

**RESPONSE TO SPECIFIC QUESTIONS RAISED BY
PROFESSOR GEOFFREY BOULTON,
IN HIS LETTER OF 6 MAY 2010,
IN HIS ROLE AS A
MEMBER OF THE MUIR-RUSSELL REVIEW TEAM**

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19 MAY 2010

Dear Professor Boulton,

At the outset we note that you have addressed your request (Supporting Document A) for a response to specific allegations to Keith Briffa alone, but it is clear that the original detailed and extensive list of accusations from which you draw in formulating your request contains references to other individuals both in CRU and at other institutions. We must make clear that the response provided here has not been reviewed or sanctioned by anyone outside of UEA and that the remarks made here represent only the views of Briffa and colleague Dr. Tim Osborn who, as a co-author on the IPCC chapter under question, has also provided input.

Before answering your request we would ask that the following general points be noted. First, even though you make clear that the Review Team is not enquiring into whether IPCC procedures were followed (an issue that you state is one for the IPCC) we feel it important to stress that IPCC procedures, as known to us, were in fact followed at all times. The accusations to the contrary, contained in the Annex you supply, are fallacious. As to the issue of whether “*IPCC procedures were misused to favour one particular view of climate change to the detriment of a credible countervailing view*”, we state emphatically that they were not. The assessment of the evidence for how Northern Hemisphere average temperatures may have varied over the last 1,300 years was undertaken fairly and without prejudice by a team of authors that numbered considerably more than just Briffa and Osborn.

As would be the case in any multi-author publication, different individuals were tasked with preparing initial drafts of sections of text. This does not alter the fact that in the preparation of IPCC AR4 Chapter 6, this text was then reviewed, criticised, edited and added to by both Convening and other Lead Authors, where they deemed it necessary. In this way the balance of content, the emphasis on specific issues, the precise wording and the conclusions all evolved as the product of joint effort. As with the whole of the AR4, different drafts of Chapter 6 were scrutinised by numerous reviewers and the final version of that text accepted only after final multi-government review. The implication that any individual or small group of individuals could skew or deliberately misrepresent the consensus view of particular issues is not tenable. The focus on CRU individuals and the allegations of impartiality on their part are, therefore, both unwarranted.

In this response we provide the requested evidence pertaining firstly to the specific issues expressed in points (a) and (b) of your letter (dated 6th May 2010; see Supporting Documents A). However, in addition we wish to put on record our responses to the specific allegations contained in the accompanying Annex. Given that virtually every statement in this Annex requires correction of some error of fact, interpretation or implication we believe it to be essential that our responses to these specific allegations as contained in the Annex are formally recorded. Our detailed responses are provided in the form of annotations, added where appropriate, in the accompanying version of the Annex. **These are a fundamental part of our response and we ask that the Review Team consider them carefully in conjunction with the more general remarks given below.**

Turning to the allegations as summarised in your letter, we see that Briffa is specifically accused, in the preparation of Chapter 6 of the Working Group 1 Fourth Assessment Report of the Intergovernmental Panel on Climate Change (subsequently referred to as AR4), of having used “*excessive effort, including distortion of contemporary IPCC rules ... to include a paper by Wahl and Ammann [2007] that claimed to disprove the results of McIntyre and McKittrick (2003)*”. In other words, the accusations relate primarily to the interpretation of very few papers, and whether their significance was fairly considered and duly represented in the AR4 assessment. However, we have also to consider what evidence exists for the accusation that Briffa, or any of the other authors of AR4 had any “*desire to ensure that the latter [McIntyre and McKittrick (2003)] paper’s conclusions could be dismissed ... rather than represented as a credible alternative view*”. This encompasses the question of whether McIntyre and McKittrick (2003) represented a “*credible countervailing view*” of climate change that could be reasonably be adjudged to have been unfairly represented or overlooked.

McIntyre and McKittrick (2003) is concerned principally with reanalysing and challenging the results of a single paper, that of Mann *et al.* (1998). The relevant text is contained in a single paragraph in

both the final and penultimate (Second-Order Draft) versions of AR4. For convenience we reproduce them here.

Final text (Jansen *et al.*, 2007, p. 466):

McIntyre and McKittrick (2003) reported that they were unable to replicate the results of Mann *et al.* (1998). Wahl and Ammann (2007) showed that this was a consequence of differences in the way McIntyre and McKittrick (2003) had implemented the method of Mann *et al.* (1998) and that the original reconstruction could be closely duplicated using the original proxy data. McIntyre and McKittrick (2005a,b) raised further concerns about the details of the Mann *et al.* (1998) method, principally relating to the independent verification of the reconstruction against 19th-century instrumental temperature data and to the extraction of the dominant modes of variability present in a network of western North American tree ring chronologies, using Principal Components Analysis. The latter may have some theoretical foundation, but Wahl and Ammann (2006^{NOTE}) also show that the impact on the amplitude of the final reconstruction is very small (~0.05°C; for further discussion of these issues see also Huybers, 2005; McIntyre and McKittrick, 2005c,d; von Storch and Zorita, 2005).

^{NOTE}This was a typographical error in the final text and should instead have read Wahl and Ammann (2007).

Second-order draft (SOD) text

(<http://pds.lib.harvard.edu/pds/view/7768990?n=566&imagesize=1200&jp2Res=.25>, p. 6-29):

McIntyre and McKittrick (2003) reported that they were unable to replicate the results of Mann *et al.* (1998). Wahl and Ammann (accepted) demonstrated that this was due to the omission by McIntyre and McKittrick of several proxy series used by Mann *et al.* (1998). Wahl and Ammann (accepted) were able to reproduce the original reconstruction closely when all records were included. McIntyre and McKittrick (2005) raised further concerns about the details of the Mann *et al.* (1998) method, principally relating to the independent verification of the reconstruction against 19th century instrumental temperature data and to the extraction of the dominant modes of variability present in a network of western North American tree-ring chronologies, using Principal Components Analysis. The latter may have some foundation, but it is unclear whether it has a marked impact upon the final reconstruction (Von Storch *et al.*, 2004; Huybers, 2005; McIntyre and McKittrick, 2005). However, subsequent work using different methods to those of Mann *et al.* (1998, 1999), also provides evidence of rapid 20th century warming compared to reconstructed temperatures in the preceding millennium.

It is pertinent to describe what the AR4 text does, and does not, address and to consider the reasons.

The first paper referred to in both of these paragraphs, McIntyre and McKittrick (2003; hereafter MM2003), assessed the underlying database of proxy records used by Mann *et al.* (1998; hereafter MBH98) by inspecting individual series and comparing some with versions available in the original or updated sources. They also recalculated the principal components (PCs) of five regional tree-ring networks (Table 7 of MM2003), which MBH98 had justified as follows: “*Certain densely sampled regional dendroclimatic data sets have been represented in the network by a smaller number of leading principal components ... ensures a reasonably homogeneous spatial sampling in the multiproxy network*”. MM2003 then implemented the MBH98 approach for combining the proxy records into a reconstruction of quasi-global patterns of temperature variability, from which a timeseries of average NH temperatures could be computed. The MM2003 NH temperature series differed markedly from the MBH98 series, especially from 1400–1520, though also from 1520–1580 and 1820–1910 (in the 20-year running mean series, Figure 8 of MM2003).

It was not possible to discuss every individual criticism made by MM2003 (or indeed those made elsewhere) within the AR4 due to strict limitations on space.

The AR4 does not present the possibility that the MM2003 series is a credible alternative reconstruction, nor is the MM2003 series included in Figure 6.10 of the AR4 which depicts 12 such reconstructions. The title of the MM2003 paper and the labelling on Figures 7 and 8 of MM2003 suggest that MM2003 presents a correction to MBH98, which thus might be considered as an alternative reconstruction. Subsequent separate commentary, however, by both McIntyre and McKittrick makes clear that they do not consider this to be the case. In their comments on the first-order draft of the AR4 each of them admonishes the chapter authors for referring to their “NH reconstruction” (see Expert Review Comments on First Order Draft dated 16 November 2005,

numbers 6-1316 and 6-1319; included here as Supporting Documents B). In the latter, McKittrick, in commenting on the first-order draft of the paragraph we are discussing, states “*the paragraph trots out the straw man that we are selling an alternative climate history, despite our repeated and persistent statements that we are not trying to offer ‘our’ climate history curve.*”

The AR4 focussed instead on the implications of MM2003 for the reconstruction of MBH98 (and thus also on the longer reconstruction of Mann *et al.*, 1999 – hereafter MBH99 – which uses MBH98 for the period from 1400 to present). In the AR4 text, the first sentence interprets the work of MM2003 as an indication that MBH98’s NH temperature reconstruction could not be replicated.

This can be interpreted in a number of ways. It might mean replication of the overall work, from data collection/selection through all steps of analysis/calculation to obtain the final results. Under this interpretation of “replicate”, the results presented by MM2003 argue that MBH98 could not be replicated: though they did not redo every step, they did reassemble part of the proxy database, they did recalculate the PCs of the regional tree-ring networks and the PCs of the instrumental temperature fields, and they did combine these data to yield an NH temperature reconstruction. Their final result differed markedly from the MBH98 result. This was the basis for the statement in the AR4 that MM2003 could not replicate the MBH98 results.

A rather narrower interpretation of “replicate” might be whether MBH98 could be replicated using exactly the same data that MBH98 used (i.e. rather than the alternative proxy database assembled by MM2003). Under this interpretation, it is perhaps less clear how to present the MM2003 findings because they did not report an attempt to do this. However, Figure 6 of MM2003 does show that when using the same data that MBH98 used, they could replicate, at least approximately, the steps used by MBH98 to combine the proxy data (including the MBH98 version of the PCs of the tree-ring networks) into an NH temperature reconstruction (compare their Figures 6c with 6a and 6b). Their Figures 6d, 7 and 8 show the rather different result obtained using their alternative proxy database and their implementation of the calculation of the tree-ring PCs. Rutherford *et al.* (2005) point out that the MM2003 approach to calculating the tree-ring PCs resulted in the elimination of 77 out of the 95 proxy series used by MBH98 prior to 1500. Wahl and Ammann (2007; hereafter WA2007) demonstrate that excluding these series can result in an NH temperature reconstruction that has a relatively warm 15th century, similar to that reported by MM2003. Taking this information together, the AR4 authors’ inference was that, had MM2003 used the same data that MBH98 had used, but their own implementation of the calculation of tree-ring PCs and their implementation of the steps used to combine the proxy data into an NH temperature reconstruction, then they would have obtained a much warmer 15th century temperature estimate than that reported by MBH98. The AR4 authors’ inference, therefore, was that even under this narrower interpretation of “replicate”, the MM2003 findings indicated that MBH98 could not be replicated.

