

Submission to the “The Independent Climate Change Em@il Review”

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and

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Background: I worked in the Climatic Research Unit from 1975 to 1993. I was Director of the Unit from 1978 to 1993. In 1993 I moved to NCAR as a Senior Scientist. I retired from NCAR in 2008, but still retain a formal affiliation with NCAR. I also have an appointment (since 2008) as an Adjunct Professor at the University of Adelaide. I divide my time between Adelaide and Boulder, CO.

A number of the emails being examined were written by me. I am appending documents about particular emails, and about the email hacking issue. There are other emails written by me that have been misrepresented on blogs or in the popular press. I am willing to answer specific questions about any of these emails. Indeed, I urge that, if there is even the slightest element of doubt about the context or interpretation of these emails, then I should be contacted to give me a chance to clarify the issues.

Attachments: The following items are attached ...

CanadianView <http://current.com/1j54q4c>

GuardianRubbish

HackingResponse-new

HackingResponses

KateGuardian

<http://www.guardian.co.uk/environment/2009/dec/08/hacked-climate-emails-death-threats>

KeenanLetter [not published for legal reasons]

PhilExplanation

Somerville_Facts_Matter [not published]

YaleDefense <http://www.yaleclimatemediaforum.org/2009/12/cru-emails-whats-really-there/>

Yamal-EPRIextract

Tom Wigley,
Feb. 28, 2010.

CRITICISM OF KEITH BRIFFA IN A GUARDIAN ARTICLE BY FRED PEARCE

This is an example of what is either [redacted for legal purposes] journalism by a well-known science journalist. Mr. Pearce made no attempt to check any facts with me on this issue.

It begins with Sarah Raper pointing out a problem with the Pearce article. The article may be viewed at ...

<http://www.guardian.co.uk/environment/2010/feb/03/yamal-data-climate-change-hacked-email>

She said, in an email to Tom Wigley (2/3/10, 12:18 PM – Boulder time, date is 3 Feb.) ...

Dear Tom,

Look at this article and in particular pay attention to the order of the quotes since I think they are deliberately out of sequence to make it look like you were dissatisfied with Keith's response to the Yamal issue.

Here is my response to Sarah Raper (2/3/10, 3:46 pm) ...

Sarah,

I can see why you are concerned about Fred's latest piece in The Guardian. It does look as though he has deliberately chosen dates to make it appear that I was dissatisfied with Keith's response.

Either that or it was a genuine mistake -- or he is simply ignorant and has not seen the full response.

Whatever, he really should write an apologetic P.S. to his piece.

I was completely satisfied with Keith's response. Not only did it answer all of my concerns and questions, but it also shows that the real [redacted for legal purposes] here is McIntyre (although Keith is careful not to draw that conclusion).

I am enclosing a chronology, and my own summary of the issue.

Pearce is a good science writer, but he has really dropped the ball in his series of Guardian articles over the last few days.

Sad.

Best wishes,

Tom.

Subsequent to this, I read other articles by Pearce in his series for the Guardian. I retract my statement that he "is a good science writer". My revised opinion is that he is a poor investigative journalist. Good investigative journalists check their facts and their interpretations of these facts. Mr Pearce made no attempt to do this in the Briffa case (and in other cases). Good investigative journalists also ensure that, by omission, misinterpretation or misrepresentation they do not harm individuals. Mr Pearce has failed to do this.

The email chronology mentioned above is given below (with new emphasis in red) ...

CHRONOLOGY OF EMAILS REGARDING YAMAL

(Times are US mountain time)

5 Oct. 2009, 3:03 AM: Jones to Wigley: “Keith is still working on a response” to the Yamal criticism.

5 Oct. 2009, 3:57AM: Wigley to Jones. ““Keith does seem to have got himself into a bit of a mess”. Note the word “seem”. When everything was explained to me and I had seen Keith’s response, it was clear to me that the above statement was incorrect and based on incomplete knowledge of the situation.

5 Oct. 2009, 4:49 AM: Jones to Wigley. Phil said he had forwarded my “mess” email on to Keith.

28 Oct. 2009: Estimated date that Briffa’s Yamal response was posted (see below).

4 Nov. 2009, 2:58 AM: Jones to Wigley. “Keith posted this the other week on Yamal”. “This” refers to Keith’s Yamal response. Phil gave the following web site ...

