
9-424	A	19	38	19	44	RE-phrase this paragraph. (Chris Reason, University of Cape Town)	MINOR
9-425	A	19	40	19	44	perhaps some rewording here to clarify some of the statements ? (Mark Tadross, University of Cape Town)	MINOR
9-426	A	19	42			(- -et al.,2002) (Effiom Antia, University Of Calabar)	MINOR
9-427	A	19	42			write Davidson and al., 2002 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	MINOR
9-428	A	19	44			(de Villers et al.,2000) (Effiom Antia, University Of Calabar)	MINOR
9-429	A	19	44			write de Viller and al., 2000 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	MINOR
9-430	A	19	46	19	48	There are a number of sections in the chapter where estimations of projected population growth are included - these should be linked and made consistent. (Emma Archer, University of the Witwatersrand)	MINOR
9-431	A	19	46	19	46	Replace "estimated" with "projected". (Raban Chanda, University of Botswana)	MINOR
9-432	A	19	46	19	50	This paragraph is a bit confused (Youba SOKONA, Sahel and Sahara Observatory (OSS))	MINOR
9-433	A	19	47	19	48	a reference for the figure of 344% is needed I think (Mark Tadross, University of Cape Town)	MINOR
9-434	A	19	50	19	50	also a reference for the 40% figure I think would be appropriate. (Mark Tadross, University of Cape Town)	MINOR
9-435	A	20	1	20	2	Data contradicted by that on page 31 Lines 4 and 5. Reconcile for consistency. (Mwakio Tole, Kenyatta University)	
9-436	A	20	6	20	28	Why bring back the question of human health in Africa to the only problem of paludism? In my opinion, there are other diseases as water ones. Cholera for example, which makes episodical devastations particular in the case of drinking water deficit! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	Cholera – NB
9-437	A	20	7			et al.(2004) (Effiom Antia, University Of Calabar)	
9-438	A	20	7		26	There are other epidemics apart from malaria associated with climate change. This	

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						poses the question why malaria only is discussed under human health. (Todd Ngara, IGES)	Agreed
9-439	A	20	7			write Christopher and al., (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-440	A	20	18			Thomas et al.(2004) (Effiom Antia, University Of Calabar)	
9-441	A	20	23	20	25	The sentence could better read as follows: By this period, areas currently with low values for stable transmission in central Somalia and the Angolan highlands could also become highly suitable. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-442	A	20	26	20	26	Add the following after the word "transmission" : "also, a substantial increase in incidence of respiratory diseases during late Autumn months has been noticed in the large cities probably due to the increased air pollution episodes yielded from positive anomalies of high pressure and stability conditions (see El-Shahawy 2002,2003) (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-443	A	20	28	20	36	Link this to the sections on livestock and pastoralism in Chapter 5. Why so little cross referencing? (Emma Archer, University of the Witwatersrand)	Agreed
9-444	A	20	28	20	28	Replace "form" with "source". (Raban Chanda, University of Botswana)	
9-445	A	20	28	20	28	Insert "production" between "Livestock" and "in Africa". (Raban Chanda, University of Botswana)	
9-446	A	20	32	20	36	The tsetse fly is a problem to livestock production only because it is the vector of trypanosomiasis. The write up referenced here gives the impression that the two (tsetse and trypanosomiasis) are not related - that the former is a pest and the latter an independent disease. (Raban Chanda, University of Botswana)	
9-447	A	20	34			(East Coast Fever,ECF) (Effiom Antia, University Of Calabar)	
9-448	A	20	34		36	This sentence is not functional and could be deleted. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-449	A	20	39		40	phrase "anthrax ... while" could be deleted. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	MINOR Structure, editorial
9-450	A	20	40	20	40	The word 'in' should be inserted between remain and in, in the sentence that reads	MINOR Structure, editorial

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						'Anthrax pores can remain" (Richard Anyah, Rutgers University)	
9-451	A	20	40	20	40	Insert "in" after the word "remain" - delete "s" from the word "soil". (Nadir Awad, Partners in Environmental Sustainability)	MINOR Structure, editorial
9-452	A	20	40	20	40	Insert "in" between "remain" and "the soils". (Raban Chanda, University of Botswana)	
9-453	A	20	41	20	41	outbreaks of which disease ? Anthrax ? (Mark Tadross, University of Cape Town)	MINOR Structure, editorial
9-454	A	20	48			can remain in the soils (Effiom Antia, University Of Calabar)	MINOR Structure, editorial
9-455	A	20	50			write Bylis and Githeko, (2005) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	Livestock
9-456	A	21	2	21	10	is the rogers (1996) paper in the TAR ? If so then it maybe needs to be included in the summary of the TAR and keep this section to studies since the TAR ? (Mark Tadross, University of Cape Town)	
9-457	A	21	6	21	11	Cross reference to chapter 5 & others where appropriate. (Emma Archer, University of the Witwatersrand)	
9-458	A	21	13	21	35	The link with climate of these three paragraph is not explicit (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-459	A	21	13	21	35	For more coherence of the text, I suggest that the paragraphs: vulnerability, protective gene polymorphism and immunity (lines 13-35) must be brought back after the paragraph impacts what would give the following plan: Heath - Impacts - Vulnerability - Protective gene polymorphism - Immunity - Animal heath..... (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	Structure
9-460	A	21	14	21	25	This section is discussing impacts rather than vulnerability. What is the effect of poor health on human vulnerability. What is the effect of HIV/AIDS on people's ability to cope with climate stress and adjust to climate change in the long term? (Siri Eriksen, University of Oslo)	
9-461	A	21	31	21	31	The spelling of the word indicator should be corrected (see indictor) (Richard Anyah, Rutgers University)	Editing
9-462	A	21	31	21	31	"Indictor" should read "Indicator".	Editing

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						(Raban Chanda, University of Botswana)	
9-463	A	21	31	21	35	Do more parasites imply less or more resistance ? what do these changes imply for future generations ? (Mark Tadross, University of Cape Town)	
9-464	A	21	33		1992 (Effiom Antia, University Of Calabar)	
9-465	A	21	38	23	3	Cross reference to chapter 5 & others where appropriate. (Emma Archer, University of the Witwatersrand)	
9-466	A	21	44	21	44	perhaps mention egypt at the beginning of this sentence to make it clear this statement applies to this country (Mark Tadross, University of Cape Town)	
9-467	A	21	48	21	49	The sentence reads The agricultural.....,ranging from 10-70%. It should instead be written as: ranging from 10 to 70%. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-468	A	21	48		50	This is a repeat of information in the introduction. Does it need to be repeated? Maybe the introduction could be shortened. (Kathleen Galvin, Colorado State University)	
9-469	A	21	49	21	49	"project impacts" should read "projected impacts" (Raban Chanda, University of Botswana)	
9-470	A	21	49	21	49	I do not understand what the start of this sentence is saying. Which previous levels of carbon dioxide and how is the CO2 impacting the crop ? (Mark Tadross, University of Cape Town)	
9-471	A	21	50	21	50	IGAD and not EGAD (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-472	A	22	1		1	It would be better to use the word "percentage" instead of fraction. (Todd Ngara, IGES)	
9-473	A	22	2	22	11	Must also mention food security threat in climate change impacts on agriculture in terms of how it also affects access. (Emma Archer, University of the Witwatersrand)	Agreed.
9-474	A	22	3			Another vague reference to northern and southern Africa (Chris Reason, University of Cape Town)	Take the pt..... but this is how it is mentioned in texts....tried to get more specif later on in section see changed sections 9.4.4. section 3....but if we did this for every item would greatly exceed page length....will check with TSU and chapter editors on this!!!!
9-475	A	22	5	22	6	The sentence reads: Africa will not benefit from CO2 stabilization since cereal crop yields will decrease by 2.5 to 5% by the years 2080s (Arnell et al 2002). The	

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						sentence could better read as Africa will not....by 2.5 to 5% by the year 2080 or by the 2080s. (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-476	A	22	9			(..et al.,2003) (Effiom Antia, University Of Calabar)	
9-477	A	22	9			write for food, (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-478	A	22	11			(Parry et al.,1999) (Effiom Antia, University Of Calabar)	
9-479	A	22	11			write (Parry and al., 1999) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-480	A	22	13	22	17	This paragraph is basically a repeat. May be shortened for space saving. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-481	A	22	13		15	Suggest replace the vague "certain areas" by the specific terrain or areas, mention their (relatively small) extent and add "There," at the start of the next sentence. This would avoid raising unrealistically favourable expectations. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-482	A	22	13	22	17	The areas on Mt Kenya and Mt Kilimanjarto that have the potential for temperate crops are tiny – here is a paradox as this small area vignette with little broader application contrasts with the generalizations that are found elsewhere. Moreover, there is no discussion of the changes in livelihoods, infrastructure, marketing etc that would be needed to transform these areas into producers of temperate crops. (David Campbell, Michigan State University)	NB
9-483	A	22	13		17	Again this is a repeat of earlier stuff; any way it can be shortened? (Kathleen Galvin, Colorado State University)	
9-484	A	22	17			(et al,2004) to italicize (Effiom Antia, University Of Calabar)	
9-485	A	22	18	22	18	A caveat should be added that while in a climate change scenario it would be possible to grow more temperate crops over the alpine zones(higher elevation of mountain slopes), this has the potential to further degrade water catchments of local streams/rivers exacerbating water stress in regions downslope due to decline in stream flow capacity and groundwater recharge. (Richard Anyah, Rutgers University)	
9-486	A	22	19	22	31	Again, cross reference and make consistent with rest of chapter(s). (Emma Archer, University of the Witwatersrand)	
9-487	A	22	19		31	Paragraph can be shortened	

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						(Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-488	A	22	19	22	31	There are indications from the BIOME model that semi-arid areas in Southern Africa (e.g. Botswana) may expansion expansion of the area covered by shrub and a correponding shrinkage of grass dominated savanna. This would favour browsers over grazers in the livestock production sub-sector. (Raban Chanda, University of Botswana)	
9-489	A	22	31			(Barton et al.,2001) (Effiom Antia, University Of Calabar)	
9-490	A	22	31			write (Barton and al., 2001) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-491	A	22	33	22	40	Again, cross reference and make consistent with rest of chapter(s). (Emma Archer, University of the Witwatersrand)	
9-492	A	22	37			...2001; (Effiom Antia, University Of Calabar)	
9-493	A	22	37	22	40	The sentence relating the simulations using the NCAR GCM and the decrease in productivity does not convey a clear message. Actually this entire section about agriculture 9.4.4 can be shortened by using a map or a table showing regions affected negatively and positively, in a way similar to table 9.1. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-494	A	22	37			write République du Congo, 2001; Cury..... (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-495	A	22	42	23	3	The food unsecurity is a major issue for Africa now and is most likely to increase in the near and longterm future if nothing is done to mitigate it. Here I would like to refer the authors to a recent article by Imhoff et al., 2004 " Global patterns in Human consumption of net primary production", NATURE Vol. 429, 24 June 2004. This paper has an important map showing the ratio of consumption to local production and therefore explictely indicates regions of vulnerability in terms of food and other commodities where consumption is far larger than local production. Regional tables are also presented in this paper which spells an explicit accounting of Human appropriation of natural net primary production. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Will check
9-496	A	22	42	23	3	I would include here some of the studies that show the usefulness of communicating downscaled information to farmers. This would include work by Ziervogel, Kirshen, and others. The most definitive of these is ** Patt, Anthony, Pablo Suarez, and Chiedza Gwata (2005). Effects of seasonal climate forecasts and participatory workshops among subsistence farmers in Zimbabwe. Proceedings of	Will include in adaptation Disagree

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						the National Academy of Sciences of the United States of America 102: 12673-12678 ** which observed that subsistence farmers in Zimbabwe were able to significantly improve their yields, by an average of as much as 17% in some years, by incorporating downscaled seasonal climate forecasts into their decision-making. (Anthony Patt, Boston University)	Once off case – never – institutionalized – disagree case for future adaptation needed.
9-497	A	22	43	23	3	This discussion appears very superficial, focused on impacts on agricultural production rather than on vulnerability, see comment 5. The discussion needs to be much more comprehensive if it is to cover vulnerability in rural areas or of people involved in the agricultural sector. Certainly the reasons for malnutrition are much more complex than presented here. Therefore, local/regional models are not the only issue in terms of reducing vulnerability. See Patt 2005 as well as Ziervogel (2005) O'Brien and Vogel (2003) on forecast use. (Siri Eriksen, University of Oslo)	Agreed – vulnerabilities to other multiple stressors key.
9-498	A	22	47	22	47	should also mention climate change impacts on farmers producing for market (livelihood security) (Emma Archer, University of the Witwatersrand)	
9-499	A	22	49	22	50	Perhaps preface this sentence with 'during droughts and food shortages', otherwise the sentence implies that Africans are always hungry, because they depend on subsistence agriculture. (Mark Tadross, University of Cape Town)	
9-500	A	22	50	23	3	Here a question is raised as to whether it is necessary to develop local/regional models but on page 7 lines 8 - 10 it is written that the TAR "stressedand called for the development and implementation of regional assessments of vulnerability, impacts and adaptation". Please reconcile the two statements. (Todd Ngara, IGES)	
9-501	A	23	8		50	The discussion on ecosystems here is limited to terrestrial and coastal and marine. I think it should be extended to speculate on the impact of the identified climatic trends on two of the most important African ecosystems: African wetlands and African montane vegetation. These have very specific biomes and are important from the biodiversity perspective. The Sudd swamps of the Upper Nile, the largest swamp in the world, should in my view, receive some treatment. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	Gonzales – wetland Pius//Midgeley Agreed AIACC
9-502	A	23	8	23	8	Replace "economy" with "economies". (Raban Chanda, University of Botswana)	
9-503	A	23	10	23	10	The sentence "... most of these species are threatened" can be replaced by " most of the species are likely to change".	