The excerpts from these papers relevant to the manner in which the tree-ring PCs are calculated are given below.

MM2003: “*We computed all 28 PCs, together with their explained variances, using a standard principal component algorithm for the maximum period in which all records were available within each region.*”

Rutherford *et al.* (2005): “*In the Mann et al. (1998) implementation, the PCs are computed over different time steps so that the maximum amount of data can be used in the reconstruction. For example, if a tree-ring network comprises 50 individual chronologies that extend back to A.D. 1600 and only 10 of those 50 extend to A.D. 1400, then calculating one set of PCs from 1400 to 1980 [the end of the Mann et al. (1998) calibration period] would require the elimination of 40 of the 50 chronologies available back to A.D. 1600. By calculating PCs for two different intervals in this example (1400–1980 and 1600–1980) and performing the reconstruction in a stepwise fashion, PCs of all 50 series that extend back to A.D. 1600 can be used in the reconstruction back to A.D. 1600 with PCs of the remaining 10 chronologies used to reconstruct the period from 1400 to 1600. The latter misunderstanding apparently led McIntyre and McKittrick (2003) to eliminate roughly 70% of the proxy data used by Mann et al. (1998) prior to A.D. 1600 (McIntyre and McKittrick 2003, their Table*

7), including 77 of the 95 proxy series used by Mann *et al.* (1998) prior to A.D. 1500. This elimination of data gave rise to spurious warmth during the fifteenth century in their reconstruction.”

WA2007: “Reconstruction was done over 1400–1499 by exclusion of all the North American proxy data from the ITRDB along with additional series from the North American Southwest and North American tree line, with calibration over the standard period. This scenario mimics the reconstruction scenario developed for this period in MM2003 (*cf.* Rutherford *et al.*, 2005).” and “The 15th century reconstructions that result from elimination of significant proxy information in scenario 1 (MM2003; *cf.* Rutherford *et al.*, 2005) are also shown in Figure 1 (pink line). Similar to MM2003, this scenario yields much warmer NH temperatures for the 15th century than both MBH98 and WA.”

It is important to note that the arguments presented so far do not address the issue of the correct or incorrect calculation of the tree-ring PCs by MBH98 (specifically the issues of what period the data were centred over and the use of the covariance or correlation matrices). These issues were not raised in MM2003, but rather by later papers. Though they are important, they are not relevant to the MM2003 findings or the first sentence of the AR4 text quoted at the beginning of this discussion.

The second sentence in this paragraph of the AR4 report presents the AR4 authors’ assessment of some of the results reported by WA2007. Although, as illustrated in the excerpts given above, Rutherford *et al.* (2005) gave more detail about the differences in calculation of tree-ring PCs between MBH98 and MM2003 (specifically the stepwise approach used by MBH98), they did not demonstrate the effect of this on the NH temperature reconstruction. Figures 1 and 5b of WA2007 show the effect of excluding some of the early tree-ring records from the reconstruction, to emulate the MM2003 implementation which excluded these records by not computing the tree-ring PCs separately for each individual reconstruction step/period. These results demonstrate that this exclusion of data, via the different implementation of the calculation of tree-ring PCs, could explain the differences between the MBH98 and MM2003 NH temperature reconstructions. This provided support for the first half of the second sentence in this paragraph of the AR4 report: “Wahl and Ammann (2007) showed that this was a consequence of differences in the way McIntyre and McKittrick (2003) had implemented the method of Mann *et al.* (1998)”.

Figures 1 and 5a of WA2007 show that they were able to replicate very closely the NH temperature reconstruction of MBH98, when using their implementation of the MBH98 methods and the same data. This provided support for the second half of the second sentence in this paragraph of the AR4 report: “Wahl and Ammann (2007) showed that ... the original reconstruction could be closely duplicated using the original proxy data”.

Note that the AR4 did not comment on issues such as whether the MBH98 method was adequately described in the original paper, nor whether the data were accurate and accurately described. Nor did it comment on all the issues raised by MM2003. Similarly, it did not state that WA2007 had replicated every finding reported by MBH98. Instead, the statement was limited to the fact that the MBH98 reconstruction could be “closely duplicated”. This may seem to be a relatively narrow focus, but this was necessitated because (i) some of the issues were not settled in the available published literature; (ii) space limitations prevented discussion of all these items; and (iii) there was a genuine concern at the time that the MM2003 work had demonstrated that the MBH98 reconstruction could not be replicated and it was important to assess the merits of this concern.

The remainder of this paragraph of the AR4 report deals with issues raised by McIntyre and McKittrick (2005a,b; hereafter MM2005a and MM2005b). According to the clarification provided by Professor Boulton (in his email dated 12 May 2010; see Supporting Documents A), these are not the subject of the allegations to which we must respond, since he is clear that the focus is on MM2003. Nevertheless, it is worth commenting briefly on the rest of this paragraph.

The AR4 text states that MM2005a and MM2005b raised concerns about the independent verification of the MBH98 reconstruction against 19th-century instrumental temperature data. This relates to the statistical testing of the reconstruction. The AR4 text does not dismiss these concerns, nor does it say that WA2007 had disproved them. Thus it is not dependent on WA2007 here, and thus any

dependence of WA2007 (whether real or imagined) on the later Ammann and Wahl (2007) paper for further discussion of statistical testing is also absent. The AR4 text simply stated that such concerns had been raised. Hence there is no foundation to allegation (b) in your letter. See also our response to paragraph 49 of the Annex.

The remainder of the paragraph focussed on the calculation of the tree-ring PCs. This is mostly related to the issue of centred versus uncentred PCs (see MM2005a). The AR4 text states that MM2005a and MM2005b had raised concerns about this issue in relation to the MBH98 implementation. The AR4 text did not state that WA2007 had disproved these concerns. Instead it considered their possible impact on the final reconstruction, citing papers that had assessed this impact including, but not exclusively, WA2007. Published results indicated that the impact on the final reconstruction may be relatively small. This seemed to be a key result that should be included in the AR4 text. It was supported by reference to published work other than that of WA2007 (e.g. von Storch and Zorita, 2005).

The instructions issued to authors of the AR4 Chapters make clear that the Assessment must take account of all relevant information known to the authors and that they are entitled to request further information from experts who are not part of the author team (see accompanying statements from the IPCC TSU in Supporting Documents C). Authors should use their own judgement to weigh this information. That some of this information may not yet be formally published or may be “in press” does not mean that it should be ignored when writing the assessment. Weighing the balance of the most relevant evidence, published or unpublished, and coming to conclusions about the ‘state of the art’ is the essence of an assessment, as distinct from a comprehensive review. The emphasis in the latter is often far more on reporting all published evidence on a topic. The following extracts are taken from the Annex 1 of the *Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports*, current when the AR4 was being prepared (a copy is provided as Supporting Document D).

In Section 4.2.3 (*Preparation of the Draft Report*) Lead Authors are instructed to:

“... work on the basis of these contributions, the peer-reviewed and internationally-available literature, including manuscripts that can be made available for IPCC review and selected non-peer-reviewed literature according to IPCC Supporting Material (see Annex 2 and Section 6).”

“Material which is not published but which is available to experts and reviewers may be included provided that its inclusion is fully justified in the context of IPCC assessment process (see Annex 2)”

Lead Authors should also:

“... clearly identify disparate views for which there is significant scientific or technical support, together with the relevant arguments.”

Lead authors are expected to make every attempt to support the text with references to up-to-date published sources where possible.

In the AR4 it was important to include references to the evidence of past temperature changes contained in the Mann et al. (1998, 1999) work, to provide some historical context and continuity between the Third (TAR) and Fourth (AR4) IPCC Assessments. Given the prominent role of Mann et al. work in the TAR, it was also felt appropriate to assess the likely validity of the McIntyre and McKittrick criticisms and how they affected the view of temperature change presented in MBH98.

The WA2007 paper describes analyses that were extremely relevant to the particular criticisms raised in MM2003. Indeed, Wahl and Ammann had undertaken the only dedicated reanalysis of the McIntyre and McKittrick claims and as such, not to have taken account of the insight provided by their results would have represented a failure on the part of the assessors to “*clearly identify disparate views*”. Consideration of MBH98 and WA2007, along with other relevant papers cited in AR4, led to the AR4 conclusion that the criticisms raised against the MBH98 reconstruction were not sufficient to

discount the evidence of temperature change represented in MBH98. AR4 also considered that the statistical evidence in WA2007 (relating to the method of calculating tree-ring PCs used by MM2003 and illustrating the goodness of fit between estimated and observed temperature variability, over a different period from that used to 'calibrate' their regression model) did not justify the inclusion of the MM2003 'temperature anomalies index' among those that were incorporated into Figure 6.10 of AR4. Along with the support for this decision provided by the review comments on the 1st Order Draft provided by McIntyre and McKittrick (quoted earlier and provided as Supporting Documents B), we contend that the AR4 was correct in not considering it a "credible alternative view" of the likely history of temperature change. See also our responses to the accusations contained in paragraph 49 of the Annex.

So, in terms of the specific accusations being addressed here, regardless of whether we interpret the phrase "*credible alternative view*" only in terms of the need to examine whether MM2003 was sufficient grounds for dismissing the view of temperature change provided in MBH98, or whether we consider the wider interpretation that McIntyre and McKittrick's alternative Northern Hemisphere average temperature index should be considered valid and so provides defensible evidence that the early and late parts of the 15th century were warmer than the second half of the 20th century, we come to the same conclusion: that the text in the AR4 was defensible and arrived at with fair consideration of the relevant evidence.