<http://www.cru.uea.ac.uk/cru/people/briffa/yamal2009/>

This gives the response (by Briffa and Melvin). Unfortunately, the document is not dated. However, we can estimate the date from the fact that Briffa was still working on the response on Oct. 5, and from “the other week” stated in Phil’s email. Relative to Nov. 4 this would come to about Oct. 28.

Pearce says that a statement on this issue was posted in Sept. 2009. Either this is fabrication, an honest error, or it refers to some other (less relevant) posting. I suspect that Pearce has not read the Briffa/Melvin response. Reading between the lines [redacted for legal purposes] .

Note that, although I had expressed intense interest in this issue, Briffa either never alerted me to the posting of his response or his alert got lost in the email ether. I have no record of any communication from Briffa on the Yamal response posting.

4 Nov. 2009, 10:28 AM: Wigley to Briffa. I sent a series of editorial comments to Keith on his posted response. I received no acknowledgment of this, nor any indication that my comments were accounted for. Note, however, that I was totally satisfied with the science and the explanations in the response, which I thought was quite brilliant. My comments were merely of an editorial nature.

5 Nov. 2009, 6:53 PM: Wigley to Briffa (cc to Jones). I forwarded a section from a report I was writing on the Yamal issue to Briffa asking for comments. I received no response.

Tom Wigley, Feb. 3, 2010.

Note that this incident shows just why scientists like Briffa, Jones, Santer, etc. are loathe to respond promptly to FOIA requests for data. When Briffa supplied the Yamal data to McIntyre he did not use the data for scientific purposes. [redacted for legal purposes].

Tom Wigley,
28 Feb. 2010.

ClimateGate - Climate center's server hacked revealing documents and emails

<http://www.examiner.com/x-25061-Climate-Change-Examiner~y2009m11d20-ClimateGate--Climate-centers-server-hacked-revealing-documents-and-emails>

vs

<http://www.realclimate.org/index.php/archives/2009/11/the-cru-hack/>

It is a matter of concern that data, including personal information about individuals, appears to have been illegally taken and a criminal investigation is underway. The selective publication of some stolen emails and other papers taken out of context is mischievous and cannot be considered a genuine attempt to engage with this issue in a responsible way. The volume of material published and its piecemeal nature makes it impossible to confirm what proportion is genuine. Many elements have been published selectively on a number of websites. Generally the items are out of context, incomplete and very misleading. Some others are wildly misinterpreted and have a simple explanation.

The material published relates to the work of our globally-respected Climatic Research Unit (CRU) and other scientists around the world. CRU's published research is, and has always been, fully peer-reviewed by the relevant journals, and is one strand of research underpinning the strong consensus that human activity is affecting the world's climate.

Many of the scientists featured in the emails with Jones have web sites and freely and openly make available their papers, presentations, blogs and other information. Several of the emails document the detailed procedures used in the IPCC AR4 Fourth Assessment report for Chapter 3 (for which Phil Jones and Kevin Trenberth were coordinating lead authors) and other chapters. They actually reveal the integrity of the process and the hard work that goes into such an assessment.

Examples of misinterpretations

From Kevin Trenberth, interpreted as a failure of computer models:

“The fact is that we can’t account for the lack of warming at the moment and it is a travesty that we can’t. The CERES data published in the August BAMS 09 supplement on 2008 shows there should be even more warming: but the data are surely wrong. Our observing system is inadequate.”

This refers to the inability of our current observations from satellites and in situ to account for where all the energy has gone. A paper on this is available here:

Trenberth, K. E., 2009: An imperative for climate change planning: tracking Earth's global energy. *Current Opinion in Environmental Sustainability*, **1**, 19-27, doi:10.1016/j.cosust.2009.06.001. [\[PDF\]](#)