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						(Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-504	A	23	10	23	10	Literature reference that explains the empirical evidence for the observation that most species are threatened is needed here. (Siri Eriksen, University of Oslo)	
9-505	A	23	15	23	18	I think more could be said here regarding fire regimes and their importance for the balance between trees and grasses. see Bond et al (2003), global change biology, 9, 973-982. Also modelling of changes in the distribution of fynbos, one of the most biodiverse ecosystems (Midgley et al, 2002, biological conservation, doi:10.1016/S0006-3207(02)00414-7) (Mark Tadross, University of Cape Town)	Agreed
9-506	A	23	16	23	16	The fourth word 'phonological' should be spelt 'phenological'. There is also virtually no discussion on the tropical rainforest. While studies of the tropical rainforest(Congo forest) are hampered by inaccessibility due to incessant wars, it is important to have a speculative statement on the impact of climate change on the tropical rainforest, or feedbacks on the regional climate that are likely to be triggered by the degradation of the forests. (Richard Anyah, Rutgers University)	Ok to be done (Pius)
9-507	A	23	18	23	18	Add a sentence about a significant impact of climate change on terrestrial ecosystems in Africa: "Across West Africa, declining rainfall has caused a latitudinal shift of the Sahel, Sudan, and Guinean ecological zones, a shift that could continue as temperatures increase (Gonzalez 2001; Gonzalez, Sy, et al. 2004)." References: (Gonzalez, P. 2001. Desertification and a shift of forest species in the West African Sahel. Climate Research 17: 217-228); (Gonzalez, P., H. Sy, and C.J. Tucker. 2004. Local knowledge and remote sensing of forest biodiversity and forest carbon across the African Sahel. In Lykke, A.M., M.K. Due, M. Kristensen, and I. Nielsen (eds.) Proceedings from the 16th Danish Sahel Workshop. Sahel-Sudan Environmental Research Initiative (SEREIN), University of Copenhagen, Denmark.) (Patrick Gonzalez, The Nature Conservancy)	Forestry valuable needs to be captured Pius to address Agreed. Check the references
9-508	A	23	23			I am not sure whether "responses" is the right word to use here. (Todd Ngara, IGES)	To be addressed
9-509	A	23	25			Please add a paragraph " the last two décades, a dramatic degradation of biodiversity affected and still affect the steppe areas in North Africa that cover about 40 millions hectares. Half of this surface is on the way of desertification.The alfa, which covered the steppe, disappears for the benefit of the artemisia more resistant to the dryness and moves up lto the North. Thus vegetable cover passes gradually from the alfa to the armoise then to sand.	CA to provide the references No references

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						(Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	
9-510	A	23	30			I am not sure whether "communication" is the right word to use here. (Todd Ngara, IGES)	
9-511	A	23	40	23	41	Delete(could go under current sensitivity) (Effiom Antia, University Of Calabar)	
9-512	A	23	40	23	41	Editorial comment on these lines needs to be removed. (Raban Chanda, University of Botswana)	
9-513	A	23	40	41		This sentence could be made clearer to the reader. (Todd Ngara, IGES)	
9-514	A	23	40			"could gounder current sensitivity" ?? Revise as appropriate here (Chris Reason, University of Cape Town)	Revised
9-515	A	23	46			In North Africa, there is a degradation and even the destruction of the coastal cordons of sand for two reasons: one related to the drawing sand from the cordons for construction and the other as the results of the suppression of a large part of these cordons for the benefit of the human habitat. It follows from there an accelerated degradation of the coastal vegetation which destabilizes even more the cordons leading to a dangerous regression of the rare species like the formations with red Genévrier on the littoral dunes. (Mahi Tabet-Aoul, Association pour la Recherche pour le climat et l'environnement (ARCE))	Give referencesbut we will try and get information from Guy Midgeley
9-516	A	23	48		50	This sentence could also be made clearer to the reader. (Todd Ngara, IGES)	
9-517	A	24	18		33	There are a lot more details on the impacts in West Africa than in other regions. There is a casual (comparatively) mention of the Indian Ocean Islands and East Africa in the last three lines of the paragraph. I am not sure whether this could be attributed to the problem of the unavailability of literature or not. (Todd Ngara, IGES)	Rebalance to be addressed. Try to balance – Isabelle
9-518	A	24	24	24	25	Not sure there is a need to quote the numbers for actual km if percentages are given. The figures are confusing as the decrease is 1km for 2.6% which implies that an increase of 26% should be 10km, yet the figure given is 67km ?? (Mark Tadross, University of Cape Town)	To be addressed. Isabelle
9-519	A	24	30	24	47	Include also increased stream bank and stream bed erosion rates by flooding of stream flows from enhanced water flows resulting from snow and ice melts. Water quality is also affected by increased sediment load. (Mwakio Tole, Kenyatta University)	Separate impacts & vulnerabilities To be separated

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9-520	A	24	35	24	35	The last two words of the sentence, 'minimal values' should be replaced with 'conservative estimates' (Richard Anyah, Rutgers University)	
9-521	A	24	36	24	38	I am not sure this sentence makes sense. Which values and why is it the second Senegal study ? (Mark Tadross, University of Cape Town)	
9-522	A	24	46			"4.6 to 5.7 m" is completely unrealistic; elsewhere in the chapter values of K59decimetres to one metre are mentioned, which are within reason. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	Inunadation levels – checked with Guinea (Nat communicate) Document from Isabelle Nat Comm
9-523	A	24	46	24	46	I'm not sure of my values for sea level rise but a 4.6m to 5.7m sea level rise by 2050 seems high. Is this a feasible scenario ? Where do these figures come from ? (Mark Tadross, University of Cape Town)	
9-524	A	24	48			The sentence is confused (not clear) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-525	A	25	5			Forty percent of (instead of 40%) (Effiom Antia, University Of Calabar)	
9-526	A	25	5	25	5	Sentence should not start with figure, "40%" should therefore read as "Forty percent". (Raban Chanda, University of Botswana)	
9-527	A	25	8		9	This is the second reference to Cairo as a coastal city together with Kinshasa and Lagos.Kindly check..... (Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-528	A	25	8	25	12	Same as first comment (Cairo is not a coastal city). (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	
9-529	A	25	16	26	13	This section could be further developed. (Emma Archer, University of the Witwatersrand)	Will examine agree.
9-530	A	25	16	26	13	Can be made shorter, deleting extraneous material (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	
9-531	A	25	18	25	20	I would say this statement ignores the impacts on savanna ecosystems which harbour much of the wildlife tourists go to Africa to see e.g. the Serengeti and large parts of southern Africa. (Mark Tadross, University of Cape Town)	Find additional CA Tourism Agreed – Savannah
9-532	A	25	19	25	20	What about changes in biodiversity, water supply and disease? Would changes in species ranges or local extirpations not adversely affect tourism? (Daniel Scott, University of Waterloo)	CA

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9-533	A	25	20			The sentence "important market changes could result", needs to be clarified and elaborated on. (Daniel Scott, University of Waterloo)	
9-534	A	25	25	25	26	This sentence provides nothing specific about the implications of climate change for the tourism industry in Africa and should be removed. (Daniel Scott, University of Waterloo)	
9-535	A	25	28			Table 1 should be Table 9.1 (Todd Ngara, IGES)	
9-536	A	25	28			write Table 9.1 (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-537	A	25	31	25	31	Bullets information need to be arranged in table 9.1 (Lahouari Bounoua, NASA Goddard Space Flight Center)	Will check editorial.
9-538	A	25	31	25	31	Check bullet points in Table 9.1 for truncated/split messages. (Raban Chanda, University of Botswana)	
9-539	A	25	31			In the table column 2 and row 3 - "summer" should be "winter" for Southern Africa. (Todd Ngara, IGES)	
9-540	A	25	31			In the table column 3 row 2 it is not clear to me what "shoulder months mean"? (Todd Ngara, IGES)	
9-541	A	25	31			Table 1 needs to define a summer and winter convention. Since most of sub-Saharan Africa is south of the equator, perhaps austral seasons should be used. (Chris Reason, University of Cape Town)	Removed
9-542	A	25	31			table 9.1 - This table presents a number of speculative impacts on tourism and the supporting literature provide consists of a proceedings document that covers the globe and is not Africa specific. Some of the implications for the tourism industry outlined do not necessarily follow from the climatic impacts identified. For example, a warmer winter in northern Africa may not translate into more tourist arrivals if winter travel demand in Europe declines because of warmer winters there (market source) or if other closer destinations equally benefit from warmer conditions (thus becoming stronger competitors). There needs to be at least some evidence to support these speculative impacts (i.e., impacts during analogue years/seasons) if this table is to be included in this assessment. (Daniel Scott, University of Waterloo)	CA Tourism ?? (Coleen) AIACC – Seychelles Rolf – Small Island States
9-543	A	25	31	25	31	Table 9.1. The destination region types i.e., north Africa, sub-Saharan Africa is not clear. For example, in the sub-Saharan Africa under the implication column Southern Africa is mentioned. (Tsegaye Tadesse, University of Nebraska-Lincoln)	Noted – will address with reg definition.

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9-544	A	25	31			Table 9.1, 2nd row doesn't tie in with the impacts suggested throughout the rest of the chapter e.g all scenarios suggest an increase in winter temperatures, though the table suggests 'inconsistent' projections ???. It also suggests that southern African summers happen during 'Jun-Aug' ??? (Mark Tadross, University of Cape Town)	Check (WTO) 2003 Correct
9-545	A	25	31			Table 9.1 is not announced in the text (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-546	A	25				The third column of table 9.1 needs to be revised (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-547	A	26	0			Not to forget the psychoculturals and religious problems (very significant in Africa) which can be posed as result of the disappearance of certain species, forestry ecosystems or river which are currently the subject of veneration of cultural pride on by the populations. (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	MEA information check (Coleen) Re-writing with assistance CA To check
9-548	A	26	3	26	13	According to the authors, WTO 2020 vision is of limited use for the study of impacts of climate change. They present quantitative trends on world tourism and african tourism, with, indeed, no link with CC. Perhaps lines 3-13 could be deleted. Table 9.1 above seem sufficient. (Ghislain Dubois, Tourism Environment Consultants (TEC))	
9-549	A	26	3	26	3	reference for WTO citation ? (Mark Tadross, University of Cape Town)	
9-550	A	26	6			The lack of tourism projections beyond 2020 is not the barrier to assessing possible impacts of climate change on tourism in Africa. This is evident by the number of studies done in other regions. (Daniel Scott, University of Waterloo)	
9-551	A	26	6	25	13	Reciting the WTO projections (which are now getting dated) provides no value to this chapter and should be removed. (Daniel Scott, University of Waterloo)	
9-552	A	26	11	26	12	repetition of figures given previously. Justification needed for statement that 'rates seem certain to decline'. (Mark Tadross, University of Cape Town)	
9-553	A	26	16	29	1	Link to the IPCC urbanization chapter. (Emma Archer, University of the Witwatersrand)	Infrastructure
9-554	A	26	16		30	Tourism around the Great Lakes would be affected due to water recession. Tourism infrastructure would be left behind by the receding waters leaving in between the water line and the infrastructure a stretch of ugly muddy ground which could be colonized for vegetable growing by unruly villagers.	???