The indication, based on the results of MM2003, that it might not be possible to replicate the reconstruction of MBH98 would, if substantiated, clearly be crucial in assessing confidence in the MBH99 reconstruction. However, neither the MBH99 nor MM2003 papers are in fact crucial for the overall AR4 assessment, and it is important not to overstate the significance of either the Mann et al. paper or the associated criticisms of it. This can be demonstrated by recreating Figure 6.10 of the AR4, omitting the results of MBH99 (compare Figures 1 and 2 in this response). When this is done and the new version (Figure 2) is compared to the original (Figure 1), there is virtually no difference.

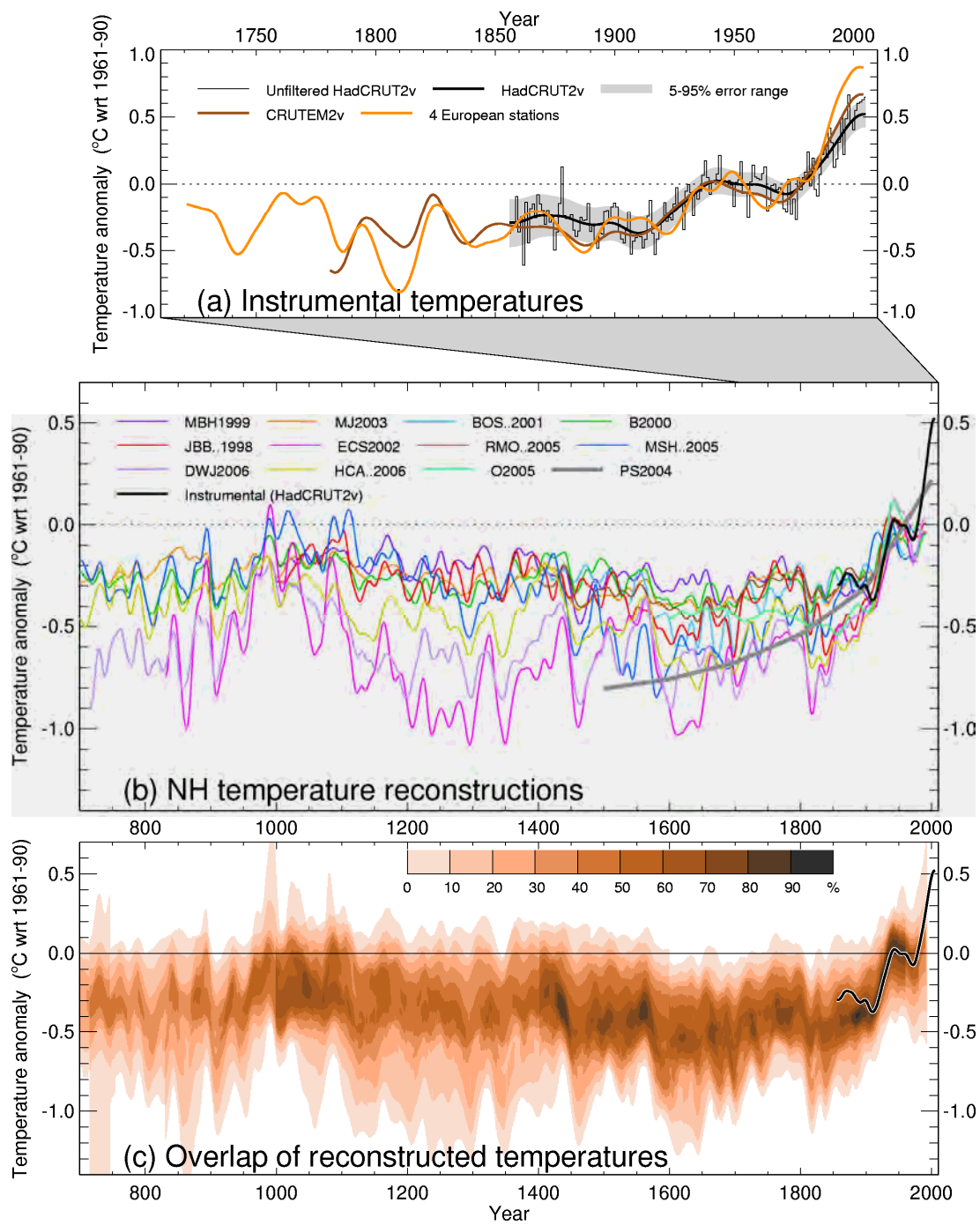


Figure 1. Reproduction of Figure 6.10 of IPCC AR4 WG1 Chapter 6.

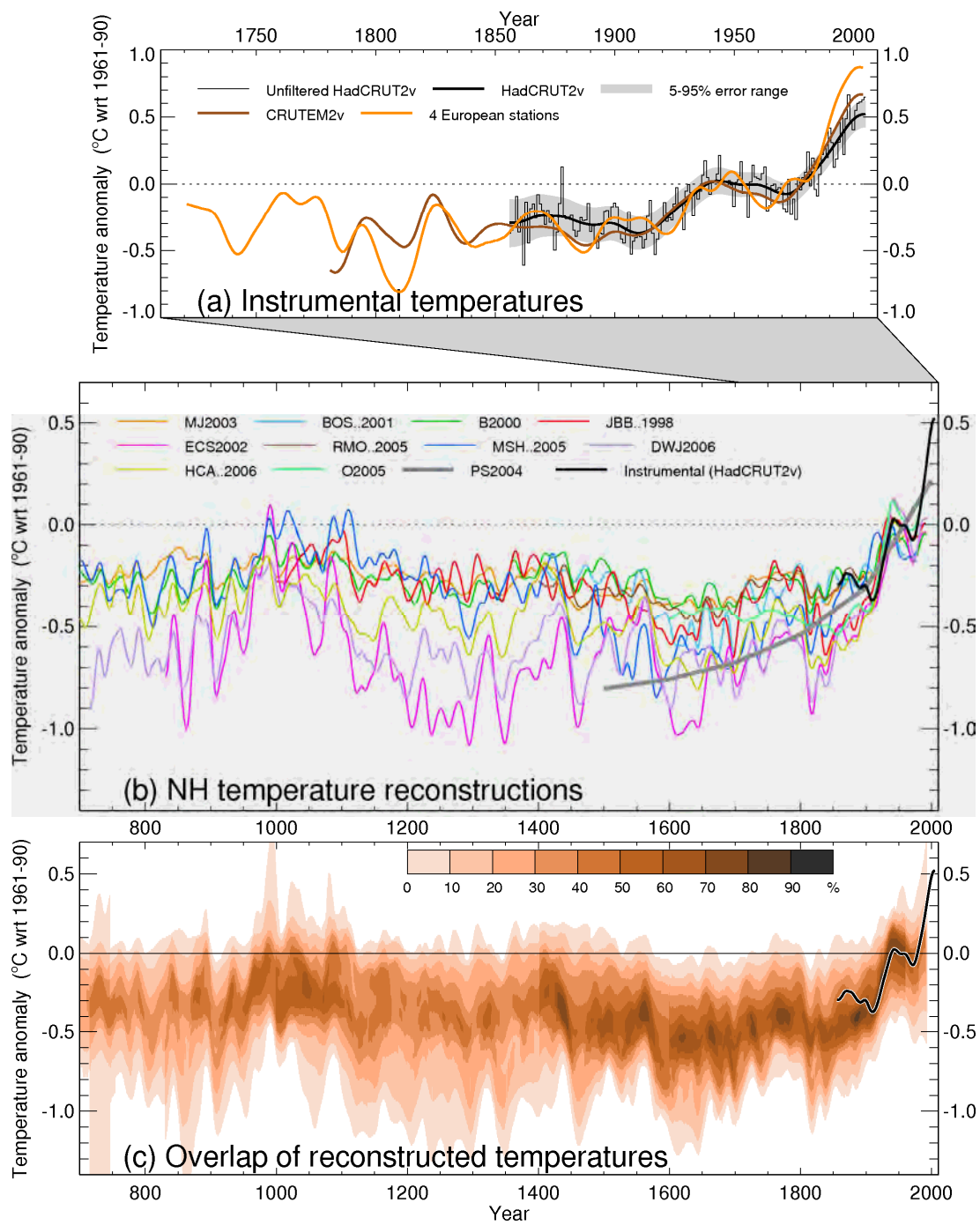


Figure 2. As Figure 1, but with the MBH99 reconstruction excluded from both panels (b) and (c).

There is no evidence that either Briffa or Osborn had any “*desire to ensure that the*” McIntyre and McKittrick paper’s conclusions should be “*dismissed*”. Neither is there evidence that any Chapter 6 AR4 author had any preconceived notion to defend the work of Mann and his co-authors. The only concerns of all AR4 authors were to weigh the evidence fairly and to cite the most relevant literature, but only when this was allowable under IPCC rules. None of the Emails cited in the accusations provide any evidence of any bias or desire to promote any ‘side’ in what was ongoing discussion on these matters – only a concern to ensure that cited papers met the requirements as laid down by the TSU. Citing WA2007 was in accord with the IPCC procedures. Neither Briffa nor Osborn had any part in defining the IPCC procedures or in considering or changing the deadlines for the citation of supporting references.

Again we stress that it is important not to exaggerate the significance of this issue (i.e. the MBH98 paper, the criticisms by McIntyre and McKittrick, and the response by Wahl and Amman), in the context of the wider body of evidence on late Holocene temperature changes considered in the AR4. We have shown in Figures 1 and 2 that the inclusion or omission of the MBH98/MBH99 data would have had no substantive effect on the synthesised picture of changing Northern Hemisphere temperatures, nor any influence on the derived conclusions.

We can condense the major points of our response as follows:

- Not including the WA2007 citation would not have changed the contemporary understanding of the issues surrounding the Mann *et al.* paper.
- The AR4 authors were minded to include the citation of WA2007, solely to provide the reader with an up-to-date source of relevant information at a level of detail than could not feasibly be provided in AR4, or was arguably even warranted given that the same conclusions would have been arrived at regardless of whether the MBH98 results were considered or not.
- The only effort made in relation to the inclusion of WA2007 was to ensure that IPCC rules were followed with regard to its citation.
- Changes to IPCC procedural deadlines were nothing to do with Briffa or Osborn and as far as we are aware, where they occurred they were nothing to do with this issue.
- The only concern demonstrated in the emails is a concern to ensure that the text and the consideration of review comments on that text were dispassionate and fair.