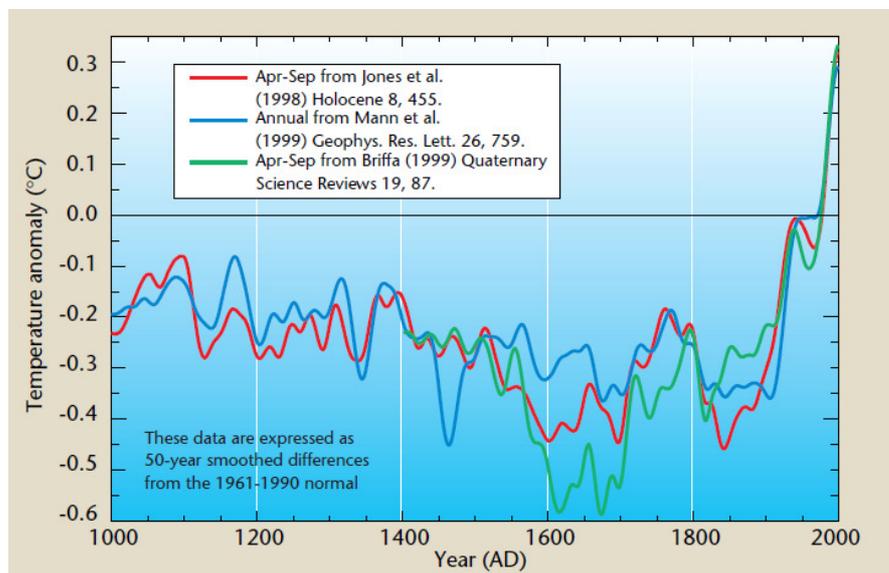
This paper tracks the effects of the changing Sun, how much heat went into the land, ocean, melting Arctic sea ice, melting Greenland and Antarctica, and changes in clouds, along with changes in greenhouse gases. We can track this well for 1993 to 2003, but not for 2004 to 2008. It does NOT mean that global warming is not happening, on the contrary, it suggests merely that we cannot fully explain why 2008 was as cool as it was, but with an implication that warming will come back, as it has.

As another example, of an email that has been widely cited and which falsely claims data manipulation, Professor Phil Jones, Director of the Climatic Research Unit comments:

The following email, which I can confirm is genuine, has caused a great deal of ill-informed comment, but has been taken completely out of context.

"I've just completed Mike's Nature trick of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and from 1961 for Keith's to hide the decline."

This email refers to a single diagram used in the World Meteorological Organisation's statement on the status of the global climate in 1999 (WMO-no.913).



The diagram shows three paleoclimate reconstruction curves as 50-year average temperature variations for the last 1000 years. Each curve referred to a scientific paper and a key gives their details.

The email contains the word “trick” and the phrase “hide the decline”, both of which have been misinterpreted.

The word “trick” is often used to mean a practice designed to deceive. This is not the meaning used here. An equally valid meaning is “the best way of doing or dealing with something” (Thorndike-Barnhart Comprehensive Desk Dictionary). This is the meaning used in this case. The “Mike” in this email refers to Mike Mann and the original “Hockey Stick” paper published in Nature in 1998. Both reconstructed and (most recently) real temperatures were shown in this paper.

The phrase “hide the decline” refers to the Briffa curve and to what is known in the tree-ring literature as the divergence problem. The Briffa curve (the correct reference year, by the way, is 2000) is based on tree-ring density, which is strongly related to temperature. However, over the past 50 to 100 years this relationship has broken down. In many areas, tree-ring densities have declined, while temperatures have risen. Reconstruction curves based on density are therefore only valid up to the early or mid 20th century. After this they no longer act as satisfactory proxies for temperature. Although they show a decline, this is not related to temperature, and it is common practice to curtail the reconstruction at some point in the 20th century and show, instead, the actual temperatures. In this sense, the last part of the density-based reconstruction, if not shown, is indeed hidden – but justifiably so as it is not related to temperature. It was, of course, not possible to put this explanation in the WMO report, but it can be found in the cited Briffa reference.

Here is a third example, of an email from Tom Wigley to Professor Phil Jones:

“Phil,
Here are some speculations on correcting SSTs to partly explain the 1940s warming blip. If you look at the attached plot you will see that the land also shows the 1940s blip (as I'm sure you know). So, if we could reduce the ocean blip by, say, 0.15 degC, then this would be significant for the global mean -- but we'd still have to explain the land blip.”

The key phrase here seems to be ... "if we could reduce the ocean blip by, say, 0.15 degC ..."

This is just shorthand for ...

"if, when the correction to the SSTs due to the change in instrumentation identified by Thompson et al. (Nature, 2008) is applied, and if this correction were, say, 0.15 degC ..."