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	
9-555	A	26	20			"Gradual changes in weather" - this is a meaningless statement (Chris Reason, University of Cape Town)	The section on settlement etc needs work agreed...trying to get more inputs.....writers!!!
9-556	A	26	20	26	20	Magadza reference missing from biblio (Mark Tadross, University of Cape Town)	
9-557	A	26	21			...Freeman and Warner,2001) (Effiom Antia, University Of Calabar)	Editorial/edit
9-558	A	26	21			write Warner, 2001 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-559	A	26	21			write Reflected, 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-560	A	26	22			What are "marginal variations in climate" ? (Chris Reason, University of Cape Town)	Agreed needs re-editing trying to get a CA for this
9-561	A	26	24			This sentence is meaningless - all these phenomena occur in the natural environment. You should say how they are expected to change under different warming scenarios (Chris Reason, University of Cape Town)	Intensity and magnitude and frequency. Dealt with earlier – Addressed Washington etc. and also waiting inputs WG1
9-562	A	26	26			(Freeman,2003) (Effiom Antia, University Of Calabar)	
9-563	A	26	27	26	27	"Table 1" should be "Table 9.2". (Raban Chanda, University of Botswana)	
9-564	A	26	27			Table (2) rather than Table(1) (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-565	A	26	27	26	27	table 1 is not summarizing climate events (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-566	A	26	27	26	27	should be table 9.2 (Mark Tadross, University of Cape Town)	Editing
9-567	A	26	31			write République de Côte.d'ivoire (problem of orthography) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-568	A	26	32	26	48	Repeats the previous section on sea level rise - should link the two better (e.g. 'As mentioned in section ...') (Emma Archer, University of the Witwatersrand)	
9-569	A	26	32	26	48	should include results of the cities of Alexandria, Rosetta and Lagos at least (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-570	A	26	38			Write clean residential district of Cotonou (Akpakpa) in Bénin (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	

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9-571	A	26	39			(Niasse and Afoudo,2003) (Effiom Antia, University Of Calabar)	
9-572	A	26	39			write (... Afoudou, 2003) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-573	A	26	41			...,ome of the Country's two port cities..) (Effiom Antia, University Of Calabar)	
9-574	A	26	50	27	6	should be shifted to adaptation section (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	Include refs infrastructure
9-575	A	27	8	27	26	Years of publication are missing in some references, otherwise the section on infrastructure is comprehensive. The table 9.2 (is referred to as table 1) in page 26 line 27. Also do results in this table refer to the entire continent, If not mention it in the table caption. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-576	A	27	8	27	40	Many references or source are lacking. This section needs to be developed because very critical in Africa.Variability and change in precipitation plus extrem events in this vulnerable region with poor adaptation possibilities have now and certainly in the future dramatic consequence. (Abdoulaye SARR, Direction Météorologie Nationale)	NB Point we should be stressing
9-577	A	27	10			(Karanja etal.??) (Effiom Antia, University Of Calabar)	
9-578	A	27	10	27	10	Outstanding editorial in line. (Raban Chanda, University of Botswana)	
9-579	A	27	10			Reference details is missing Karanja et al,----- (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-580	A	27	10			Say where increased tropical cyclones are expected - Mozambique, Tanzania, Madagascar ? (Chris Reason, University of Cape Town)	
9-581	A	27	10			Karanja and al., (to specify the year !) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-582	A	27	11			et al.,2001) (Effiom Antia, University Of Calabar)	
9-583	A	27	11	27	12	The sentence seem to contradict the fact that warm ENSO(El-Nino) events have been associated with wetter conditions over East Africa . See for example Schreck and Semazzi,2004: Variability of the recent climate of East Africa) (Richard Anyah, Rutgers University)	Check the source Warm & Wet phases ENSO Obasi (2005) in PS low. Climatechange and Africa
9-584	A	27	11	27	13	Warm phase ENSO tends to increase OND rainfall in Eas Africa (assoicated with	

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						flooding and crop damage and RV Fever (Declan Conway, university of east anglia)	
9-585	A	27	11		13	The sentence is incomplete. (Todd Ngara, IGES)	Editing
9-586	A	27	11	27	13	El-Nino is associated with increased rains over east africa, not decreased rains as stated in this sentence. (Mark Tadross, University of Cape Town)	Agreed
9-587	A	27	12			This sentence states there is reduced precipitation in East Africa which contradicts earlier statements such as that on page 14, line 17 (Kathleen Galvin, Colorado State University)	Agreed
9-588	A	27	13			Freeman and Warner (Effiom Antia, University Of Calabar)	
9-589	A	27	15	27	20	How do you know that these examples are related to climate change ? (Chris Reason, University of Cape Town)	Will check – and check for assessment...
9-590	A	27	16			In which countries are these places located? (Todd Ngara, IGES)	
9-591	A	27	17			(Source of information to be cited) (Effiom Antia, University Of Calabar)	
9-592	A	27	17			source is missing (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-593	A	27	17			source (to specify the author and the year!) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	Editing
9-594	A	27	18			source of information to be cited (Effiom Antia, University Of Calabar)	
9-595	A	27	18			source (to specify the author and the year!) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-596	A	27	20			(Niasse and Afoudo,2003) (Effiom Antia, University Of Calabar)	
9-597	A	27	22			"trend" No trend has been demonstrated, just a list of a few unrelated examples (Chris Reason, University of Cape Town)	Again this section pts..... advice and inputs welcome! Tried to address them and will try to improve in next round....but agreed not ideal! No dedicated CA on this ...hence weaker than other sections.....otehr pts same problem! Will try and amend!
9-598	A	27	22	27	22	I don't think the word 'trend' should be used unless there are citable studies to suggest that these flood events and/or their impacts are on the increase ?? (Mark Tadross, University of Cape Town)	

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-599	A	27	28		40	Increased warming is not specifically addressed in this paragraph (Kathleen Galvin, Colorado State University)	
9-600	A	27	28			"Increased drying trend" Where over Africa ? (Chris Reason, University of Cape Town)	
9-601	A	27	28	27	32	" Section 9.4.8. You laid the stress only on the dryness and the socio-economic factors as reasons of the fall to water resources . But, surface qualities also play a considerable role in the dynamic of the water resource; you must explore this track." (Expédit Wilfrid Vissin, FLASH/Abomey-Calavi University)	
9-602	A	27	30			(Freeman and Warner,2001,Malhi and Wright,2004) (Effiom Antia, University Of Calabar)	
9-603	A	27	30			(Malhi and Wright, 2004) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-604	A	27	34		40	A particular situation would arise for Malawi where 90% of the electricity is produced from hydropower plants along one outlet river from Lake Malawi, the River Shire. If lake water level drops beyond its usual 1.7m –2.3m, the river would stop flowing and the turbines would stop. This happened in 1915 but had no consequence as at that time electricity was being produced from diesel generators. (Alexander Bulirani, Ministry of Mines Natural Resources and Environment)	Please can we get references
9-605	A	27	34	27	36	Tate, E., Sutcliffe, J.V., Conway, D. and Farquharsen, F. (2004) Water balance of Lake Victoria: update to 2000 and climate change modelling to 2100. Hydrological Sciences Journal 49, 563-574. Paper discusses the managment challenge of variable lake levels during recent decades and the future. (Declan Conway, university of east anglia)	Will collect and include Contact Dan Ollago (Coleen)
9-606	A	27	35	27	40	It should at least be noted that attempts at mitigation and adaptation to future water stress in Africa, may have to include redrafting some of the existing water-sharing policies(regulations on water rights) so that they become consistent with the changing water resources availability and demands by riparian countries (Richard Anyah, Rutgers University)	Excellent point. Agreed
9-607	A	27	42	27	50	A summary of the recent national communications to UNFCCC should be included in the executive summary since they provide the best country evaluations on future impacts of climate change and the identified adaptation actions which needs to be mainstreamed in national policies. (Richard Anyah, Rutgers University)	Where appropriate will make best an assessment as possible NB
9-608	A	27	42		50	This paragraph does not really fit here; it seems like a summary and if this is the case, then the paragraph should be started with, In sum.... (Kathleen Galvin, Colorado State University)	

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-609	A	27	42			Provide a summary of the UNFCC results (Chris Reason, University of Cape Town)	
9-610	A	27	47			..damage(Freeman and Wright,2004) (Effiom Antia, University Of Calabar)	
9-611	A	27	47			write danage (Freeman and Waner, 2001) (problem of formulation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-612	A	28	0			The raw of accelerated sea level, ground and surface water salinization should include Egypt in the vulnerable countries (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-613	A	28	0			A raw on dust storms events and desertification including increased frequencies of dust storms in north African countries (Egypt, Lebya,Algeria Morocco and Sudan) which impacts land productivity, buildings, tourism and health must be included (Mohamed El Raey, Institute of Graduate Studies and Research)	Dust storms (Nick Brooks) Aerosol production etc WG1
9-614	A	28	0			ASLR - I imagine that most if not all coastal African countries would be affected ? Why are only some countries listed ? (Chris Reason, University of Cape Town)	Ref previous response.....
9-615	A	29	1	33	41	Section 9.5 on adaptation is interesting, but could still be improved by tightening up. (Jean Palutikof, Hadley Centre)	
9-616	A	29	2	33	41	The adaptation section is detailed and elaborate on rural and agricultural aspects and policy, but seems to ignore energy and health issues. For energy some material could be taken from p 12 lines 37-44. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	Energy & Health Adaptation Health Ghana - Tony
9-617	A	29	2	30	34	9.5.1 The discussion needs to distinguish between coping and adaptation (Eriksen, Brown et al 2005). The discussion also needs to cover how people actually cope to climate stress and how people actually adapt in the long term. (Siri Eriksen, University of Oslo)	Coping//Adaptation Refer coping // adaptation 17
9-618	A	29	2			This section is heavily reliant on data just from West Africa and does not seem to represent the African continent. It also needs some heavy editing. Some sentences are very awkward and hard to understand. (Kathleen Galvin, Colorado State University)	AIACC // Coleen, Belgis
9-619	A	29	4	30	34	This part needs to be consistent with chapter 18. Many ideas but lack of logical flow of reading. (Youba SOKONA, Sahel and Sahara Observatory (OSS))	Check will do
9-620	A	29	9	29	9	The reference could be paraphrased to include the 'that enhance coping capacity' before the period.	

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						(Richard Anyah, Rutgers University)	
9-621	A	29	11	29	11	would rather replace 'lesser' with 'current' (Mark Tadross, University of Cape Town)	
9-622	A	29	14			.capacity which is due to the (Effiom Antia, University Of Calabar)	
9-623	A	29	16	29	16	I might be being a bit picky here but saying a 'general assessment' and then detailing speciifc sectors that need addressing sounds a bit contradictory. (Mark Tadross, University of Cape Town)	
9-624	A	29	21	29	31	While it could be true that the rich and diversified African cultures and indigenous knowledge have helped a number of people/or groups of communities to develop very resilient coping mechnisms to climate variability/change, it is likely that with abrupt climate change, and at the scale curretly projected in certain areas, most traditional coping strategies will be rendered less effective. Therefore, it should be aknowledged that in most futre climate change scenarios the traditional coping mechanisms would not withstand the full scope of the climate change impacts. (Richard Anyah, Rutgers University)	Loss of coping strategies – already eroding in some areas
9-625	A	29	25			The maintenance of tradition. (Effiom Antia, University Of Calabar)	
9-626	A	29	27			..who knows what else, (Effiom Antia, University Of Calabar)	
9-627	A	29	27	29	27	Slightly odd language. (Emma Archer, University of the Witwatersrand)	
9-628	A	29	27	29	27	remove the statement : " and who knows who else" or be more specific. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-629	A	29	29	29	31	is there a reference for these east african floods and perhaps include a date for them. (Mark Tadross, University of Cape Town)	
9-630	A	29	30	29	31	It is not clear which episode the author/authors is(are) refering to when talking about the flooding experienced in East Africa after extended drought. (Richard Anyah, Rutgers University)	
9-631	A	29	31			This sentence needs a citation at the end. (Kathleen Galvin, Colorado State University)	
9-632	A	29	33	29	41	It would be important, while refering to resilience based on indeginous knowledge, to acknowledge that Africa is a region where a majority of human livelihoods are strongly linked to sociology,ecology and economics all of which to a large extent depends on environmental inetgrity and biodiversity conservation. Hence, any abrupt shock visited on the ecosystems due to environmental/climate changes has a	Good point Get references

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						major potential of severely disrupting the livelihoods and coping capacity(e.g Hartnet and Semazzi, 2005: Enhancing collaboration on the Environment in Sub-Saharan Africa) (Richard Anyah, Rutgers University)	
9-633	A	29	34	29	37	Repeated sentence "In terms of the availability of economic resources to adapt, the scale is significantly tilted against Africa" delete one and leave the other. (Nadir Awad, Partners in Environmental Sustainability)	
9-634	A	29	34	29	37	Repeated sentence. (Raban Chanda, University of Botswana)	
9-635	A	29	34	37		Sentence beginning with" In terms" ...is repeated. (Todd Ngara, IGES)	
9-636	A	29	36	29	37	the sentence : "in terms of ..." is repeated. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-637	A	29	36	29	37	repeated sentence (Mark Tadross, University of Cape Town)	Editing
9-638	A	29	38			"international"?! Authors' intention must have been "internal", since the majority in SSA are and have been civil wars. (Robert Brinkman, Food and Agriculture Organization of the United Nations, Rome)	Editing comments
9-639	A	29	40	29	41	maybe preface sentence with 'However' ? DFID reference not in biblio (Mark Tadross, University of Cape Town)	Editing comments
9-640	A	29	41	30		two citations to DFID report - not in the reference list (Declan Conway, university of east anglia)	Editing comments
9-641	A	29	43	31	17	check the consistency between these two sections on technology (Declan Conway, university of east anglia)	Editing comments
9-642	A	29	47	29	48	The sentence (Some of the technological developments developed in the west and imported to Africa have proven very inappropriate and unsustainable). This can better read as (Some of the technologies developed in the western world and imported to Africa have proven very inappropriate and unsustainable). (Ahmed El Wakeel, Agricultural Research Corporation (ARC))	Editing comments
9-643	A	29	50			This sentence also needs a citation. (Kathleen Galvin, Colorado State University)	Editing comments
9-644	A	29	50	29	50	needs a reference for seed failure I think (Mark Tadross, University of Cape Town)	Editing comments
9-645	A	30	0			It seems to me that the aspects related to the good gouvernant will be also determinant in the capacities of adaptation especially in the African States. (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	Editing comments