In conclusion we contend that the ‘treatment’ of the MM2003 was fair, that the level of space allotted to describing the then current debate surrounding the MM2003 critique of MBH98 was proportionate and that the consideration and citation of WA2007 was scientifically justified and fully in accord with IPCC procedures.

We provide additional detailed responses to the list of accusations contained in the accompanying Annex, some of which deal with issues not addressed in this response. We also supply additional written evidence in support of various points made here and in the annotated Annex.

Finally, we wish to state that we consider the accusations contained in the Annex (along with other submissions made to the Muir-Russell Review Team by a small group of prominent critics) amount to an attempt to use this enquiry as an opportunity to advance what is clearly an orchestrated campaign aimed at discrediting the case for anthropogenic climate change by whatever means possible. This is most clearly seen in the last paragraph of the Annex, where the submitter, having gone to great lengths in an attempt to fabricate a case of scientific misconduct against individual members of CRU, focusses on a narrow issue about the criticism of a single paper – which we have shown was assessed fairly, within IPCC rules and which did not affect the conclusions of AR4 Chapter 6 – and then suddenly leaps to the completely unsupported conclusion that there was some massive conspiracy involving all WG1 authors, review editors and co-chairs in what he asserts is “*one of the worst scientific scandals ever*”!

References

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Annex

- 40 The IPCC Working Group One (WGI) timetable⁽¹²⁾ dated 20 January 2006, issued by the WGI Technical Support Unit (TSU) stated in its entries for the year 2005 [sic]:

“Third Lead Author meeting, December 13 to 15, Christchurch, New Zealand. This meeting considers comments on the first order draft and writing of the second order draft starts immediately afterwards. Meeting of the TS/SPM writing team December 16, Christchurch, New Zealand Note. Literature to be cited will need to be published or in press by this time.”

- 41 This entry was retained verbatim in the updated timetable⁽¹³⁾ dated 14 August 2006 and, other than the addition of the meeting of the TS/SPM writing team, this entry was the same as for the earlier timetable of 8 February 2005.

- 42 More specific instructions are included in a 1 June 2005 “Deadlines” document, written by Martin Manning and entitled “Deadlines for literature cited in the Working Group I Fourth Assessment Report”. This document has since been removed from the WGI website but it stated:

“When the second draft of the AR4 is written authors need to be sure that any cited paper that is not yet published will actually appear in the literature, is correctly referenced, and will not be subsequently modified (except perhaps for copy editing). In practice this means that by December 2005, papers cited need to be either published or “in press”. When the second draft of the AR4 is sent to Governments and experts for the second round review, the TSU must hold final preprint copies of any unpublished papers that are cited in order that these can be made available to reviewers. This means that by late-February 2006 if LAs can not assure us that a paper is in press and provide a preprint we will ask them to remove any reference to it.”

- Note some contradiction with the later text which instead indicates late February 2006. We did not set any of the deadlines ourselves, we simply worked to the deadlines communicated to us and were happy to do so. Note that there are no emails that can be cited as evidence to the contrary.
- It is clear that if a cited paper did not meet the guidelines / deadline, then the TSU would ask the author team to remove the citation.

- 43 In leaked UEA email 1139591144, Eugene Wahl reported on the slow progress to get accepted the papers he was writing with Caspar Ammann in one case and Bette Otto-Bliesner in another other. On 10 February 2006, Overpeck replied:

“Based on your update (which is much appreciated), I’m not sure we’ll be able to cite either in the SOD due at the end of this month (sections will have to be done this week, or earliest next week to meet this deadline). The rule is that we can’t cite any papers not in press by end of Feb.

From what you are saying, there isn’t much chance for in press by the end of the month? If this is not true, please let me, Keith, Tim and Eystein know, and make sure you send the in press doc as soon as it is officially in press (as in you have written confirmation). We have to be careful on these issues.”

- This indicates clear acceptance of the deadlines imposed on the author team and there was no doubt that we would remove citations to references that had not met the appropriate deadlines.

- 45 The sentence, that Wahl put in parentheses above, shows that he had understood the clear TSU instruction that the paper had to be “in press” by 16 December and was not expecting his paper, written with Caspar Ammann, to be acceptable to the IPCC WGI TSU. Overpeck was overlooking this and a major effort was evidently underway to squeeze this critical paper into the IPCC report. Schneider eventually replied from Australia, accepting the paper in email 1141145428, received by Wahl at 9:33 PM on 28 February 2006.

- No text from Wahl is quoted above and therefore this statement is in error.
- This is false. There was no instruction from the TSU that the paper had to be in press by any date at all, and even if there were such an instruction, it would carry no weight with the journal editor handling the paper.
- This statement is about Overpeck’s actions and thus it is not our responsibility to explain them. However, as far as we are aware, the instruction from the TSU at this point in time was that papers needed to be in press by the end of February 2006, and thus Overpeck was not overlooking such an instruction.
- This is an unsubstantiated assertion, no more than pure speculation, implying some concerted effort between the journal editor, the TSU and the chapter 6 author team. No such major effort took place to our knowledge and certainly no effort on the part of CRU individuals. The deadline was not set specifically to allow this paper in. As part of the author team we simply waited to see if the deadline was met or not. If it wasn’t, we would remove the citation. We sent some emails asking for the latest status to determine if this was likely to be necessary or not.
- This paper was not critical to the IPCC report, nor to chapter 6, nor even to the section on the climate of the last 2000 years. No evidence is provided to support this statement that the paper was critical. For example, what executive summary bullet points would be altered if we had been unable to refer to this paper?

- 46 This might suggest that the Wahl and Ammann paper was then “in press” but the paper still failed to meet the 26 December 2005 deadline, and indeed if the deadline could be argued to be 28 February 2006, it missed that as well since the published version Wahl and Ammann 2007⁽¹⁴⁾ states its acceptance date as 1 March 2006.

- See previous comments above about the deadlines, who set them, and who made the decision about whether particular cited papers had met them. To our knowledge, the email from Schneider on 28 February 2006 provided the necessary evidence that the paper was in press by the deadline set by the TSU.
- The 1 March 2006 acceptance date may indicate the date when the publisher received the instruction from the editor. Anyway, at a later stage papers were considered for inclusion that were in press later in 2006 than this.

- 47 The matter of the “final preprint” was obviously not settled by end February 2006, as on 20 May 2006 well into the Expert Review stage, in email 1148299124 Martin Manning, the manager of the TSU writes:

“It has been pointed out to us by a reviewer that the version of the Wahl and Amman paper (accepted by Climatic Change) on our review web site differs from the version that is available publicly from the NCAR web site”

- This email has been selectively quoted. Martin Manning went on to say that “the differences are not (in my view) substantial.”

48 Thus the TSU did not hold a “final preprint” copy by the end of February 2006. In fact it could not have it until after the Government and Expert Review stage had finished. This is because, for some of its assertions, the Wahl and Ammann 2007 cited a “companion paper”, by Ammann and Wahl, which had just been rejected for publication by the journal *GRL* and would not be accepted by *Climatic Change* until 13 June 2007⁽¹⁵⁾ well after the IPCC published its WGI Report. No genuine guarantee of being published could be offered by any journal until the Ammann and Wahl paper was also “in press”.

▪ The TSU were provided with a preprint of the Wahl and Ammann article. As soon as we became aware that the version they held may not have been the final version, the updated version was obtained and provided to the TSU to place on their website. We confirmed that this version “reflects most accurately the status of the paper as used by the Chapter 6 team when preparing the SOD”.

▪ The chapter 6 author team are not responsible for, and could not predict that, subsequent changes might be made to Wahl and Ammann’s paper after its formal acceptance. The final published version of Wahl and Ammann (2007) and the differences between it and the version that was considered to be in press at the end of February 2006, have been assessed and make no difference to the statements made in chapter 6. See also the letter provided by the AR4 Chapter 6 CLA, Professor Eystein Jansen (Supporting Documents E).

49 In particular AR4 WGI Chapter 6 relies upon the then unaccepted and unpublished paper from Ammann and Wahl for its critical assertion in the text, that Wahl and Ammann 2007 disproves the work of McIntyre and McKitrick, which in its turn, demonstrated that the iconic 1998/9 ‘hockey stick’ papers of Mann, Bradley and Hughes failed standard statistical tests.

▪ This statement is false. Chapter 6 does not rely upon an unpublished Ammann and Wahl manuscript. The Wahl and Ammann in press article was used to support a rather specific and narrowly focussed statement in chapter 6; we do not refer to many aspects of the Wahl and Ammann findings, and those that we do refer to are not dependent on the unpublished Ammann and Wahl work.

▪ This statement is a fabrication. Chapter 6 does not state that Wahl and Ammann (2007) disproves the work of McIntyre and McKitrick. The statement does not give a proper citation, so it is unclear which of the five McIntyre and McKitrick papers were “disproved” (2003, 2005a-d), nor whether it is the entire results on one, some or all of these papers, or one or more specific results within a paper. Chapter 6 does not assert that McIntyre and McKitrick's work has been disproved. It uses the Wahl and Amman (2007) paper to support a few specific statements: (i) the Mann et al. (1998) reconstruction can be closely duplicated using the original methods and data; (ii) that the differences between McIntyre and McKitrick's (2003) results and the reconstruction of Mann et al. (1998) were a consequences of differences in the way the method had been implemented; and (iii) that the extraction of dominant patterns of variability in some tree-ring networks that was criticised by McIntyre and McKitrick (2005a) made little difference to the final reconstruction. On this final point, other references were also provided.

▪ Chapter 6 does in fact note that concerns were raised by McIntyre and McKitrick (2005a,b) about the statistical verification of the Mann et al. (1998) reconstruction. Chapter 6 does not state that Wahl and Ammann (2007) disprove these concerns. It is obvious that Chapter 6 cannot be relying on the unpublished Ammann and Wahl paper to support a statement when that statement is not made in Chapter 6.

50 The methodology in Ammann and Wahl 2007 itself was not divulged in the paper; instead readers were referred to an online supplement, which did not appear until August 2008.

▪ We have not considered the accuracy or otherwise of this statement, since it is clear that Chapter 6 is not reliant on the Ammann and Wahl paper anyway.