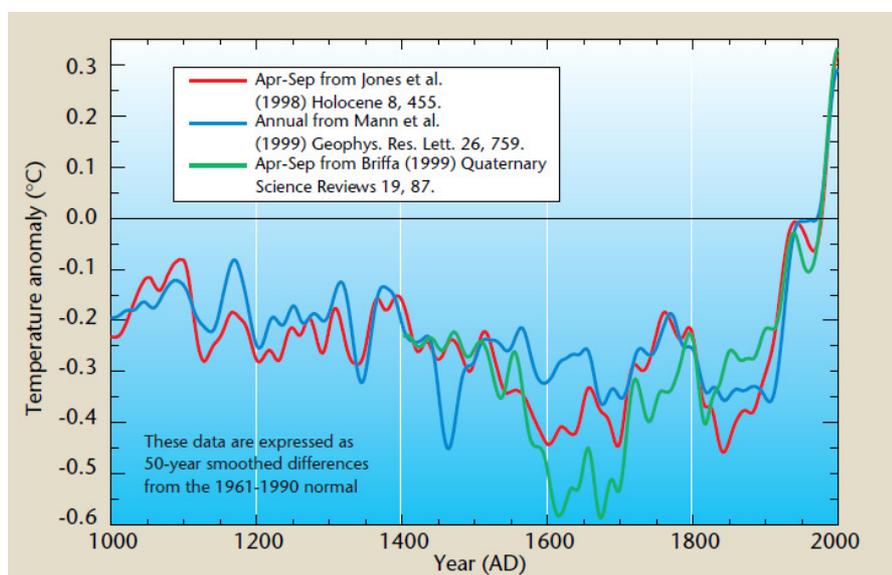
This email was directed to Phil Jones only, and Phil knew exactly what I was talking about. It does not at all refer to making some arbitrary correction to existing data in order to make such data fit some preconceived ideas about global warming. The SST correction is being made on the basis of knowledge about the instrumentation change, and this alone. The a priori (and preliminary) estimate of this correction suggests that it will make land and ocean changes more consistent, providing a valuable check on the correction procedures.

(1) Explaining “trick” and “hide the decline”

The following email quote, which Phil Jones has confirmed is genuine, has caused a great deal of ill-informed comment, mostly based on taking the email completely out of context.

"I've just completed Mike's Nature trick of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and from 1961 for Keith's to hide the decline."

Here is the full story. This email refers to a single diagram used in the World Meteorological Organization's statement on the status of the global climate in 1999 (WMO-No.913), reproduced below.



The WMO diagram shows three paleoclimate reconstruction curves as 50-year average temperature variations for the last 1000 years. Each curve is based on data in a specific scientific paper. The key gives the details (“Briffa (1999)” was actually published in 2000.)

The email contains the word “trick” and the phrase “hide the decline”, both of which have been misinterpreted.

It is true that the word “trick” is often used to mean a practice designed to deceive, but this is not the meaning used here. An equally valid meaning is “the best way of doing or dealing with something” (Thorndike-Barnhart Comprehensive Desk Dictionary). This is the meaning used in this case. The “Mike” in this email refers to Mike Mann and the original “Hockey Stick” paper published in Nature in 1998. Both reconstructed and (most recently) real temperatures were shown in this paper.

The phrase “hide the decline” refers to the Briffa curve and to what is known in the tree-ring literature as the divergence problem. The Briffa curve is based on tree-ring density, which is strongly related to temperature. However, over the past 50 or so years this relationship has broken down. In many areas, tree-ring densities have declined, while temperatures have risen. The relationship is unequivocal. It still shows up very strongly in year-to-year variations, but some other factor has, in recent years, superimposed a slow overall density decline. There are a number of possible causes for this low-frequency decline, but the issue has not been resolved. The key point is that this means that, in recent years, density **trends** cannot be used as an indicator of temperature trends – but prior to the 20th century, density is still an excellent proxy for temperature on all time scales.

Reconstruction curves based on density are therefore only valid up to the early or mid 20th century. After this they no longer act as satisfactory proxies for temperature. Although they show a decline, this is not related to temperature. This does not matter, of course, since we have real instrumental temperatures for this period. It is common and completely justifiable practice, therefore, to curtail the reconstruction at some point in the 20th century and show, after this, the actual temperatures.