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9-646	A	30	1	30	1	The word 'Increasing' should be not be with a title case, but lower case (ie increasing) (Richard Anyah, Rutgers University)	
9-647	A	30	2	30	3	Recast thus: Traditional ways in many communities in Africa are increasingly being replaced by.. (Effiom Antia, University Of Calabar)	
9-648	A	30	2	30	9	This paragraph doesn't seem to make sense, and at least sentence in it seems somewhat politically motivated. It would be better to say that there are traditional coping strategies (cite Scoones et al. 1996: Hazards and opportunities: farming livelihoods in dryland Africa, lessons from Zimbabwe), that in some cases these are now inadequate, and that in some cases these are being replaced by top-down management practices that actually have the perverse effect of increasing vulnerability (cite Archer, Again the machine has failed us: environment-development narratives and women small scale farmers in Venda, South Africa, Geographic Journal). One of the reasons that the top down approaches actually increase vulnerability is that they are serving particular economic interests. Not surprisingly, many people are sceptical of them, and may not trust them (cite Suarez, Pablo and Anthony Patt (2004). Caution, cognition, and credibility: the risks of climate forecast application. Risk, Decision and Policy 9: 75-89.) (Anthony Patt, Boston University)	Good point. Coleen check and add in.
9-649	A	30	4	30	5	references ? This is far too deterministic. (Emma Archer, University of the Witwatersrand)	Editing
9-650	A	30	9	30	9	Williams 2005 isn't in the reference list. (Emma Archer, University of the Witwatersrand)	Editing
9-651	A	30	9	30	9	Williams reference missing (Mark Tadross, University of Cape Town)	Editing
9-652	A	30	11			..will generally improve the.. (Effiom Antia, University Of Calabar)	Editing
9-653	A	30	11	30	11	This is not guaranteed! (Emma Archer, University of the Witwatersrand)	Editing
9-654	A	30	15			(Burton,2001) (Effiom Antia, University Of Calabar)	Editing
9-655	A	30	18	30	19	What does this sentence mean? 'Constraints to resources' ? (Emma Archer, University of the Witwatersrand)	Editing
9-656	A	30	18		19	This sentence does not make sense as stated; do you mean there are institutional constraints to the use of resources... (Kathleen Galvin, Colorado State University)	Editing

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-657	A	30	19	30	22	The sentence : " Moreover there is a considerable uncertainty ..." is not clear. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Editing
9-658	A	30	20			The term, edge problems, needs to be explained or defined (Kathleen Galvin, Colorado State University)	
9-659	A	30	20	30	20	I do not and I'm not sure the layperson will understand what an 'edge problem' is. (Mark Tadross, University of Cape Town)	Will check – Coleen
9-660	A	30	22	30	22	ISDR reference not in biblio (Mark Tadross, University of Cape Town)	
9-661	A	30	22			write capacity for (not comma between the two words) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-662	A	30	24	30	24	There is reference made to increase in animal numbers in the Sahel as a positive adaptation strategy without putting into perspective how the increase in livestock numbers may lead to over-grazing which would negatively feedback on the land surface inturn leading to a negative forcing on the regional climate. (Richard Anyah, Rutgers University)	
9-663	A	30	25			(Mortimore,2001) (Effiom Antia, University Of Calabar)	
9-664	A	30	25	30	25	Mortimore reference: is it 2000 or 'Mortimore and adams 2001' ? (Mark Tadross, University of Cape Town)	
9-665	A	30	25			write (Mortimore, 2001) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-666	A	30	27	30	34	This section seems out of place here. (Emma Archer, University of the Witwatersrand)	
9-667	A	30	29			(Beder,2000).Adapting.. (Effiom Antia, University Of Calabar)	
9-668	A	30	29	30	29	Beder reference not in the biblio (Mark Tadross, University of Cape Town)	
9-669	A	30	29			write (Beder, 2001). Adapting (problem of spacing) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-670	A	30	34			This reference is not included in the list at the end of the chapter. (Todd Ngara, IGES)	
9-671	A	30	34	30	34	Vordzorgbe reference not in biblio (Mark Tadross, University of Cape Town)	
9-672	A	30	36			write (Monyo, 2002) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-673	A	30	37	32	16	This entire section is rather simplistic. A few more 'success story' case studies should be added.	Food security and adaptation. Case studies to added

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						(Emma Archer, University of the Witwatersrand)	
9-674	A	30	37	32	16	<p>This section about the current adaptation options is written in high level of generalities. What makes a region or a country more vulnerable if it relies on agriculture, even if agriculture depends on climate ? Also what are the other several factors ... ? On the other hand early planting seems to be have been successful in some regions, I, for one would like this idea to be developed concisely to quantify the impact of this technique on crop yield in that particular region and emphasize its application to other similar regions as an adaptation option. Also The EWS seem to have provided useful help in may areas. It seems that in Africa there are several agricultural research institutions that provide timely and consistently seasonal forecast. Is there sufficient data showing improvement for those farmers using the EWS compared to those who don't ? as mentioned in the 7th paragraph of this section, climate variability can not, in itself, explain the food production decline. It is important to highlight crop production efficiency and lack of adaptation of existing technological development as impediments to crop production failure, the example of Mali cited at the end of the section is a good example. In sum after reading this section many times, I did not end up with a clear conclusion of what the current adaptation options used in Africa, what are their rates of success and what can be recommended ?</p> <p>(Lahouari Bounoua, NASA Goddard Space Flight Center)</p>	James Petty – agro – ecology etc. (Coleen) Adaptation tool Commical
9-675	A	30	37	32	16	<p>This section is quite selective in its choice of strategies but there is of course a danger that it could potentially become a long list of strategies currently used across Africa - an important measure not mentioned is rainwater harvesting (and soil moisture conservation) technologies and efforts (refer to Rockstrom or Habtibu papers; e.g. Falkenmark, M. and Rockström, J. (2004) Balancing water for humans and nature: the new approach in ecohydrology. London, Earthscan.), pastoralist and fisherfolk flexible management strategies (ties in with section on indigenous knowledge). Water resources management, lakeside communities and fisherfolk livelihood systems are discussed in relation to climate variability in Conway, D., Allison, E., Felstead, R. and Goulden, M (2005) Rainfall variability in East Africa: implications for natural resources management and livelihoods. Philosophical Transactions of the Royal Society, London A, 363, 49-54. It is important to emphasize the need for flexibility in existing and new management systems - 'robustness to uncertainty' Water demand management programmes in southern Africa also important to cover here - e.g. Mohamed, A.S. and Savenije, H.H.G. (2000) Water demand management: Positive incentives, negative incentives or quota regulation? Phys. Chem. Earth (B) 25, 251-258. Hervé Lévyte, Hilmy Sally</p>	Excellent – we need those Belgis – Water harvesting Coleen/Belgis

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
						and Julien Cour, Testing water demand management scenarios in a water-stressed basin in South Africa: application of the WEAP model, Physics and Chemistry of the Earth, Parts A/B/C, Volume 28, Issues 20-27, 2003, Pages 779-786. Johan Rockström, Resilience building and water demand management for drought mitigation, Physics and Chemistry of the Earth, Parts A/B/C, Volume 28, Issues 20-27, 2003, Pages 869-877. Bekithemba Gumbo, Dinis Juizo and Pieter van der Zaag, Information is a prerequisite for water demand management: experiences from four cities in Southern Africa, Physics and Chemistry of the Earth, Parts A/B/C, Volume 28, Issues 20-27, 2003, Pages 827-837. (Declan Conway, university of east anglia)	
9-676	A	30	37	38	16	9.5.2 This section focuses too much on sectoral technical adjustments but very little on how the causes of vulnerability can be addressed (Eriksen and Næss 2003; Orindi and Eriksen 2005). (Siri Eriksen, University of Oslo)	
9-677	A	30	37	32	16	Why the current adaptation options is concentrating on agriculture while in the previous sections various vulnerability sectors has been identified? In any case if is difficult to find out the proposed adaptation options. (Youba SOKONA, Sahel and Sahara Observatory (OSS))	Agreed will address
9-678	A	30	37	33	41	Current adaptation options section is very focused on agriculture. The previous adaptive capacity section sets out a range of concerns well, but this becomes limited in the actual options section. If there hasn't been work done on adaptation within the health, water resource management, biodiversity sectors - this should be highlighted - but I think more adaptation options should be explored (which could be done by looking at some of the AIACC projects). (Gina Ziervogel, University of Cape Town)	Agreed!
9-679	A	30	39		45	Introduction by the nomads of changes in the structure of their herds to suit the grazing conditions is another form of adaptation. Some nomadic households who had lost sizeable numbers of livestock chose to settle down and abandon nomadism. They became marginalized. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-680	A	30	39	32	16	This section on adaptation options only discusses options for agriculture. There is no discussion for adaptation options in economics, technology (except biotechnology), infrastructure, knowledge/skills, social structures, biodiversity conservation or even water resources. This comment also applies to section 9.5.3 as well as 9.5.2 (Mark Tadross, University of Cape Town)	

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9-681	A	30	39		41	One can also think of the use of bottoms melt in a context of dryness (Ogouwalé, 2004) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-682	A	30	40			..agriculture, which contribute along several other factors to the... (Effiom Antia, University Of Calabar)	
9-683	A	30	42			..measures should be aimed at.. (Effiom Antia, University Of Calabar)	
9-684	A	30	42	30	43	does this mean a reduction in livestock numbers as well as crop losses ? (Mark Tadross, University of Cape Town)	
9-685	A	30	45			This sentence needs a citation at the end. (Kathleen Galvin, Colorado State University)	
9-686	A	30	48			These references are not included in the list at the end of the chapter. There could many others since I could not check every reference. (Todd Ngara, IGES)	
9-687	A	30	48	31	1	references missing in the biblio (Mark Tadross, University of Cape Town)	
9-688	A	30	49			Where is Beit Bridge? (Kathleen Galvin, Colorado State University)	
9-689	A	30	49			"Beit Bridge" is a town on the Zimbabwe / SA border ?? I don't see relevance here (Chris Reason, University of Cape Town)	Ref previous response.....
9-690	A	31	1	31	15	Statements that Africa is water-stressed therefore irrigation not a viable option is misleading and inaccurate. Given Africa very diverse climates, there are many areas where irrigation is very viable. In fact, this section should quote FAO figures that show irrigation potential versus installed irrigation. How mixed crops and legumes help reduce risk of crop failures need elaboration - these are generic statements that dont seem to have much empirical basis, unless there is evidence out there? The para of EWS needs to be expanded and offer insight on EWS. reference to a 1995 is not adequate. There have been a lot of studies on EWS and they are largely seen as a critical component in agric - this section needs to be very concise about what this potential is, and what lessons have been learnt. This is one thing that needs to emerge under the adaptation section esp the Future Adaptation Options section. (Paul Desanker, Penn State Univ)	Lowest fertilization Soil fertility key – small business EWS – forecast etc – could use!
9-691	A	31	1			write the height of the summer according to Makhadro (1996) and Mataria and al., (1996). (proposal of formulation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-692	A	31	2	31	2	downward trend' I'm not sure about unless this relates to changes seen in the sahel. I	

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						know there has been a lot of talk about downward trends but there is little published work to suggest this is the case. Perhaps say 'downward trends in some regions' or 'future projected downward trends' ? (Mark Tadross, University of Cape Town)	
9-693	A	31	9	31	12	cited the institutions: ACMAD, AGRHYMET in Niamey and also the DMC centers in Nairobi and harare; Early Warning System need to be more elaborated as an adaptation strategy to climate variability and change. EWS are available in many African regions (AMANI Abou, AGRHYMET Regional Center)	
9-694	A	31	9	31	15	It should be emphasized that the successful use of climate information would require cooperation and collaboration among the Agricultural research institutions and the NMSs and NHSs. In fact the strategy adopted by the Climate Outlook Forums (COFs) over the past several years in producing and disseminating consensus seasonal climate forecasts has achieved this quite well and such strategies needs to be instutionalized and supported by the regional governments instead of relying on international support only. (Richard Anyah, Rutgers University)	Agreed. To be condensed. Inkgrakd actual climate variability Look Sudan case study Balgis Check the info from Mowees – Hallali (early warning)
9-695	A	31	9	31	15	I would add to this paragraph, however, that several studies have shown that the manner in which early warnings are communicated can have a great impact on their uptake, and hence the success of farmers at using them. Include again reference to Ziervogel, as well as Phillips and Orlove, and Cash et al. (Cash, David, Jonathan Borck, and Anthony Patt (in press). Institutions for linking research to decisions: a comparative analysis of ENSO forecasting systems. In press at Science, Technology, and Human Values.). One of the most definitive studies (Patt, Anthony, Pablo Suarez, and Chiedza Gwata (2005). Effects of seasonal climate forecasts and participatory workshops among subsistence farmers in Zimbabwe. Proceedings of the National Academy of Sciences of the United States of America 102: 12673-12678) shows statistically significant increases in the likelihood with which farmers use early warning forecasts, and benefit from them, when farmers learn of the early warning forecast through a participatory community event. (Anthony Patt, Boston University)	Check the references Gosh?? Really??
9-696	A	31	9	31	15	There has been a lot of work done on seasonal forecast dissemination in southern Africa. This paragraph focuses on agriculture. It might be worth expanding it to talk about agriculture and climate research institutions (line 10). References to add about forecast work done recently in southern Africa include Archer, E.R.M. (2003) Identifying Underserved End-user Groups in the Provision of Climate Information. Bulletin of the American Meteorological Society 84 (11), 1525-1532,	Check the references Agreed.