51 Insertion into the IPCC Report of published papers that rely upon other unpublished papers can be likened to cheque kiting. In another instance the IPCC explicitly ruled this out. Back on 22 March 2006 in the email 1143137864, WGI Chapter 6 Coordinating Lead Author, Overpeck, had written to Lead Author, Briffa, and Contributing Author Osborn. He was concerned about the paper written by Caspar Ammann with others including Chapter 6 Lead Author Bette Otto-Bliesner, which was at that time cited in the working copy of the second draft and which was soon to be sent out to the Government and Expert Reviewers. Overpeck wrote:

“Hi Keith and Tim - need FAST help. Figure 6.13, and Table 6.2 cite Amman et al., for the CSM curve. Since this paper doesn't yet exist in "in press" form (I checked w/ Bette, who is a co-author), we have two choices.”

▪ Chapter 6 did not rely on the unpublished Ammann and Wahl paper so this simile is irrelevant. And anyway the comparison is a poor one in this instance.

▪ These two instances are not directly comparable, so little insight is gained by doing so.

54 Overpeck discussed options for finding another suitable citation or removing it. The only alternate citation that existed relied upon a “private communication” from Ammann and the decision was made to drop the citation altogether. Manning later wrote:

“Susan and I have discussed your two options and have to say that we can not agree to option 1 in the circumstances. Although the Jones and Mann (2004) paper shows the NCAR simulation, the key point is that it cites it as "C. Ammann et al private communication 2003". So in effect option 1 would be bringing in material that was not peer reviewed and not even separately documented. Anyone wanting to discredit your chapter would highlight the fact that you appear to be depending on work done in 2003 that had still not been peer-reviewed.”

▪ This provides clear evidence that the TSU and the Chapter 6 author team were following the rules/deadlines and would remove results that were not supported by published or in press articles.

53 This email exchange shows that the TSU, at that time, were anxious to observe the “rules” and in particular did not want to allow undocumented claims to be “smuggled” into the IPCC report hidden in another peer-reviewed paper. However, this is exactly what Briffa did with Wahl and Amman 2007.

▪ The implication that the TSU were, at other times, less anxious to observe the rules is not substantiated anywhere and should be ignored.

▪ This is completely false. Wahl and Ammann (2007) met the deadlines that were specified to the Chapter 6 author team. The statements which were supported by this reference did not rely upon the unpublished Ammann and Wahl paper, and thus no undocumented claims were “smuggled” into the text.

54 The second order draft text of IPCC 2007 WGI Chapter 6 as sent late in March 2006 to the Government and Expert Reviewers, included on page 29⁽¹⁶⁾ the following text relying on Wahl and Ammann to rebut McIntyre and McKittrick:

“McIntyre and McKittrick (2003) reported that they were unable to replicate the results of Mann et al. (1998). Wahl and Ammann (accepted) demonstrated that this was due to the omission by McIntyre and McKittrick of several proxy series used by Mann et al. (1998). Wahl and Ammann (accepted) were able to reproduce the original reconstruction closely when all records were included. McIntyre and McKittrick (2005) raised further concerns about the details of the Mann et al. (1998) method, principally relating to the independent verification of the reconstruction against 19th century instrumental temperature data and to the extraction of the dominant modes of variability present in a network of western North American tree-ring chronologies, using Principal Components Analysis. The latter may have some foundation, but it is unclear whether it has a marked impact upon the final reconstruction (Von Storch et al., 2004; Huybers, 2005; McIntyre and McKittrick, 2005).”

55 Since the text written by Briffa was grossly inaccurate and unfair, this short section of text was heavily criticised by Reviewers including the Reviewer for the Government of United States of America, who wrote in comment 6-750⁽¹⁷⁾:

“The use of Wahl and Ammann (accepted) does not comply with WG1’s deadlines and all text based on this reference should be deleted. WG1’s rules require that all references be “published or in print” by December 16, 2005. Wahl and Ammann was “provisionally accepted” on that date, and not fully accepted until February 28, 2006, at which time no final preprint was available. Substantial changes were made in the paper between December 16, 2005 and February 28, 2006, including insertion of tables showing that the MBH98 reconstruction failed verification with r-squared statistics, as had been reported by McIntyre and McKittrick in 2003. These tables were not available in the draft considered by WG1 when developing the second-order draft.”

- It is inappropriate to attribute particular sections of text to individual authors. While it is true that individuals or groups of individuals were assigned to take the lead on drafting particular sections, they assimilated contributions from a number of sources and the chapter author team had the opportunity, which some took, of suggesting specific wording. It is more accurately seen, therefore, as an output of the author team.
- The claim that the text was “grossly inaccurate and unfair” is not substantiated here and should be ignored. The reviewer’s comment excerpted here does not claim that the text was inaccurate or unfair, instead it offers complaints about the timing and modification of the Wahl and Ammann paper.
- This is not true. The “in press” preprint was available to the author team at this time, even though an earlier preprint was provided to the TSU in error.

56 The Lead Authors’ response to the Government of the United States of America was to refer to their response to the similar comment 6-1158. This was:

“Rejected - the citation is allowed under current rules.”

59 Attachment sent out to all Expert Reviewers by the TSU on US Independence Day 4 July 2006.

60 The email read: *“Following the Government and Expert review of the Working Group I contribution to the IPCC Fourth Assessment Report, the attached guidelines are being provided to clarify how recent scientific literature related to review comments may be included in the final draft. Please feel free to distribute this information among your colleagues.”*

61 The attachment, created by Martin Manning on 1 July 2006, read:

“We are very grateful to the many reviewers of the second draft of the Working Group I contribution to the IPCC Fourth Assessment Report for suggestions received on issues of balance and citation of additional scientific literature. To ensure clarity and transparency in determining how such material might be included in the final Working Group I report, the following guidelines will be used by Lead Authors in considering such suggestions.

In preparing the final draft of the IPCC Working Group I report, Lead Authors may include scientific papers published in 2006 where, in their judgment, doing so would advance the goal of achieving a balance of scientific views in addressing reviewer comments. However, new issues beyond those covered in the second order draft will not be introduced at this stage in the preparation of the report.

Reviewers are invited to submit copies of additional papers that are either in-press or published in 2006, along with the chapter and section number to which this material could pertain, via email to ipcc-wg1@al.noaa.gov, not later than July 24, 2006. In the case of in-press papers a copy of the final acceptance letter from the journal is requested for our records. All submissions must be received by the TSU not later than July 24, 2006 and incomplete submissions cannot be accepted.”

- The tense of this statement suggests that they should already have been published at this point (4 July 2006).
- The tenses used in this statement suggest that the papers should either currently (as of 4 July 2006) be in press, or already have been published in 2006. The Wahl and Ammann (2007) paper was in press at that date and thus met the criteria. If it had not met the criteria, the TSU would have asked the chapter author team to remove the citation.

64 The “new guidelines” applied only to “additional scientific literature” and only to papers actually “published in 2006”, which Wahl had just told Jones his paper failed.

- See the previous comment: the Wahl and Ammann (2007) paper was in press and thus met the guidelines. The statement that Wahl told Jones that his paper failed to meet the guidelines is not substantiated here and should be ignored.

66 In fact no draft version of the Wahl and Ammann paper in the possession of WGI during the assessment could have been construed as a “final preprint” as there are significant differences in the published version including four additional references to Ammann and Wahl 2007 and no less than 16 new references to other papers. One new paper⁽²¹⁾ cited was only accepted for publication on 20 February 2007 so Wahl and Ammann 2007 could never have actually been “in press” any earlier and must indeed have changed after “the IPCC close-off date July 2006”.

- The chapter 6 author team are not responsible for, and could not predict that, subsequent changes might be made to Wahl and Ammann’s paper after its formal acceptance. The final published version of Wahl and Ammann (2007) and the differences between it and the version that was considered to be in press at the end of February 2006, have been assessed and make no difference to the statements made in chapter 6. Again, see the letter from the CLA, Eystein Jansen, provided as support for our assertion (Supporting Documents E).

67 Back on 12 August 2006 a month before the final draft of Chapter 6 was completed in email 1155402164, Wahl told Briffa:

"I should note that AW 2006 is still in "in press" status, and its exact publication date will be affected by publication of an editorial designed to go with it that Caspar and I are submitting this weekend. Thus I cannot say it is certain this article will come out in 2006, but its final acceptance for publication as of 2/28/06 remains completely solid."

Although in the first sentence Wahl referred to AW 2006, in the second it is clear from his comment, "its final acceptance for publication as of 2/28/06 remains completely solid" that he is referring to Wahl and Amman 2006. He is making it known that he cannot guarantee the paper to be published in 2006, which was the clear requirement of the "new guidelines".

Knowing this, Briffa should have pulled all references to it.

- This statement makes clear the "in press" status of this paper, which meets the guidelines. There is no indication that any changes are due to be made to the Wahl and Ammann (2007) paper, just that its publication date may be delayed.
- This statement is based on the false conjecture that papers had to be published in 2006 if they were to be cited. An in press status was sufficient according to the guidelines provided by the TSU.
- There was no reason for Briffa to have removed citations of Wahl and Ammann (2007) because he had no indication that it had failed to meet the required guidelines – and indeed it had not failed to meet them.

68 Perhaps because of this Briffa hedged his bets and on page 466 of the IPCC's published AR4 Report the text cites the publication year as 2007 in one line then 2006 a few lines later.

- This was not a case of hedging his bets; it is simply a typographical error introduced during final editing.

75 Email 1154353922 also shows that on 26 July 2006 two days after the deadline in the "new guidelines" expired, the WGI TSU sent all Coordinating Lead Authors the comments for their chapters. The email read: "Dear CLAs

Please find attached additional paper(s) that are relevant to your chapter and have been submitted in response to our most recent guidelines for consideration of papers published in 2006 following the expert and government review. A separate spreadsheet file is attached listing: the submitter, file name of the paper, its acceptance date, and the chapter and section which the submitter feels is relevant.

As discussed in Bergen, please note the following:

- * inclusion of additional papers in the final draft should not open up any substantive issues that were not in the second draft and so not previously reviewed;*
- * additional papers should only be used where in the view of the LAs doing so provides a more balanced coverage of scientific views;"*

76 Overpeck immediately forwarded the TSU email to his Chapter 6 Lead Authors including Briffa. The attachment to this email, containing these new unpublished comments, is not in the leaked emails but was precisely what I had requested on 27 May 2008 from UEA, the Met Office and others. It is part of what Jones sought to have deleted.