This, of course, is perfectly legitimate because these are the real thing. Strictly, the reconstructions are only useful for the period prior to the beginning of the divergence phenomenon. Showing both real and reconstructed temperatures can be useful in a technical presentation as this gives the viewer an idea of the skill of the reconstruction. However, if the skill is demonstrated elsewhere through validation statistics, showing both curves in an overlap period can be confusing to novices.

In the WMO diagram the real instrumental temperatures are used in the most recent parts of the record and the reconstructions are shown prior to this. In this sense, the last part of the density-based reconstruction is not shown, and it is indeed hidden – but justifiably so as it is not related to temperature. It was, of course, not possible to put this explanation (which, even here is too brief to do the issue justice) in the WMO report, but it can be found in the cited Briffa reference and related papers.

(2) Computer code issues: item 1

In computer programming and computer modeling, it is common practice to write test programs or to modify existing programs for sensitivity studies. Many programs that are developed for testing are for this purpose only and are **not** used in producing results that are eventually published. This should be re-assuring to non-scientists because it demonstrates the care and work done in data analysis and modeling before results are published. It may be that some individuals still think that program segments like that below are or have been used in producing bogus results that are subsequently published. This is not the case. If someone

thinks this **is** the case then it is up to them to show that the offending program was actually used in producing published material.

I have dozens of examples like this in my own program development. This is the way science works.

Here is a bit of code that has been picked out by others ...

```
-----  
> From FOI2009/FOIA/documents/harris-treebriffa_sep98_e.pro  
>  
> ; PLOTS 'ALL' REGION MXD timeseries from age banded and from hugershoff  
> ; standardised datasets.  
> ; Reads Harry's regional timeseries and outputs the 1600-1992 portion  
> ; with missing values set appropriately. Uses mxd, and just the  
> ; "all band" timeseries  
> ;  
> ; PLOTS 'ALL' REGION MXD timeseries from age banded and from >  
> ; hugershoff  
> ; standardised datasets.  
> ; Reads Harry's regional timeseries and outputs the 1600-1992 portion  
> ; with missing values set appropriately. Uses mxd, and just the  
> ; "all band" timeseries  
> ;***** APPLIES A VERY ARTIFICIAL CORRECTION FOR DECLINE*****  
> ;  
> yrloc=[1400,findgen(19)*5.+1904]  
> valadj=[0.,0.,0.,0.,0.,-0.1,-0.25,-0.3,0.,-0.1,0.3,0.8,1.2,1.7,2.5,2.6,2.6,$  
> 2.6,2.6,2.6]*0.75 ; fudge factor  
> if n_elements(yrloc) ne n_elements(valadj) then message,'Oooops!'  
> Some code removed here for brevity.  
> ;  
> ; Now normalise w.r.t. 1881-1960  
> ;  
> ; mknormal,densadj,x,refperiod=[1881,1960],refmean=refmean,refsd=refsd  
> ; Some code removed here for brevity.  
> ;  
> ; APPLY ARTIFICIAL CORRECTION  
> ;  
> ; yearlyadj=interpol(valadj,yrloc,x)  
> ; densall=densall+yearlyadj  
> ;  
> ; Now plot them  
>  
-----
```

This is just a test modification of another program. This should be obvious from ...

```
***** APPLIES A VERY ARTIFICIAL CORRECTION FOR DECLINE*****
```

and

```
APPLY ARTIFICIAL CORRECTION
```

Note the words "ARTIFICIAL" and "fudge factor". Scientists do not use artificial components or fudge factors in producing results for publication. But they **do** use these things in testing programs and assessing the sensitivity of results to various uncertainties, The "fudge factor" is, as it says, just an artificial test set of numbers for a model sensitivity study.

This is a wonderful example of taking something out of context.

...

Phil's less-than-perfect attempt at explaining "trick"