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						Johnston, P., Archer E.R.M., Vogel, C.H., Bezuidenhout, C.N., Tennant, W.J. and Kuschke, R. (2005) Review of seasonal forecasting in South Africa: producer to end-user. <i>Climate Research</i> . 28, 67-82. , Vogel, C. (2000) Usable Science: an assessment of long-term seasonal forecasts among farmers in rural areas of South Africa. <i>South African Geographical Journal</i> 82(2), 107-116., Ziervogel, G. and Downing, T. E. (2004) Stakeholder networks: Improving seasonal forecasts, <i>Climatic Change</i> . 65. 73-101. (Gina Ziervogel, University of Cape Town)	
9-697	A	31	14			(..Davies,1995) (Effiom Antia, University Of Calabar)	
9-698	A	31	21			(Brink et al.,1998) (Effiom Antia, University Of Calabar)	
9-699	A	31	21			write Da Silva, 1998) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-700	A	31	23			ECA,2002) (Effiom Antia, University Of Calabar)	
9-701	A	31	23			write ECA, 2002 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-702	A	31	36			(Monyo,2002) (Effiom Antia, University Of Calabar)	
9-703	A	31	42			"While drought .." Point is unclear - re-phrase (Chris Reason, University of Cape Town)	Ref previous response.....
9-704	A	31	44	32	43	In Kenya, whereas there is a general increase in the rates of coastal erosion, with some structures completely disappearing into the sea (a Kenya Navy Outpost at Ras Ngomeni had to be abandoned due to erosion), in some places, such as in Malindi, due to influx of sediments from the Athi River, there has been accretion of land by up to 1 km since 1960. (Mwakio Tole, Kenyatta University)	Recheck
9-705	A	31	49			..change(Sokona,2001) (Effiom Antia, University Of Calabar)	
9-706	A	31	49	31	49	Sokona should be brackets. (Raban Chanda, University of Botswana)	
9-707	A	32	1			..climates(Hulme et al.,2000;Williams,2005)(names need no Italics) (Effiom Antia, University Of Calabar)	
9-708	A	32	1	32	16	While the Sahel is a classic example of a region which is highly sensitive to climate change and needs elaborate discussion as is done here, a more comprehensive assessment of the current adaptation options in Africa to climate change across	Agreed.

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						<p>other geopgraphical regions need adequate discussion in the reoprt as well. Other large ecological systems such large inland lakes in eastern Africa(Lake Victoria , Lake Tanganyika, etc), the Nile river Basin and the central Africa(tropical) rainforest which directly support human livelihoods and are quite sensitive to both natural and human-induced variability/change also need to be alloted ample assesments. Consequently. hee National Communications to UNFCC could form the basis of summarizing the Adaptation assessments over northern, southern , eastern and western Africa, with the Sahel being emphasized as the grande classical region where climate-human interactions can potentially spark a spiraling feedback in the climate system.</p> <p>(Richard Anyah, Rutgers University)</p>	Agreed.
9-709	A	32	2	32	4	<p>these two sentences don't fit very well here - could be removed</p> <p>(Declan Conway, university of east anglia)</p>	
9-710	A	32	12			<p>..shocks.Evidence from..</p> <p>(Effiom Antia, University Of Calabar)</p>	
9-711	A	32	19	33	41	<p>It is clear at this point that future development of Africa's economy relies on water availability which is likely to be the most affected by climate change. However, there are no significant signs that climate change research and its implications is included into decision making for economic development or planning. While instituions like NEPAD are more than welcome to play the role they promised to play, there is an urgent need to develop an African base of climate knowledge based both on observation and mathematical models capable of predicting with some degre of accuracy climate at some seasonal and longer time scales. There is also an urgent need for outreach and education, explaining to both the farmers and policy makers the role of climate in future adaptation and mitigation strategies. A sound approach to future adaptation to climate change in Africa is through education and the development of a base of knowledge on climate. The costing adaptation section could be reduced to provide an overall conclusion based on the examples cited.</p> <p>(Lahouari Bounoua, NASA Goddard Space Flight Center)</p>	<p>To be condensed under research gaps Joint</p> <p>Agreed.</p> <p>This to be referenced.</p>
9-712	A	32	19	33	17	<p>What are the identfyed future adaptation options</p> <p>(Youba SOKONA, Sahel and Sahara Observatory (OSS))</p>	
9-713	A	32	21	33	41	<p>see comments under general chapter comments - this section shoul db e re-written. Mainstreaming and costing are important things to explore, but they are not future adaptation options to address the various vulnerabilities discussed in the text. Mainstreaming is a policy issue, and this section is being very policy-prescriptive. This section could be best written by highlighting key climate change threats and</p>	Reverted. Try to address the identification of adaptation options

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						vulnerabilities, then exploring solution sets for each. E.g. changes in growing seasons - adaptations would include increased irrigation to avoid excessive reliance on rainfed ag, use of EWS to better time planning, use of fast-maturing provenances, etc. Then a discussion needs to follow about possible obstacles and constraints to implement these - such as technology needs, timing to get new cultivars/provenances. Some crops take 10-20 years to develop new cultivars then get them into a production line. Perhaps there is room for adding CA's to do this section justice. (Paul Desanker, Penn State Univ)	
9-714	A	32	21	33	41	9.5.3 A critical discussion of possible limits to mainstreaming would be useful (Eriksen, Næss et al 2005). For example, if current policies are leading to political and economic marginalisation of certain groups, can mainstreaming adaptation into these policies actually reduce vulnerability or are more dramatic measures required? (Siri Eriksen, University of Oslo)	Iden 713
9-715	A	32	22			..change,given the low adaptive capacity.. (Effiom Antia, University Of Calabar)	
9-716	A	32	22	32	26	These introductory sentences have already been stated at the start of other sections. I suggest cutting them. (Mark Tadross, University of Cape Town)	
9-717	A	32	22			Africa is the most vulnerable region to climate change, as a result of the HIGH CLIMATE VARIABILITY AND low adaptive capacity. (Gina Ziervogel, University of Cape Town)	Agreed must go the ES
9-718	A	32	24	32	29	Sentence starting with "Considering" is incomplete. (Raban Chanda, University of Botswana)	
9-719	A	32	26	32	27	Again the statement that climate change has already started and is becoming apparent needs a reference for justification. On a global scale this has been achieved but I can't think of a study that has shown it regionally within Africa. I may be wrong but such a strong statement needs a reference. (Mark Tadross, University of Cape Town)	Agreed. Schrec & Semazzi (2004)
9-720	A	32	27	32	27	Why is 'climate change' capitalized? (Emma Archer, University of the Witwatersrand)	
9-721	A	32	27			Provide reference to support statement that climate change has started (Chris Reason, University of Cape Town)	Ref previous response.....
9-722	A	32	27			Does Climate Change have to be spelt with capitals? (Gina Ziervogel, University of Cape Town)	
9-723	A	32	31	32	32	Mainstreaming of climate change adaptation into national development plans,	Revised section

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						would require establishment of permanent Disaster management and Emergency response institutions at the national and regional level, which are fully autonomous and having political goodwill as well as permanent national budget support. (Richard Anyah, Rutgers University)	
9-724	A	32	34	33	17	could shorten this section - it does not mention many options (as in measures) but rather focusses on implementation through development programmes - some consideration could be given to what types of measures would be appropriate in certain situations across Africa - are these win-win.. or are there extra measures required for CC adaptation? (Declan Conway, university of east anglia)	
9-725	A	32	34	33	17	second definition of NEPAD and NAPA defined twice. I think this section is not the place for a review of international and regional programs that seek to promote adaptation, rather I would prefer to see a section that might suggest either through examples or speculation how this could happen in practice. Should we be building houses with dry loos in semi-arid areas that are likely to get drier ? Is rainfall harvesting a viable option for similar areas ? Can we build roads to withstand higher temperatures ? Similarly for buildings. Can current dams be strengthened to withstand flashfloods ? What are the implications for including these criteria in the building of new infrastructure ? Possibly these questions cannot yet be answered, but they are nonetheless future adaptation options. These comments also apply to the whole of section 9.5.2 as well as 9.5.3. (Mark Tadross, University of Cape Town)	
9-726	A	32	44			Moreover,the confernce.... (Effiom Antia, University Of Calabar)	
9-727	A	32	45			..(UNFCCC) has established (Effiom Antia, University Of Calabar)	
9-728	A	32	45	32	45	"have" should read "has". (Raban Chanda, University of Botswana)	
9-729	A	33	0	35		this is an important section to include and is clearly one of the main concerns related to impacts of CC in Africa - the section would benefit from some speculation about how CC could interact with the many other non-climate influences discussed. (Declan Conway, university of east anglia)	
9-730	A	33	9			(Huq et al.,2003) (Effiom Antia, University Of Calabar)	
9-731	A	33	9			write Huq and al., 2003) (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	

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9-732	A	33	10			(PRSPs) can help.. (Effiom Antia, University Of Calabar)	
9-733	A	33	11			..approaches.PRSPs.. (Effiom Antia, University Of Calabar)	
9-734	A	33	14			..urgent task." (Effiom Antia, University Of Calabar)	
9-735	A	33	15			(World Bank,2000) (Effiom Antia, University Of Calabar)	
9-736	A	33	19	33	41	This is not costing adaptation. It indicates some costs of some projects but this does not mean costing (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-737	A	33	20	33	41	I'm wondering if there are more studies of costs that are available. Most of these estimates seem to be taken from the one reference. What is the reference for the Senegal estimates ? I know B. Gomez submitted a paper to the AIACC working paper series on adaptation, including costs, for agriculture in the Gambia. Is there other information in either the AIACC working paper series or in the final reports for AIACC projects ? (Mark Tadross, University of Cape Town)	Will be considered
9-738	A	33	21			What does, costing studies, mean? (Kathleen Galvin, Colorado State University)	
9-739	A	33	24			write forestry climate (problem of spacing) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-740	A	33	30		32	The sentence is incomplete. (Todd Ngara, IGES)	
9-741	A	33	32			(Egypt...) are cited in Van Drunen(2005) (Effiom Antia, University Of Calabar)	
9-742	A	33	32	33	32	"Egypt" should be in brackets. (Raban Chanda, University of Botswana)	
9-743	A	33	32		41	Reference is not listed in the reference list (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-744	A	33	32			write Van Druner, M.A., 2005 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-745	A	33	39			948km2 (Effiom Antia, University Of Calabar)	
9-746	A	33	41			..adaptation)(Van Drunen,2005) (Effiom Antia, University Of Calabar)	
9-747	A	33	44			It is unclear what the term, Case Studies, means here. Are they case studies or	

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						examples of the effects of climate change. How are food security and drought and indigenous knowledge connected here? If a section needs to go in this chapter, this could be it. It is interesting but I am not sure how it fits in. (Kathleen Galvin, Colorado State University)	
9-748	A	33	44	37	38	What is the objective of the case studies? It is not clear what you are trying to highlight here (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-749	A	33	46	35	15	"locus' needs to be changed to "focus" ? Also the entire section 9.6.1 entitled Food insecurity in Africa can be drastically reduced to 1- sharpen the definition on food insecurity, 2-Introduce the vulnerability to non-food sectors. One example suffices to illustrate the points. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-750	A	33	46	35	15	The Case Study on Food Insecurity needs to cite Rosegrant and Cline (2003), Science 302, 1917-1919 (Jean Palutikof, Hadley Centre)	Agreed.
9-751	A	33	46			I would include here some of the recent work that shows that in communicating information in order to raise rural capacity to avoid food insecurity, it matters a great deal who is doing the communication. Two studies from Zimbabwe show that when the communicator has a stake in the outcome of the farmer's decision, the farmers are more likely to trust the information and use it. This is especially the case after information from that communicator appeared to have been wrong, as often happens in the realm of communicating climate information, which is probabilistic. Patt, Anthony, Hannah Bowles, and David Cash (2005). Mechanisms for enhancing the credibility of an unknown advisor: purchased advice and aligned incentives. Second revisions to manuscript in review at Journal of Behavioral Decision Making. Patt, Anthony (2005). Trust, respect, patience, and sea surface temperatures: useful climate forecasting in Zimbabwe. In R. Mitchell, W. Clark, D. Cash, and F. Alcock (eds.), Global environmental assessments: information, institutions, and influence. Cambridge: MIT Press. (Anthony Patt, Boston University)	Agreed. References need to be condensed.
9-752	A	33	50	34	3	This sentence is poorly structured. (Todd Ngara, IGES)	
9-753	A	34	5	34	15	This material needs to be raised far earlier in the chapter, and then be used to inform every sub-section on food security. (Emma Archer, University of the Witwatersrand)	
9-754	A	34	6	34	7	sensitivities of climate or sensitivities of food production to climate ? (Mark Tadross, University of Cape Town)	