- This statement is false. The email in question did not have an attachment containing any comments on the draft IPCC text. The attachment contained only a list of recently published papers that the author team might consider for inclusion. A copy of the attachment is included here to substantiate this statement (Supporting Documents F).

88 On 18 July 2006 in email 1153470204 we find Briffa writing to Eugene Wahl, who is not an officially listed Expert Reviewer: “Gene I am taking the liberty (confidentially) to send you a copy of the reviewers comments (please keep these to yourself) of the last IPCC draft chapter. I am concerned that I am not as objective as perhaps I should be and would appreciate your take on the comments from number 6-737 onwards, that relate to your reassessment of the Mann et al work. I have to consider whether the current text is fair or whether I should change things in the light of the sceptic comments. In practise this brief version has evolved and there is little scope for additional text , but I must put on record responses to these comments - any confidential help , opinions are appreciated . I have only days now to complete this revision and response. note that the sub heading 6.6 the last 2000 years is page 27 on the original (commented) draft. Cheers Keith”

89 This is an astonishing email. First, it is inconceivable why Briffa, already in doubt about his own objectivity regarding the ‘hockey stick’ material, would turn to a known, vocal partisan on Mann’s behalf for extra input. Any pretence of neutrality was lost at this point. Second, sharing IPCC Review materials in this way was well outside the rules. Members of the IPCC Review group were subjected to extraordinary obstacles in gaining access to review comments.

- The portrayal of there being two opposing sides to the debate is false; in practice there is a spectrum of opinion. Despite what Holland says, we considered, as we do now, that Wahl is a knowledgeable, objective and entirely frank arbiter and as such was a wholly reasonable judge of whether the responses were appropriate, though we did consider his input from our own neutral viewpoint. Given his particular expertise on the details of the Mann et al. methodology and most importantly the implications for the character of the Mann et al. reconstruction, Briffa felt justified in seeking his advice and in using specific wording in a very few responses that were based on the text of a paper co-authored by Wahl. Wahl did not write any of the main text, though he did make some suggestions for very minor edits. He contributed suggestions to the precise wording of responses to certain review comments pertaining to the Mann – McIntyre and McKittrick debate.
- The writer chooses not to cite other emails in which it is clear that Briffa’s anxiety to maintain objectivity in his responses to reviewers’ comments on the Second-Order Draft of the AR4 applies equally to those by both McIntyre and Mann (e.g. email 1155402164.txt includes both “You could also see that I hope to be fair to Mike [Mann] - but he can be a little unbalanced in his remarks sometime - and I have had to disagree with his interpretations of some issues also” and “your comments have been really useful and reassuring that I am not doing MM [McIntyre and McKittrick] a disservice”. A thorough reading of all the responses to the review comments reveals that some by McIntyre were rejected and some were accepted. Similarly, some of Mann’s comments were rejected and some were accepted.
- This statement is false to the best of our knowledge. It is inconceivable that the author team should isolate themselves from all other members of the academic community during the approximately 2-year period during which the assessment report was written. Clearly they will receive information and opinions from many colleagues and sources over this time, and the author team will make best use of such knowledge and insight. The idea that the author team should not be able to seek expert advice when and where needed is not written in the IPCC rules, and the TSU and the Convening Lead Authors of chapter 6 agree that the author team were allowed to seek such advice. Copies of communications from both CLAs (Professor Eystein Jansen and Jonathan Overpeck) and the IPCC WG1 TSU are provided as Supporting Documents C to provide support that Briffa’s actions did not contravene IPCC procedures.

90 When official Expert Reviewers James Annan⁽²⁷⁾ asked for the review comments, he was told to wait until the hard copy was in the Littauer library and then fly half way round the world to see them. But here is Briffa handing them (confidentially) to Wahl for him to help rebuff the comments from Expert Reviewers critical of the Wahl and Ammann paper. The email lists the attachments showing that Briffa also sent Ammann the working draft of Chapter 6.

▪ See previous comment –the rules do not preclude the author team from seeking expert advice if necessary. There is a subtext here that Wahl received preferential treatment by communicating with the author team without registering as an official reviewer and submitting his comments via the official route. This is false. Anyone was free to communicate directly with the author team during the writing of the assessment report, but unless their comments were submitted as official review comments, then the author team could, if they wished, have simply disregarded such input. Official review comments, on the other hand, had to be considered and responded to.

▪ Briffa did not send Ammann anything. He did send Wahl a section of the Chapter 6 text to provide context for his requested assessment of the ‘fairness’ of certain responses to comments on the text dealing with the McIntyre and McKitrick critique of Mann et al. (1998). We reiterate that there was nothing in the IPCC rules to prohibit this.

91 On 21 July 2006 in 1153470204 Wahl replies to Briffa in a rambling email supporting his criticism of McIntyre and McKitrick and attached text that may well have provided Briffa’s response to McKitrick’s review comment 6-735.

▪ Far from being rambling, Wahl’s communication contained much pertinent information.

▪ This is not entirely correct. Although he does criticise McIntyre and McKitrick, he also states “we agree at some level with some of the criticisms raised by MM and others”. Also, he provides a written summary of various results and analyses that are relevant to the assessment and which allow Briffa to come to his own view about the issue rather than simply taking Wahl’s word for it.

92 Also on 21 July 2006 in email 1155402164, Briffa thanks Wahl, but says he needs time to digest what he sent. Nonetheless Wahl then sends yet more arguments against McIntyre and McKitrick. Wahl says that some of what he sends is confidential and asks if he can see Briffa’s responses. Wahl does however admit that Mann’s ‘hockey stick’ as a whole stands or falls on the appropriateness of the “bristlecone pine records”. Just a month earlier, as they both knew, the NRC Panel had reported in NRC 2006 that these bristlecone tree ring data should be “avoided” in historic temperature reconstructions.

▪ It is this type of concern that led the Chapter 6 author team to state their conclusions with less confidence than might be implied if the published uncertainty ranges were assumed to comprehensively cover all sources of uncertainty. Our view, stated in a number of our publications, is that the published uncertainty ranges do not include all sources of uncertainty and thus should be considered to underestimate the full uncertainty, especially on the longer (multi-century to millennial) timescales. Time-dependent limitations of specific proxy records such as Bristlecone pine ring-width chronologies are examples of this.

▪ We note that the NRC (2006) report also stated “Based on the analyses presented in the original papers by Mann et al. and this newer supporting evidence, the committee finds it plausible that the Northern Hemisphere was warmer during the last few decades of the 20th century than during any comparable period over the preceding millennium.”

93 The fact that the IPCC WGI included Wahl and Ammann, 2007 and not Wegman et al. 2006 or the critical conclusions of NRC 2006, shows that the assessment process failed to be “comprehensive and objective” as was required by the IPCC. It is a further example, like the Himalayan matter, of IPCC Authors determined to ensure their views prevail over their critics at all costs. In WGI the matter is made worse by the deliberate, retrospective, unauthorised changing of the rules in which all Lead Authors, Review Editors and Working Group Co-Chairs must have acquiesced. It is one of the worst scientific scandals ever. The record clearly shows that CRU scientists played key roles at every step where rules were broken and processes were conducted in bad faith.

- Given the strict space limitations, some hard decisions had to be made. The author team considered that, for example, citing the Wegman et al. (2006) report added little information to the coverage of the issues surrounding the work of Mann et al. (1998) already contained in the text.
- This is not at all comparable to the “Himalayan matter”.
- This is not a characterization of the process that we accept. The chapter 6 author team acted in good faith to provide an objective assessment of the complex and broad literature covering our knowledge of climate variations over the last 2000 years. There was no predetermined conclusion to which we were working and no email can be cited as evidence that there was.
- It is not for us to determine the validity of the rules and any changes that were made to them, though we view them as fair and reasonable and were happy to follow them in writing chapter 6.
- This is clearly hyperbole. It is not a scandal anyway, and readers should remember that the best outcome of the assessment is that it most accurately reflects the evidence published in the scientific literature. The process and associated rules and procedures are a vehicle to achieving that in an objective and timely way, but they themselves are not the measure of success in this endeavour.
- Our comments to these allegations demonstrate that no CRU individual, nor any one of the Chapter 6 authors, transgressed any rule in preparing our contribution to the AR4. Similarly, the accuser fails to provide any evidence, other than conjecture or distortion of selectively quoted emails, in support of his accusations of bad faith on our part. We have rebutted all allegations of misconduct or of a general failure to comply with “best scientific practice” presented in this document. This final statement should be disregarded as it is clearly unfounded.

¹² http://ipcc-wg1.ucar.edu/wg1/docs/wg1_timetable_2006-01-20.pdf

¹³ http://ipcc-wg1.ucar.edu/wg1/docs/wg1_timetable_2006-08-14.pdf

¹⁴ http://www.cgd.ucar.edu/ccr/ammann/millennium/refs/Wahl_ClimChange2007.pdf

¹⁵ <http://www.springerlink.com/content/c668835m747q4823/?p=6aa4eb35621349a98684fd322109d4c9&pi=0> NOTE the received date remains a misprint for 2006.

¹⁶ <http://pds.lib.harvard.edu/pds/view/7768990?n=566&jp2Res=.25&imagesize=1200&rotation=0>

¹⁷ <http://pds.lib.harvard.edu/pds/view/7786989?n=119>

²¹ Mann, M. E., S. Rutherford, E. Wahl, and C. Ammann (2007), Robustness of proxy-based climate field reconstruction methods, *J. Geophys. Res.*, 112, D12109,

²⁷ http://julesandjames.blogspot.com/2007_05_01_archive.html

Supporting Documentation

The following Supporting Documents are provided:

A: The letter and clarification from Professor Boulton outlining the allegations.

B: Relevant review comments made about the IPCC AR4 First-Order Draft (FOD).

C: Statements from the IPCC WG1 TSU and from AR4 Chapter 6 CLAs.

D: Annex 1 to Appendix A of the IPCC Principles Governing IPCC Work, as they stood at the time of AR4 preparation.

E: A statement from Professor Eystein Jansen, one of the AR4 Chapter 6 CLAs.