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9-755	A	34	14			or add on pg35 line 8. Could add reference from AIACC work - Ziervogel, G., Nyong, A., Osman, B., Conde, C., Cortés, S. and Downing, T.E. (In press) Climate variability and change: implications for household food security. Chapter in AIACC Vulnerability Synthesis Book. (Gina Ziervogel, University of Cape Town)	
9-756	A	34	17	34	39	there is a need to elaborated more on the food insecurity in the Sahel region by considering all the experiences of more than 30 years of CILSS (Permament Inter-state committee to combat drought and desertification in the Sahel) composed with nine countries having the mandate of creating conditions to reduce food insecurity in the Sahel. It will be a pleasure for CILSS to reinforced this part of the document. (AMANI Abou, AGRHYMET Regional Center)	Contract (TAR) Agrimet Get ask for – pull in CA
9-757	A	34	22	34	22	"factor" should read "factors". (Raban Chanda, University of Botswana)	
9-758	A	34	26	34	29	It is not clear whether salinisation of Coastal aquifers is due to sea level rise effects, or overabstraction of groundwaters in the Kenyan Coast (Tole, M. P. (1997). Pollution of groundwater in the Coastal Kwale District, Kenya. International Association of Hydrological Sciences Publication No. 240 pp. 287 – 297. IAHS Wallingford; also Anyango, S. O., Tole, M. P., and Ucakuwun, E. K. (1998). Groundwater resources and sea water intrusion in Kwale district. In Hoorweg, J. (1998) (Ed.). Dunes, Mangroves, and Birdlife in Coastal Kenya. ACTS Press, Nairobi pp. 73 – 84.) (Mwakio Tole, Kenyatta University)	Not relevant – incorrect reference to text. Not relevant incorrect reference to text.
9-759	A	34	34		39	This sentence is too long and convoluted. One has to read it twice or thrice to get its meaning. (Todd Ngara, IGES)	
9-760	A	34	39			(Devereux,2000,?) (Effiom Antia, University Of Calabar)	
9-761	A	34	49			..farmers' adaptive... (Effiom Antia, University Of Calabar)	
9-762	A	35	6			"nuanced view" What does this mean ? Be more specific (Chris Reason, University of Cape Town)	Agreed. This section was rewritten so as to explain use of language!!!
9-763	A	35	13		15	Suggest you add a few lines to explain what you mean by improved science and more usable science. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-764	A	35	13	35	15	this last sentence does not seem like a logical follow-on from the previous ones. What science ? 'Science' is a very generalised term and needs to be more specific.	

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						(Mark Tadross, University of Cape Town)	
9-765	A	35	18	37	31	Why only a case study for the Sahel ? Is this the best case study - there are excellent cases of quite nuanced complex situations which have concrete lessons, and actually move the debate forward. This is very simplistic. (Emma Archer, University of the Witwatersrand)	Addressed Sahel represented of other situations, visible Introduce better.
9-766	A	35	18	37	31	The section ' Drought in the Sahel" is supposed to be a case study. Instead it is presented as a review article which brings about different views, all equally not supported by observational evidences, and ranging from early theories to shifts theories. First the section is long for the information it carries. Second, notions of climate variability, desertifications, Sahara expansion etc ... are all brought under the same umbrella. I suggest that the text in the first 2 paragraphs be shortened to one paragraph. While doing that correct for the Charney reference (1997), charney's paper did not mention desert expansion. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Adressed Adaptation
9-767	A	35	18	35		9.6.2 – In this section need to focus on what is new in the climatic and human systems. (David Campbell, Michigan State University)	
9-768	A	35	18	37	31	Case study on Drought in the Sahel now has too much meteorological WGI-type material, and has little or nothing to tell us which is new since the TAR. Unless the authors can come up with material which is clearly new, and reaches new conclusions, I suggest this case study is dropped. If it is retained, a graph showing latest rainfall trends in the region should be included, to replace most of the meteorological information, and a reference could be made to the Box in WGI Chapter 3.. (Jean Palutikof, Hadley Centre)	Adressed Generic
9-769	A	35	18			Section on Sahel - the authors should condider including a section on southern African drought too considering all the research that has been done on this important topic (Chris Reason, University of Cape Town)	Coleen – address
9-770	A	35	20	36	50	Also for this session, there is a need to add information related to the ongoing AMMA (African Mosoon Multidisciplinary Analyze) international program on the African Mosoon having the aim to improve our knowledges on the mosoon dynamic and impacts in the west africa region (AMANI Abou, AGRHYMET Regional Center)	Coleen – address
9-771	A	35	20	37	31	9.6.2 This section has good critical discussion. It would be helpful if it came earlier to balance the assumptions made in early sections regarding desertification,	

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						population growth, and inappropriate practices of the poor, rather than as a case study at the end. See also Eriksen 2004 for links between desertification and adaptation measures. (Siri Eriksen, University of Oslo)	
9-772	A	35	20	36	50	This discussion of the causal mechanisms for drought and long-term drying in the Sahel does not seem appropriate to a chapter focussing on adaptation. It sounds more like a discussion for a Working Group I chapter. I suggest cutting it almost altogether and focussing on the implications for adaptation that follow. (Mark Tadross, University of Cape Town)	Structurally
9-773	A	35	24	35	24	Replace the citation (Nicholson 2000) with a citation to the most recent and extensive analysis (Dai, Lamb, et al. 2004). Reference: (Dai, A., P.J. Lamb, K.E. Trenberth, M. Hulme, P.D. Jones, and P. Xie. 2004. The recent Sahel drought is real. International Journal of Climatology 24: 1323-1331). (Patrick Gonzalez, The Nature Conservancy)	
9-774	A	35	29	35	32	Replace the two sentences "One of the...2002" with the more accurate "Analyses of historical rainfall and coupled atmosphere-ocean-land-vegetation model output indicates that the Sahel drought results from sea surface temperature anomalies amplified by a reduction of Sahel vegetation cover (Zeng, Neelin et al. 1999; Giannini, Saravanan et al. 2003; Zeng 2003.)" References: (Giannini, A., R. Saravanan, and P. Chang. 2003. Oceanic forcing of Sahel rainfall on interannual to interdecadal time scales. Science 302: 1027-1030); (Zeng, N., J.D. Neelin, K.-M. Lau, and C.J. Tucker. 1999. Enhancement of interdecadal climate variability in the Sahel by vegetation interaction. Science 286: 1537-1540); (Zeng, N. 2003. Drought in the Sahel. Science 302: 999-1000). The draft sentence did not take into account the extensive and detailed research that demonstrates that both sea surface temperature anomalies and vegetation cover reduction are necessary to explain the Sahel drought. (Patrick Gonzalez, The Nature Conservancy)	Case study address Under revision
9-775	A	35	29	35	30	Could you please give the sources of the theories arguing that drought was due to land-use pressure leading to desertification (Youba SOKONA, Sahel and Sahara Observatory (OSS))	CA Sokona
9-776	A	35	30	35	31	The sentence that begins, 'However(Nicholson, 2000; Xue and Fennessy, 2002) should clearly state the these studies(which to some extent are in agreement with other recent modeling studies, e.g Hoerling et al, 2005: Detection and Attribution of 20th century Northern and Southern Africa Monsoon Change) now dispute parts of the earlier theory that change in surface albedo was the primary trigger of Sahelian droughts(Charney et al.,1977).	

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						(Richard Anyah, Rutgers University)	
9-777	A	35	36		37	You have chosen to work with recent reference material. Lamprey's 1975 work is a classic and it would be unwise to overlook it. Kindly ensure that it appears on the ref list. It is not on the list. Perhaps you could add a line or two to show the value of Lamprey's work. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	
9-778	A	35	37			..et al.,1977) (Effiom Antia, University Of Calabar)	
9-779	A	35	37			The mentioning of dust in this section just adds to the non clarity. While it is recognized that dust and sand from that region can be transported across the atlantic, they are short lived and no studies have linked them to the African decadal scale drought regimes. Furthermore the causality of droughts and rainfall variability is just uncommensurate with the time scale. I suggest that the core of the section revolves around the patterns of sst in the African adjacent bassins (parag. 3) with rainfall variability and land surface feedbacks being the major modulators (for example Bounoua, see Bounoua et al., 2000 " Sensitivity of Cliamte to changes in NDVI' Journal of Climate, Volume 13, 2277-2292. The pargaraphs about shifts can all be concisely compacted to single pargaraph and the adaptation part of the section can then be a nice concluding paragraph. (Lahouari Bounoua, NASA Goddard Space Flight Center)	The whole of this page to be addressed by?
9-780	A	35	37			write Charney and al., 1997 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-781	A	35	46	35	47	Change the phrase "...perhaps...timescales" with the more accurate "amplifying and exacerbating drought conditions" and add (Zeng 2003) to the citations. Reference (Zeng, N. 2003. Drought in the Sahel. Science 302: 999-1000.) (Patrick Gonzalez, The Nature Conservancy)	
9-782	A	35	47			..Zeng et al.,1977) (Effiom Antia, University Of Calabar)	
9-783	A	35	47			write Zing and al., 1999 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-784	A	35	49	36	5	Replace the sentences "Remote sensing studies...Environmental Change" with a review of the evidence from the few original long-term field studies: "Declining rainfall in the West African Sahel since 1855 has shifted the Sahel, Sudan, and Guinean ecological zones by 35-50 km in Senegal in the period 1945-1993 (Gonzalez 2001). Forest inventories from Mauritania, Mali, Burkina Faso, Niger, and Chad confirm the latitudinal shift of vegeation zones in the last half of the 20th Century (Gonzalez, Sy, et al. 2004). On the other hand, a slight recovery of rainfall	

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						has resulted in a reduction of vegetation-free areas on one sand dune system in northern Burkina Faso (Rasmussen, Fog, et al. 2001)." Note that the authors of the one reference that the draft used to generalize a greening for the entire Sahel state that "It is not claimed that the study region, part of the Oudalan of northern Burkina Faso, is in any way representative for larger areas, and conclusions from this study should not be extrapolated to the rest of the Sahel-Sudan zone" (Rasmussen, Fog, et al. 2001). References given in the next comment due to lack of space in this Excel cell. (Patrick Gonzalez, The Nature Conservancy)	
9-785	A	35	49	36	5	References for the previous comment: (Gonzalez, P. 2001. Desertification and a shift of forest species in the West African Sahel. Climate Research 17: 217-228); (Gonzalez, P., H. Sy, and C.J. Tucker. 2004. Local knowledge and remote sensing of forest biodiversity and forest carbon across the African Sahel. In Lykke, A.M., M.K. Due, M. Kristensen, and I. Nielsen (eds.) Proceedings from the 16th Danish Sahel Workshop. Sahel-Sudan Environmental Research Initiative (SEREIN), University of Copenhagen, Denmark.) (Patrick Gonzalez, The Nature Conservancy)	
9-786	A	35		37		drought in the Sahel has dominated much of the research on African climate but I am not sure how relevant the technical detail here is for a chapter on CC and adaptation - I think the section is too long and goes into too much detail about the causes of the drought - this could be summarised in one/two paragraphs - I am not sure that the three bullet point hypotheses are really necessary. The section should at least contain a sentence or two on how these processes may respond with CC - (there are a couple of references cited earlier in the chapter that refer to this). The final section is better, focussing on impacts and adaptation of the drought - this is very useful, although it could include some mention of remittances and migration which have been very important during the last couple of decades in many Sahelian countries. (Declan Conway, university of east anglia)	Revision of case study
9-787	A	36	4	36	5	Editorial comment on these lines needs to be removed. (Raban Chanda, University of Botswana)	
9-788	A	36	18			..et al.,2003 (Effiom Antia, University Of Calabar)	
9-789	A	36	18	36	18	The reference Foley et al, 2003 is not in the bibliography (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-790	A	36	18			write Foley and al., 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	

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9-791	A	36	22	36	29	In East Africa, bleaching affected up to 80 - 95% of the corals in the 1998 event associated with the El Nino of 1997/1998 (Payet, R. and Obura, D. (2004). The Negative Impacts of Human Activities in the Eastern African Region: An International Waters Perspective. AMBIO: A Journal of the Human Environment: Vol. 33, No. 1, pp. 24–33). This was due to a combination of increased sea surface temperatures, local dilution of sea water salinities, and local increases in sediment concentrations which affected light penetration. (Mwakio Tole, Kenyatta University)	
9-792	A	36	24			..et al.,2003 (Effiom Antia, University Of Calabar)	
9-793	A	36	24			write Foley and al., 2003 (problem of punctuation) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-794	A	36	28	36	28	The word "in-adequate" should be inadequate. (Tsegaye Tadesse, University of Nebraska-Lincoln)	
9-795	A	36	30			..2003) For oceans.. (Effiom Antia, University Of Calabar)	
9-796	A	36	30	36	30	what is SSTs? (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-797	A	36	31			exist but (Effiom Antia, University Of Calabar)	
9-798	A	36	40			"changes in SST patterns" Be more specific (Chris Reason, University of Cape Town)	What follows should have been addressed....most of these sections were either removed or re-written.
9-799	A	36	47			Need to explain or give an example of driver here. (Kathleen Galvin, Colorado State University)	
9-800	A	37	2	37	31	this paragraph can be more rich by considering the experiences of more than 30 years of AGRHYMET regional Center concerning the system implemented with the collaboration of all the nine CILSS countries members for the permanent monitoring of the Sahel ecosystem particularly during the rainy season to give precise informations to decisionmakers and populations (farmers principally) to face the variability of the rainy season. It will be a pleasure for AGRHYMET to share experiences (AMANI Abou, AGRHYMET Regional Center)	
9-801	A	37	28	37	31	When emphasizing that farmers in the Sahel region have developed various coping and adaptation mechanisms, it should be acknowledged that some of the traditional coping strategies cannot be effective in the event of an abrupt climate change. (Richard Anyah, Rutgers University)	

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9-802	A	37	34	37	38	? (Emma Archer, University of the Witwatersrand)	
9-803	A	37	34	37		Stating the obvious! 9.6.3 need to be written but this is where the complexity of coping strategies might be spoken to. (David Campbell, Michigan State University)	Tony and Coleen
9-804	A	37	34	37	34	Sub-section is undeveloped. (Raban Chanda, University of Botswana)	
9-805	A	37	34			The subtitle 9.6.3. (Indigenous knowledge systems include non developed three points. One wonders why ? (Lucien Marc Oyede, Department of Geology (U.A.C.) Benin)	
9-806	A	37	34	37	38	development missing (Youba SOKONA, Sahel and Sahara Observatory (OSS))	
9-807	A	37	34	37	38	I think this section needs expanding ? (Mark Tadross, University of Cape Town)	
9-808	A	37	36		38	These bullets need further elaboration. (Todd Ngara, IGES)	
9-809	A	37	36			the comment is missed! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-810	A	37	37			the comment is missed! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-811	A	37	38			the comment is missed! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-812	A	37	39	37	39	A bullet on Integrating indigenous knowledge in wildlife conservation and management in marginal areas should be added as this is also crucial in biodiversity conservation (i.e human-wildlife interactions-see Hartnet and Semazzi, 2005) (Richard Anyah, Rutgers University)	Agreed
9-813	A	37	41	38	37	link to the chapter that deals with sustainable development. (Emma Archer, University of the Witwatersrand)	
9-814	A	37	41	42	28	9.7 These sections should perhaps form part of a more structured section 9.5 on adaptation options. This might make it easier to structure an argument for the chapter. (Siri Eriksen, University of Oslo)	
9-815	A	37	41	42	27	Section 9.7 on 'Implications for Sustainable Development' should look at the implications for sustainable development of the preceding assessment in the main body of the chapter. Assessing the literature has provided some new insights into the impacts of climate change for Africa - what does this mean for sustainable development? Instead, we have a long free-standing section on sustainable	IRI – Is the climate changing

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						development issues, much of which is too general to be appropriate in a regional chapter. So, everything from page 37 line 45 to page 38 line 37 could be deleted. The material on MDGs is interesting and should be retained - Table 9.3 relates directly back to the main body of the chapter, and so is useful. It would be even more useful if it listed for each bullet point the relevant sections of the chapter. (Jean Palutikof, Hadley Centre)	Tony and Belgis
9-816	A	37	43	38	37	Nice description of some of the most critical issues necessary for a sustainable development in Africa. While I agree with the author that climate change responses must be regarded and assessed within the framework of feasibility, development policies and gender equity, I also believe that education and outreach is a common denominator to success. Hence among all actions proposed to combat, mitigate or adapt to climate changes in Africa, education of both populations and policy makers is critical for alleviating the suffering and potential degradation of livelihoods in a continent already subject to a myriad of social problems. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-817	A	37	43			Please take out name of person who did section - Gina!!! (Gina Ziervogel, University of Cape Town)	
9-818	A	38	9	38	9	"dept" should read "debt". (Raban Chanda, University of Botswana)	This whole page to be looked at by Gina.
9-819	A	38	10	38	11	not all climate change is detrimental; can we qualify this statement with 'some of which are expected' or 'many of which are expected'. (Mark Tadross, University of Cape Town)	
9-820	A	38	11	38	11	The phrase "to further aggravate with" should read "to be further aggravated by". (Raban Chanda, University of Botswana)	
9-821	A	38	17	38	17	WEHAB not defined (Mark Tadross, University of Cape Town)	
9-822	A	38	22	38	37	The text could explain why these measures are necessary, in its present form the text appears normative. (Siri Eriksen, University of Oslo)	
9-823	A	38	31	38	32	Integrating climate change in economic development in Africa can be addressed through establishment of regional/sub-regional institutions that emphasize multidisciplinary as a way of integrating the environment(ecosystems), sociology and economy since the livelihoods of a majority of African population rely on sustainable environment and ecosystem management(e.g Hartnet and Semazzi, 2005). This can be seen both as a sustainable mitigation and adaptation strategy for climate change impacts.	Semazi to provide report (Webb)

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						(Richard Anyah, Rutgers University)	
9-824	A	38	35			(..et al.,2004) (Effiom Antia, University Of Calabar)	
9-825	A	38	40	40	30	This section is well written and the information presented in table 9.3 is very useful. However some editing is required in the table. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-826	A	38	40	42	28	These sections present a lot of general background to global change impacts and international bodies, some of which I think are more appropriate to one of the other 'encompassing' chapters i.e. I am not sure it is appropriate to repeat much of this information in a chapter focussing on Africa. There are some Africa specific comments which could be drawn from the text and expanded where necessary, but care should be taken not to repeat what has already appeared earlier in the chapter. (Mark Tadross, University of Cape Town)	Edit and address.
9-827	A	39	1	39	7	It could be important to point out what strategies have been included as part of the NAPAs (in the country communications to the UNFCCC) which are intended to address some of the core concerns of the Rio+10 summit(declarations) (Richard Anyah, Rutgers University)	
9-828	A	39	9			..implementation was negotiated by governments,with the main commitments with regard...implementation being: Increasing... (Effiom Antia, University Of Calabar)	
9-829	A	39	29	39	30	The table on the MDGS Goal1, should emphasize the fact that climate change would alter the ecosystem-human interfaces and interactions that may lead to loss of biodiversity and hence erode the basic support systems for the livelihood of many people in Africa. As such any poverty eradication strategies must include programmes that encourage conservation of biodiversity in order to enhance peoples adaptation to climate change (Richard Anyah, Rutgers University)	Pius to address this Agree
9-830	A	39	29	40	30	Table 9.3: check bullet points, especially under examples. Check for typos and grammar. (Raban Chanda, University of Botswana)	Bring in more African examples
9-831	A	39	29	40		I think table 9.3 could be cut out (Declan Conway, university of east anglia)	
9-832	A	39	29			Again the table did not include a clear reference to impacts of increased frequencies of dust storms and heat waves (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-833	A	39	29			There is no reference to Table 9.3 in the text. (Kathleen Galvin, Colorado State University)	

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9-834	A	39	30			Second raw of the table "Climate change may reduce" rather than "may be reduced" (Mohamed El Raey, Institute of Graduate Studies and Research)	
9-835	A	39	30	40		Why are goals in Table 9.3 not arranged sequentially? (Todd Ngara, IGES)	
9-836	A	39	30			Not forget to specify the author (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-837	A	39	35			Table 9.3 - "Climate change may be reduced poor people's livelihood" makes no sense (Chris Reason, University of Cape Town)	What follows should have been addressed....most of these sections were either removed or re-written.
9-838	A	40	0			The 5th line and 1st column of the table are empty! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-839	A	40	1	40	2	The order of the MDGs Goals as listed on page 40 should be corrected so that the description of the 2 and 3 goals are before the 4, 5 &6 goals. (Richard Anyah, Rutgers University)	
9-840	A	41	1	42	28	The section "Clean development mechanisms' is well written. (Lahouari Bounoua, NASA Goddard Space Flight Center)	
9-841	A	41	3	41	25	There is need to indicate that so far the ANNEX1 countries have been reluctant to support the Clean Development Mechanisms(CDM) in the developing countries(I.e imbalance in the carbon-trade) (Richard Anyah, Rutgers University)	
9-842	A	41	19		al.(2003),the.. (Effiom Antia, University Of Calabar)	
9-843	A	41	28	42		box 9.2 could also be cut - this information has been published in many places before (Declan Conway, university of east anglia)	
9-844	A	41	28			box 9.2. Again I don't think it is necessary to repeat this general information in such detail. I think much of the information is in Chapter 17. (Mark Tadross, University of Cape Town)	
9-845	A	42	2	42	27	The whole paragraph should be updated to reflect COP 10 deliberations on the guidance of GEF funding and operations of the Special Climate Change Fund(SCCF) and how the issues of adaptation to climate change is being addressed by the GEF trust fund. (Richard Anyah, Rutgers University)	
9-846	A	42	27			Is that supposed to be 2005? (Todd Ngara, IGES)	
9-847	A	42	31	45	3	Nice summary of the situation in Africa about the cuurent knowledge, the toolsused	

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						to acquire this knowledge and the uncertainties associated with their projections. It is however clear that current knowledge about future climate projections using current climate models has a consensus on a warming and drying trend for Africa with some regional variations. It is thus on this basis that African scientists, policy makers and development planners need to act. I suggest that a short 2-lines paragraph about uncertainties and limitations of the models be inserted in the abstract or at the beginning of the text so that readers understand that authors are aware of the limitations of the tools used to reach the conclusion drawn in this document and that the highest risk is to adopt a situation where nothing is done. (Lahouari Bounoua, NASA Goddard Space Flight Center)	Strongly agreed focus on precipitation
9-848	A	42	31			What is the difference between an 'unknown' and a 'research gap' ? (Mark Tadross, University of Cape Town)	Check terminology – unknown questionable Clarify. Unknown – climate change HIV – research gap / Integrated multiple assessment
9-849	A	42	33			Another important uncertainty is in decision making by all those affected by climate change. This could be another bullet. (Kathleen Galvin, Colorado State University)	
9-850	A	42	33			section 9.8.1 would seem to be a fundamental issue which is not addressed in these two bulleted points. I also don't think this is the appropriate place to be discussing this issue. Surely it should come towards the beginning of the chapter and form the basis for discussion of adaptation options i.e it could go in section 9.3 ? (Mark Tadross, University of Cape Town)	
9-851	A	42	37	42	39	Climate variability is the major factor concerning the food insecurity in Africa even it is not the only factor. The main reason is the place of agriculture which represents the activities of more than 80% in the sahel region for example. (AMANI Abou, AGRHYMET Regional Center)	Population driver Deagrarianization / Bryceson
9-852	A	42	38			"in some years" is not necessary. (Todd Ngara, IGES)	
9-853	A	42	42	43	25	Should there not be a section in research needed under 'food security' ? (Emma Archer, University of the Witwatersrand)	Agreed strongly
9-854	A	42	42			This section needs to be given a lot more thought. It needs to draw from any conclusions found previously in the chapter and use information on current and future adaptation options to draw a thread towards future research priorities. In its current state it falls far short of this goal. (Mark Tadross, University of Cape Town)	Agreed will address Adaptation – where are the gaps
9-855	A	42	44	42	48	This is an important point and it's very relevant raising it. The models are here but what's lacking is first the computing capacities at regional level. A development of	

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						cluster systems at regional level with high capacities and remote access for scientists of the region is a solution. This will be a capacity building and a way to increase the critical mass. So, these are few suggestion for a solution to run model at high resolution and for long runs suitable for climate projections. The funding agencies should go this way and this also gives a possibility for model intercomparison like what people did in Europe (Prudence etc..) This could be raised in WGI. (Abdoulaye SARR, Direction Météorologie Nationale)	Make research gap! Application of models Advisory risk management Cross-cutting CLIMAG Mali
9-856	A	42	45	42	45	Add at the end the sentence, the ongoing AMMA international program (AMANI Abou, AGRHYMET Regional Center)	
9-857	A	42	45	42	45	It is worth emphasizing that the current regional climate models have not been thoroughly evaluated/validated and optimized for simulating contemporary climates over different parts of Africa. As such the use of RCMs to downscale future climate scenarios over Africa is still riddled with a lot more uncertainties compared to other continents. (Richard Anyah, Rutgers University)	Agreed. B. Hewitson – regional model Comparisons
9-858	A	42	45	42	45	Add the following after the word "understood" : "due to non homogenous distribution of observing stations, data scarcity, gaps in records...etc." (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	Gaya modeling Regional model – need to call for this
9-859	A	42	46	42	48	Add also the developpement of appropriate downscaling techniques for the different regions and not only regional climate models (AMANI Abou, AGRHYMET Regional Center)	
9-860	A	42	46	42	46	Add the following after the word "need to" : " support establishment of meteorological stations sets, capacity development in the field of observers training. Also, it is needed to " (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	GCM not regional Sensitivity model – sharing
9-861	A	43	2	43	2	"reacquired" should read "required". (Raban Chanda, University of Botswana)	
9-862	A	43	13	43	13	"in wildlife" should be "on wildlife". (Raban Chanda, University of Botswana)	
9-863	A	43	19	43	21	It should be noted that while there could be no medical evidence that link the spread of HIV/AIDS to climate(or specifically climate change), but as climate change affects various socio-economic sectors thereby eroding peoples economic bases, the likely increase in rural-urban migration as people migrate in search of survival would lead to increase of the urban poor, in turn creating conducive environments for accelerated spread of the disease. (Richard Anyah, Rutgers University)	CARE / Glantz – oxfam humanitarian etc.