F: Document that was attached to the email labelled as 1154353922.txt.

Supporting Documents A

6 May 2010

Dear Professor Briffa

I do apologise for this belated letter, but the last few weeks have involved intensive work from the Review Team that has delayed the letter that I indicated that I would write to follow up the meeting held several weeks ago in Norwich.

The purpose of this letter is to set out an issue on which we would like evidence from you, and that relates to our remit "to review CRU's policies and practices for acquiring, assembling, subjecting to peer review and disseminating data and research findings, and their compliance or otherwise with best scientific practice".

The particular allegation that I want to explore, based on the improperly released emails, relates to best scientific practice in disseminating scientific evidence into the public domain, and in ensuring that scientific uncertainties and disagreements are reflected in an unbiased fashion. The interface between scientific understanding and advice to policymakers is a vital one, and one that the IPCC exists to provide, where the complexities of credible current scientific understanding must be represented without bias to any particular preferred view, though recognizing the IPCC process is one of assessment and not review. The allegation is not whether or not detailed IPCC procedures were followed, that is a matter for the IPCC, but whether IPCC procedures were misused to favour one particular view of climate change to the detriment of a credible countervailing view.

This specifically relates to your role as lead author for chapter 6 in the IPCC Fourth Assessment Report (AR4), where is alleged:

- a) that notwithstanding clear IPCC rules about the status of papers that could be used as a basis for assessment, that excessive effort, involving distortion of contemporary IPCC rules, was made to include a paper by Wahl and Amman that claimed to disprove the results of McIntyre and McKittrick (2003), and that the motive for doing so was your desire to ensure that the latter paper's conclusions could be dismissed in the AR4 document rather than represented as a credible alternative view.
- b) that further evidence of this intent is the fact that the Wahl and Amman paper did not contain the results that were used in the AR4 rebuttal of M&M2003, but in a paper the definitive version of which did not appear in 2007, which had only been accepted as "in press" long after the IPCC deadline had passed.

This is the essence of the allegations rather than your adherence or otherwise to the letter of the IPCC rules, which, as I note above is a matter for them. A detailed account on which this allegation is based has been presented to us and is given in the annex to this letter.

The essence if these allegations is that you made exceptional attempts to incorporate one particular view of climate change, and to discredit an opposing view, without, at the time, an adequate scientific reason for doing so, and that this represented a failure to discharge your responsibility to represent impartially current scientific understanding at the vital interface between science and policy.

I would be grateful for a careful and reasoned response the above allegations, with verifiable evidence where that is possible.

Yours sincerely

Geoffrey Boulton

12 May 2010

Dear Lisa

Please apologise for me to Professor Briffa that I had not been as explicit as I thought I had been, and pass this letter on to him to enlarge on the context for my questions.

A paper by McIntyre and McKittrick (2003) argued that the so called “hockey stick” plot (Mann, Bradley and Hughes, 1998) contained both simple errors and serious statistical errors. The allegation is that in your role as lead author for Chapter 3 in Working Group 1, and as the member of the writing team with the most relevant expertise, that you were involved in exceptional attempts to ensure that a paper in preparation by Wahl and Amman, which purported to discredit the work of McIntyre and McKittrick (2003), was included in AR4, to the extent that you were prepared to break IPCC rules about the citation and use of scientific publications. The paper was ultimately published as Wahl and Amman (2007; this version records its acceptance date as 1 March 2006, post-dating a relevant IPCC deadline).

Moreover the calculations that were claimed to support the conclusions of Wahl and Amman (2007), were not made available in an online supplement until August 2008.

The relevant paragraph on p.466 of the AR4 Final Report leaves the last word to Wahl and Amman, and the reader the clear impression that the M&M03 criticisms have been rebutted, although the work claimed to be the basis of this rebuttal had missed or was long after IPCC deadlines.

The allegation is that this was part of a pattern of behaviour by members of CRU that was calculated to favour one particular view of climate change and its causes, and to discredit or ignore opposing views, without, at the time, an adequate scientific reason for doing so. It therefore represents a failure to discharge a scientist’s responsibility to represent impartially current scientific understanding at the vital interface between science and policy.

The annex to my earlier letter contains a detailed account of events that have been presented to us to support the above allegations.

I hope that this clarifies matters for Professor Briffa.

Geoffrey Boulton

Supporting Documents B

6-1316 Sequence 162 of 222	A	29:7	29:9	McIntyre and McKitrick [2004] did NOT produce a NH reconstruction; they explicitly state that they do not endorse the proxies in MBH98. They showed the results using updated versions of MBH98 proxies and principal components calculated over the maximum period in which all proxies were available. [Stephen McIntyre]
6-1319	A	29:7	29:13	The authors seem pretty uninformed about my work with Steve McIntyre. For instance there is no mention of our 2005 GRL or E&E papers, even though these contain the bulk of our arguments; and indeed the paragraph shows that the chapter authors are unaware of what our arguments actually are. The paragraph trots out the straw man that we are selling an alternative climate history, despite our repeated and persistent statements that we are not trying to offer "our" climate history curve. From the outset we have been trying to show what Mann's curve would look like if he had done what he said he had done, using the data he said he used. Lest any reader of this comment think it pejorative for me to suggest that the MBH98/99 data and methods were inaccurately or incompletely disclosed, the Corrigendum ordered by Nature and published July 1 2004 by Mann et al.
				should settle that. We filed a Materials Complaint with Nature in January 2004, Nature asked Mann to respond, and based on their review of his response Nature ordered a complete restatement of the data and methods of MBH98. The methodology described in the new MBH98 SI differs fundamentally from that presented in MBH98 itself, notably in its use of a highly irregular PC methodology and the splicing of proxy PCs in hitherto undisclosed segments. [Ross McKitrick]

Supporting Documents C

Statements provided by IPCC AR5 WGI TSU, prepared in consultation with the former Co-Chair and TSU of WGI for the AR4.

1. The final dates that could be used for acceptance of articles.

The IPCC process allows experts to submit relevant literature for consideration by the Lead Authors (LAs). There must be a closing date for such submissions in order that the final draft can be completed to the tight schedule that is needed to synchronise with the formal government approval process. As was the case in earlier IPCC Assessments, this deadline for publications that were cited in the AR4 evolved during the course of the assessment process in order to provide the opportunity for as wide a range of literature as possible to be assessed. However, it was also necessary to ensure that citations added to the final draft did not open up new issues that had not been subject to the external review process.

For WGI AR4, the closing date for submission of relevant literature to the LAs was set at 24 July 2006. The decision regarding the final choice of date was made at the fourth WG1 LA meeting (Bergen, 26–30 June 2006) by consensus across all the Coordinating Lead Authors (CLAs), the WGI Co-Chairs and TSU Head. Immediately following the LA meeting, the WGI TSU informed all the expert reviewers by email of the publication cutoff date and this information was also made publicly available on the WG1 web pages.

2. Papers sent from the WGI TSU

All expert reviewers were informed about the final literature cutoff date to enable reviewers' comments potentially to be supported by very recent publications where appropriate. The TSU then received copies of a number of scientific papers by email in July 2006. Some of these were already known to the authors. For the others, it was necessary to check their status and that these papers were either published or that a final draft had been accepted for publication by the editors of a scientific journal. They were passed on to the Coordinating Lead Authors (CLAs) for the relevant chapters in batches as this became confirmed. The final decision as to which publications to include rested with the author teams.

3. Is it within the IPCC rules for an author to contact someone outside the Chapter to help respond to a comment?

The Procedures for preparation of IPCC Reports state that “The Coordinating Lead Authors and Lead Authors selected by the Working Group/Task Force Bureau may enlist other experts as Contributing Authors to assist with the work.” Thus they explicitly allow for contributions by experts who are not part of the full author team. If such an expert is consulted, it is up to the authors to decide if their contribution is significant enough to warrant their designation as Contributing Authors.

Subject: Re: Keith Briffa & IPCC confidentiality IMPORTANT

From: Eystein Jansen <xxxx@bjerknes.uib.no>

Date: Fri, 5 Feb 2010 14:01:58 +0100

To: Keith Briffa <xxxx@uea.ac.uk>

Hi Keith,

In my opinion it is entirely appropriate for you as a LA to seek whatever advice you may need in responding to the comments, in order to ensure that you have a full understanding of finer details and the whole literature.

I cannot see that there is anywhere a formal or informal rule within the IPCC whereby a LA must confine his/her work to only seek advice from insiders in the chapter team on specific issues, neither in responding to comments in the review or to getting the text right.

Best wishes
Eystein

Date: Mon, 08 Feb 2010 09:59:33 -0700
Subject: Keith Briffa and the Role of Lead Authors in the IPCC WG1
From: Jonathan Overpeck <xxxx@email.arizona.edu>
To: "xxxx" <xxxx@ITN.CO.UK>

Hi xxxx (cc Keith and Eystein, so there is not confusion) - Keith Briffa was a Lead Author of Chap 6 of the IPCC AR4 WG1 report. In this capacity, he was encouraged to interact with scientific colleagues to obtain any additional information needed to ensure that disparate views of the scientific community were understood. Thus, checking on an issue with a scientific colleague such as Dr. Wahl was normal operating procedure.

I hope this clarifies the situation. Best, Jonathan

On 2/8/10 5:13 AM, "xxxx" <xxxx@ITN.CO.UK> wrote:
Dear Profesor Overpeck,

Apologies for the email out of the blue - I am the Science Producer at Channel 4 News in the United Kingdom. Channel 4 News is a one hour programme broadcast every night across the UK. I'm afraid I have a question for you relating to the hacked emails from the CRU.

My question is, do you feel Professor Keith Briffa's forwarding of the the draft of chapter 6 and also the reviewers comments to Eugene Wahl (who was not a accredited author) was breaking the IPCC rules..? I ask this because in another of the hacked email exchanges you mentioned that the IPCC had very strict rules and that you wanted everything squeaky clean with no informal comments.

Any thoughts you have would be very much appreciated. Our editors are still asking us to address the various points the sceptics led by McIntyre are going on about.

All the best

xxxx
xxxx - Channel 4 News

Subject: Re: Further Channel 4 News enquiry
From: Eystein Jansen <xxxx@bjerknes.uib.no>
Date: Mon, 8 Feb 2010 19:36:48 +0100
To: "xxxx" <xxxx@ITN.CO.UK>

Hi, I saw your mail just now, and Jonathan Overpeck's answer to your colleague.
Just to make it clear to you that I share Overpeck's views that what Briffa did was entirely appropriate.