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9-864	A	43	19			write Heath and human Establishment (proposal) (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-865	A	43	21	43	21	Add the following after the word" meningitis" : " and respiratory diseases.." (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-866	A	43	24		25	Arable agriculture should also be mentioned since it also has research gaps. (Todd Ngara, IGES)	
9-867	A	43	28	43	49	the figure 9.5 has to move at the place of water resources paragraph (AMANI Abou, AGRHYMET Regional Center)	
9-868	A	43	28	44	33	The two figures at the end of this chapter are neither referenced within the text nor are their sources referenced. (Mark Tadross, University of Cape Town)	
9-869	A	43	49			There is no reference to Figure 9.5 in the text. (Kathleen Galvin, Colorado State University)	
9-870	A	44	1		44	Figure 9.6 on climate change vulnerability in Africa is a very important figure. It is a very useful summary. As is, it is not easily legible. I should be possible to produce another format, not necessarily a map, which will convey the same information in an attractive manner. The same goes for the preceding figure 9.5 on water availability. If space and cost would allow, both figures could be blown up into bigger size. If not possible then a table would be an alternative. (Mohamed El Mahdi Beshir, Independent scholar and consultant)	Coleen – regional vulnerability – key vulnerabilities on the map updated it. (Paul contact TSU) Limited colour
9-871	A	44	1			Figure 9.6. Please note that when this figure was adapted from the TAR by UNEP to create the pretty graphic now in this figure, there was a typo in the box on the top left corner talking about the North Atlantic Oscillation - it reads "North Atlantic a key factor in international climate vulnerability, with impact on fisherie industries" - the correct caption should read "North Atlantic Oscillation a key factor in interannual climate variability, with impact on fisheries industries". I had communicated this to UNEP a while back but was too late to correct their publications. This leads to the obvious question, how to make a link to Chapter 10 of the TAR - there should be a reference to both the TAR Chapter 10 and the UNEP Africa Vital Graphics where this was reworked into this graphic - but I wouldnt insist on it. (Paul Desanker, Penn State Univ)	Noted International Interrranel Check keep refs NEPAD Tve change / -ve change
9-872	A	44	15	44	15	Please note that Power et al. (1999) first made this point. Please cite Power et al. (1999) along with the Folland et al. and Deser et al. references given. Reference: Power, S., Folland, C., Colman, A., and V. Mehta, 1999: Inter-decadal modulation of the impact of ENSO on Australia. Climate Dynamics, 15, 319-324. (Scott Power, Bureau of Meteorology research centre)	Will checkrefs!!!

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Chapter-Comment	Batch	From Page	From Line	To Page	To line	Comments	Notes of the writing team
9-873	A	44	16	44	17	<p>The draft text states that: "It is presently not clear to what extent the PDO or IPO is physically different from tropical Pacific variability in El Nino ", but no supporting evidence in the form of a reference is given. Please add "(e.g. POWER ET AL. 2005; POWER AND COLMAN 2005)" who have examined this issue in detail. (Background information for authors: POWER ET AL. 2005 have recently shown that simple random changes in ENSO behaviour from decade-to-decade can account for a great deal of the ENSO-like decadal variability, while POWER AND COLMAN 2005 have shown that there is a genuine difference in physics operating on interannual and decadal time-scales off the equator, and this leads to a robust difference in El Nino and decadal El Nino-like patterns. References: Power, S.B., Haylock, M., Colman, R.A., and X. Wang, 2005: The predictability of inter-decadal changes in ENSO activity and ENSO teleconnections, J. Climate, (accepted). Power, S.,B., and R.A. Colman, 2005: Multi-year predictability in a coupled general circulation model. Climate Dynamics, (in press).</p> <p>(Scott Power, Bureau of Meteorology research centre)</p>	
9-874	A	44	19			<p>Fig 9.6 Coastal marine fishery depends on wind-driven upwelling rather than Benguela Current (Chris Reason, University of Cape Town)</p>	What follows should have been addressed....most of these sections were either removed or re-written.
9-875	A	44	33	44	33	<p>A reference should be included in the figure caption. (Richard Anyah, Rutgers University)</p>	
9-876	A	44	33			<p>Figure 9.6 is fuzzy and unreadable after printer (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))</p>	
9-877	A	44				<p>Fig. 9.6 was in the TAR and should not be repeated here. (Jean Palutikof, Hadley Centre)</p>	
9-878	A	45	0			<p>Annex 1 is South Africa referring to Africa south of the equator, or to the Republic of South Africa ? (Chris Reason, University of Cape Town)</p>	What follows should have been addressed....most of these sections were either removed or re-written.
9-879	A	45	1	45	2	<p>Annex 1: "South Africa" should be "Southern Africa". (Raban Chanda, University of Botswana)</p>	
9-880	A	45	1			<p>For the table in Annex 1 there should be a footnote that states what countries are included in each of those headings, especially the one that states South Africa. Is this really SA or southern Africa? (Kathleen Galvin, Colorado State University)</p>	
9-881	A	45	1			<p>The caption in the Annex should be elaborated. What are "African numbers"? (Todd Ngara, IGES)</p>	

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9-882	A	45	1			likewise Annex I does not seem to be referenced within the text. What is its purpose ? (Mark Tadross, University of Cape Town)	
9-883	A	45	3	45	3	indicate the countries for each regions (AMANI Abou, AGRHYMET Regional Center)	
9-884	A	46	0			References – some cited references are missing. No reference to Semmazzi's work? (David Campbell, Michigan State University)	Updated.
9-885	A	46	0			Not forget to mention the web sites who are consulted ! (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-886	A	46	7			..et al.(2003) (Effiom Antia, University Of Calabar)	
9-887	A	46	12			..(2002) (Effiom Antia, University Of Calabar)	
9-888	A	46	14			..(2002) (Effiom Antia, University Of Calabar)	
9-889	A	46	16	46	16	Include the following reference; Anyah RO and FHM Semazzi (2005) Climate Variability over the Greater Horn of Africa based on NCAR AGCM ensemble. Special Issue of Theoretical and Applied Climatology(In press) (Richard Anyah, Rutgers University)	
9-890	A	46	39			write République du Bénin (Not Benin). (Ibouraïma YABI, Laboratoire de Climatologie (DGAT/UAC))	
9-891	A	46	50			..(2004) (Effiom Antia, University Of Calabar)	
9-892	A	47	20	47	20	remove subscript in the volume number(I.e NO 433) of journal referenced (Richard Anyah, Rutgers University)	
9-893	A	47	20	47	20	include the following reference; Hartnet DC and FHM Semazzi(2005) Report of the Workshop for Enhancing Collaborative research on the environment in Sub-Saharan Africa. Arlington, Virginia, USA , 24-26 January,2005 (Richard Anyah, Rutgers University)	
9-894	A	47	21			C.T.,(2004) (Effiom Antia, University Of Calabar)	
9-895	A	47	28	47	28	In which journal/workshop proceedings the work was published? (Richard Anyah, Rutgers University)	
9-896	A	47	31			..(2004) (Effiom Antia, University Of Calabar)	
9-897	A	47	33	47	35	include the following reference; Coppola, E., and F. Giorgi (2005): Climate change in tropical regions from high resolution time slice AGCM experiments. Submitted,	

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						Quar. J. R. Met Soc (Richard Anyah, Rutgers University)	
9-898	A	48	1	48	1	which journal/proceedings is being referenced? (Richard Anyah, Rutgers University)	
9-899	A	48	47			..(2003) (Effiom Antia, University Of Calabar)	
9-900	A	49	12	49	12	Add the following at the start of line 12 : " El- Shahawy, M. A: Prediction of Air-Pollution Episodes. J. Boundary Layer Meteorology, 2002." (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-901	A	49	13	49	13	Add the following at the start of line 13: "El-Shahawy, M.A. Meteorological Conditions leading to Air pollution Episodes over Egypt. European Geophysical Society, Proceedings XXVIII, General Assembly, Nice, France. April 2003." (Mohamed El-Shahawy, Faculty of Science- Cairo University - Giza -Egypt)	
9-902	A	49	20	49	29	Include FAO(2001) The State of the World Forestry. FAO, United Nations, Rome, Italy (Richard Anyah, Rutgers University)	
9-903	A	50	35	50	36	Incomplete reference details(L.e where the article was published is not listed) (Richard Anyah, Rutgers University)	
9-904	A	51	29			..,(2005) (Effiom Antia, University Of Calabar)	
9-905	A	51	30	51	30	Incomplete reference details (Richard Anyah, Rutgers University)	
9-906	A	51	31			..,(2002) (Effiom Antia, University Of Calabar)	
9-907	A	51	34	51	35	In which journal/workshop proceedings.... was the article published? (Richard Anyah, Rutgers University)	
9-908	A	53	6	53	8	incomplete reference details (Richard Anyah, Rutgers University)	
9-909	A	53	20			B.,(2005) (Effiom Antia, University Of Calabar)	
9-910	A	53	27			..(2002) (Effiom Antia, University Of Calabar)	
9-911	A	54	11			(more reference information needed) (Effiom Antia, University Of Calabar)	
9-912	A	54	11	54	12	incomplete reference (Richard Anyah, Rutgers University)	
9-913	A	54	31			..S.E.,(2001)	

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						(Effiom Antia, University Of Calabar)	
9-914	A	54	33			B.,(2000) (Effiom Antia, University Of Calabar)	
9-915	A	54	36			..J.P.,(2003) (Effiom Antia, University Of Calabar)	
9-916	A	54	49	54	50	incomplete reference (Richard Anyah, Rutgers University)	
9-917	A	55	3			..D.M.,(2003) (Effiom Antia, University Of Calabar)	
9-918	A	56	27	56	29	include the following reference; Schreck C and Semazzi FHM(2004): Variability of recent climate of East Africa. Int J Climatol 24:681-701 (Richard Anyah, Rutgers University)	
9-919	A	56	42			..., (1997) (Effiom Antia, University Of Calabar)	
9-920	A	56	42			..H.,(2004) (Effiom Antia, University Of Calabar)	
9-921	A	57	23			..S.,(2001) (Effiom Antia, University Of Calabar)	
9-922	A	57	26			..C.E.,(2004) (Effiom Antia, University Of Calabar)	
9-923	A	57	28			..., (2004) (Effiom Antia, University Of Calabar)	
9-924	A	57	29			..., (2005) (Effiom Antia, University Of Calabar)	
9-925	A	57	33			..M.N., (Effiom Antia, University Of Calabar)	
9-926	A	57	50			UNEP,(2002) (Effiom Antia, University Of Calabar)	
9-927	A	58	2			UNEP,(2002) (Effiom Antia, University Of Calabar)	
9-928	A	58	4			UNEP,(2002) (Effiom Antia, University Of Calabar)	
9-929	A	58	5			UNEP,(2002) (Effiom Antia, University Of Calabar)	
9-930	A	58	13			..A.B.,(2002) (Effiom Antia, University Of Calabar)	
9-931	A	58	22			..D.,(2004)	

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						(Effiom Antia, University Of Calabar)	
9-932	A	58	28			A.,(2004) (Effiom Antia, University Of Calabar)	
9-933	A	58	35			WTO,(2003) (Effiom Antia, University Of Calabar)	
9-934	A	58	38			WTO Tourism Vision 2020,(2005b), (Effiom Antia, University Of Calabar)	
9-935	A	58	39			...Barometer,(2005a) (Effiom Antia, University Of Calabar)	
9-936	A	58	40			...C.J.,(1999), (Effiom Antia, University Of Calabar)	
9-937	A	58	42			..G.,(2004) (Effiom Antia, University Of Calabar)	
9-938	A	73	5	73	15	Tourism is also affected by infrastructure (roads, weather related airport closures), besides pure ruination by rain when fine weather is expected. (Mwakio Tole, Kenyatta University)	