Best wishes
Eystein Jansen

Supporting Documents D

Appendix A to the Principles Governing IPCC Work

PROCEDURES FOR THE PREPARATION, REVIEW, ACCEPTANCE, ADOPTION, APPROVAL AND PUBLICATION OF IPCC REPORTS

Adopted at the Fifteenth Session (San Jose, 15-18 April 1999) amended at the Twentieth Session (Paris, 19-21 February 2003) and Twenty-first Session (Vienna, 3 and 6-7 November 2003)

ANNEX 1

TASKS AND RESPONSIBILITIES FOR LEAD AUTHORS, COORDINATING LEAD AUTHORS, CONTRIBUTING AUTHORS, EXPERT REVIEWERS AND REVIEW EDITORS OF IPCC REPORTS AND GOVERNMENT FOCAL POINTS

1. LEAD AUTHORS

Function:

To be responsible for the production of designated sections addressing items of the work programme on the basis of the best scientific, technical and socio-economic information available.

Comment:

Lead Authors will typically work as small groups which have responsibility for ensuring that the various components of their sections are brought together on time, are of uniformly high quality and conform to any overall standards of style set for the document as a whole.

The task of Lead Authors is a demanding one and in recognition of this the names of Lead Authors will appear prominently in the final Report. During the final stages of Report preparation, when the workload is often particularly heavy and when Lead Authors are heavily dependent upon each other to read and edit material, and to agree to changes promptly, it is essential that the work should be accorded the highest priority.

The essence of the Lead Authors' task is synthesis of material drawn from available literature as defined in Section 4.2.3. Lead Authors, in conjunction with Review Editors, are also required to take account of expert and government review comments when revising text. Lead Authors may not necessarily write original text themselves, but they must have the proven ability to develop text that is scientifically, technically and socio-economically sound and that faithfully represents, to the extent that this is possible, contributions by a wide variety of experts. The ability to work to deadlines is also a necessary practical requirement. Lead Authors are required to record in the Report views which cannot be reconciled with a consensus view but which are nonetheless scientifically or technically valid.

Lead Authors may convene meetings with Contributing Authors, as appropriate, in the preparations of their sections or to discuss expert or government review comments and to suggest any workshops or expert meetings in their relevant areas to the Working Group/Task Force Bureau Co-Chairs. The names of all Lead Authors will be acknowledged in the Reports.

2. COORDINATING LEAD AUTHORS

Function:

To take overall responsibility for coordinating major sections of a Report

Comment:

Coordinating Lead Authors will be Lead Authors with the added responsibility of ensuring that major sections of the Report are completed to a high standard, are collated and delivered to the Working Group/Task Force Bureau Co-Chairs in a timely manner and conform to any overall standards of style set for the document.

Coordinating Lead Authors will play a leading role in ensuring that any crosscutting scientific or technical issues which may involve several sections of a Report are addressed in a complete and coherent manner and reflect the latest information available.

The skills and resources required of Coordinating Lead Authors are those required of Lead Authors with the additional organisational skills needed to coordinate a section of a Report.

The names of all Coordinating Lead Authors will be acknowledged in the Reports.

3. CONTRIBUTING AUTHORS

Function:

To prepare technical information in the form of text, graphs or data for assimilation by the Lead Authors into the draft section.

Comment:

Input from a wide range of contributors is a key element in the success of IPCC assessments, and the names of all contributors will be acknowledged in the Reports. Contributions are sometimes solicited by Lead Authors but unprompted contributions are encouraged.

Contributions should be supported as far as possible with references from the peer reviewed and internationally available literature, and with copies of any unpublished material cited; clear indications of how to access the latter should be included in the contributions. For material available in electronic format only, the location where such material may be accessed should be cited.

Contributed material may be edited, merged and if necessary, amended, in the course of developing the overall draft text.

4. EXPERT REVIEWERS

Function:

To comment on the accuracy and completeness of the scientific/technical/socio-economic content and the overall scientific/technical/socio-economic balance of the drafts.

Comment:

Expert reviewers will comment on the text according to their own knowledge and experience. They may be nominated by Governments, national and international organisations, Working Group/Task Force Bureaux, Lead Authors and Contributing Authors.

5. REVIEW EDITORS

Function:

Review Editors will assist the Working Group/Task Force Bureaux in identifying reviewers for the expert review process, ensure that all substantive expert and government review comments are afforded appropriate consideration, advise lead authors on how to handle contentious/controversial issues and ensure genuine controversies are reflected adequately in the text of the Report.

Comment:

There will be one or two Review Editors per chapter (including their executive summaries) and per technical summary. In order to carry out these tasks, Review Editors will need to have a broad understanding of the wider scientific and technical issues being addressed. The workload will be particularly heavy during the final stages of the Report preparation. This includes attending those meetings where writing teams are considering the results of the two review rounds. Review Editors are not actively engaged in drafting Reports and cannot serve as reviewers of those chapters of which they are Authors. Review Editors can be members of a Working Group/Task Force Bureau or outside experts agreed by the Working Group/Task Force Bureau.

Although responsibility for the final text remains with the Lead Authors, Review Editors will need to ensure that where significant differences of opinion on scientific issues remain, such differences are described in an annex to the Report. Review Editors must submit a written report to the Working Group Sessions or the Panel and where appropriate, will be requested to attend Sessions of the Working Group and of the IPCC to communicate their findings from the review process and to assist in finalising the Summary for Policymakers, Overview Chapters of Methodology Reports and Synthesis Reports. The names of all Review Editors will be acknowledged in the Reports.

6. GOVERNMENT FOCAL POINTS

Function:

To prepare and update the list of national experts as required to help implement the IPCC work programme, and to arrange the provision of integrated comments on the accuracy and completeness of the scientific and/or technical content and the overall scientific and/or technical balance of the drafts.

Comment:

Government review will typically be carried out within and between a number of Departments and Ministries.

For administrative convenience, each government and participating organisation should designate one Focal Point for all IPCC activities, provide full information on this Focal Point to the IPCC Secretariat and notify the Secretariat of any changes in this information. The Focal Point should liaise with the IPCC Secretariat regarding the logistics of the review process(es). Of particular importance is the full exchange of information.

Supporting Documents E

From: Eystein Jansen <xxxx@bjerknes.uib.no>
Date: Thu, 13 May 2010 21:47:37 +0200
Cc: Jonathan Overpeck <xxxx@email.arizona.edu>
To: Keith Briffa <xxxx@uea.ac.uk>

Dear Keith,

Many thanks for contacting me concerning the work you did as LA for Ch 6 of IPCC AR4 and the allegations raised against you. Feel free to use the following as documentation as you feel necessary.

As Coordinating Lead Author (CLA) for Chapter 6 I believe you did a splendid job, by being balanced in your representation of difficult and complex matters, and by being extremely careful in following IPCC rules and protocols when supplying text for the chapter. At all stages you kept the CLAs fully informed and also responded readily to questions from the TSU around the referenced literature when finalising the chapter. There is no foundation in what happened in the writing process to support allegations that you acted improperly, outside of IPCC standards and/or without full and open consent from the CLAs.

I have gone back through the e-mail exchanges we had concerning the Wahl/Amman paper in 2006. Here is the narrative I have:

1. WG1 extended its deadline for literature to be referenced in the report to July 24 in order to ensure that the report was as updated as possible. References used in final report had to be accepted by the journal and in press by that date. In addition, all new, but not yet published literature which had come up after January 1 2006, and which was used in the 2nd order draft was made available to the reviewers of the 2nd order draft through the TSU website. The Wahl/Amman paper was one of several such new papers which were referred to in the 2nd order draft.
2. When receiving the revised version of the Wahl/Amman paper on Feb 22, 2006, you immediately notified Peck and me as CLAs.
3. The revised Wahl/Amman paper was accepted by the editor of Climatic Change, Stephen Schneider, on Feb 28, 2006. This was clearly within the limits set by the TSU both for the 2nd order draft and the final report. Hence the use of this paper in the report was fully appropriate and within IPCC rules. On March 1, 2006 you forwarded a copy of the acceptance e-mail from Schneider to Wahl onward to the CLAs as documentation. It was clear to us that the paper should be referenced since it addressed central aspects of our chapter and its publication acceptance was clearly within the IPCC rules.
4. During the review of the 2nd order draft we were notified on May 20, 2006 by Dr. Manning, director of the TSU, that the version of the Wahl/Amman paper available on the TSU website for reviewers was slightly different from the version available at NCARs website. We checked this and found that my assistant who helped me compiling the drafts had uploaded a PDF based on a slightly earlier version and not the final accepted one. There were only minor and scientifically unimportant differences between these two versions, but the final and accepted version was soon uploaded and made available at the TSU website. This minor error, of no scientific substance, had nothing to do with your work as LA, and was due to an error here.

Your handling of this matter was thorough. You fully applied the IPCC regulations. There was no "rebuttal" of M&M in AR4, rather the chapter pointed out, rightly so, that there was new evidence, e.g. in the Wahl/Amman paper, accepted on Feb. 28, 2006, thus fully appropriate for AR4, that argued against the findings of M&M. This is as it should be in assessment based on published and peer reviewed literature.

I do hope this helps you to put these meaningless and false allegations to rest.

Best wishes, Eystein

Eystein Jansen, prof., Director
Bjerknes Centre for Climate Research, Allegaten 55, N5007 Bergen

Supporting Documents F

Submitted by	Date Received	File Name	Chapter/Section	Journal	Date Accepted/Published	Notes
Hermann Held	17-Jul-06	SchneiderVonDemling_etal.pdf	6.4.1.3	Geophys. Res. Lett.	07-Jun-06	
Gabi Hegerl	20-Jul-06	Hegerl_etal.pdf	6.?	J. of Climate	12-Jun-06	
Ellen Mosley-Thompson	23-Jul-06	Thompson_etal.pdf	6.5.2	PNAS	11-Jul-06	
David Schnieder	24-Jul-06	Schneider_etal.pdf	6.6	Geophys. Res. Lett.	30-Jun-06	