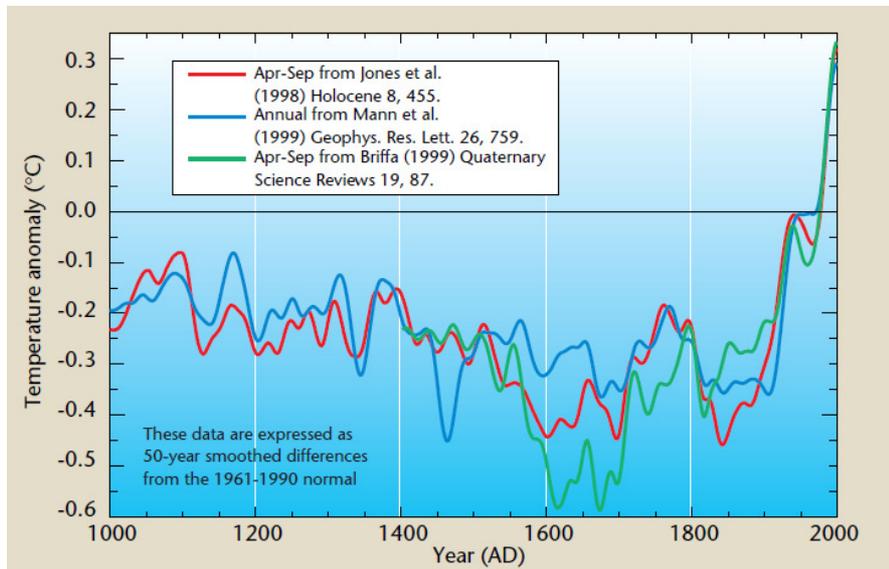
Below is what Phil has written ...

Phil Jones, Director of the Climatic Research Unit comments:

The following email, which I can confirm is genuine, has caused a great deal of ill-informed comment, but has been taken completely out of context and I want to put the record straight.

"I've just completed Mike's Nature **trick** of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and from 1961 for Keith's to **hide the decline**. Mike's series got the annual land and marine values while the other two got April-Sept for NH land N of 20N. The latter two are real for 1999, while the estimate for 1999 for NH combined is +0.44C wrt 61-90. The Global estimate for 1999 with data through Oct +is 0.35C cf. 0.57 for 1998."

The first thing to point out is that this refers to one diagram - not a scientific paper - which was used in the World Meteorological Organisation's statement on the status of the global climate in 1999 (WMO-no.913).



The diagram consisted of three curves showing 50-year average temperature variations for the last 1000 years. Each curve referred to a scientific paper and a key gives their details.

Climate records consist of actual temperature records from the mid-19th century and proxy data (tree rings, coral, ice cores, etc) which go back much further. The green curve on the diagram included proxy data up to 1960 but only actual temperatures from 1961 onwards. This is what is being discussed in the email.

The word 'trick' was used here colloquially as in a clever thing to do. It is ludicrous to suggest that it refers to anything untoward.

In my view, this is totally inadequate. The word "trick" is explained, but poorly. "clever" is almost as bad as "trick". "clever" has already been misrepresented in the press. It is so easy to just go to the dictionary and get the meaning ... which is what I have done.

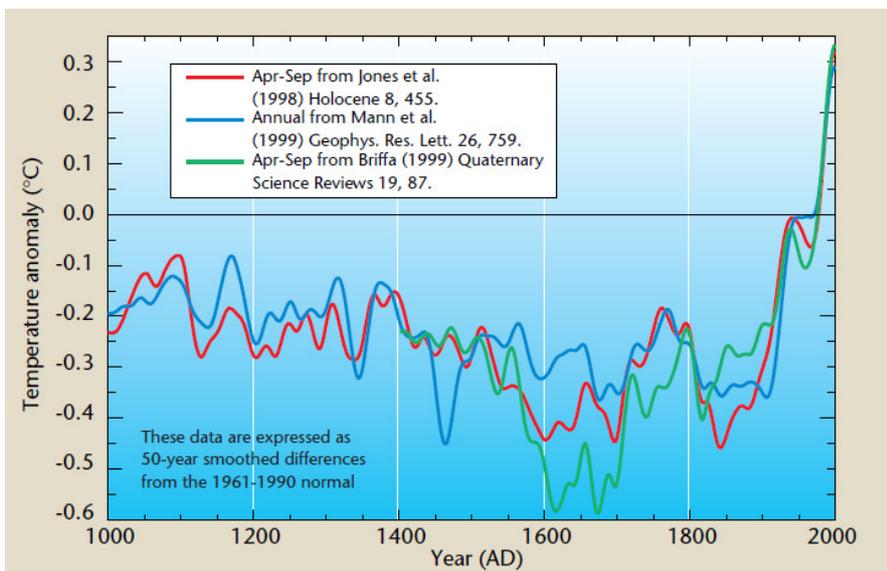
Further, there is no explanation for “hide the decline”. This is actually the major point that papers and blogs have focused on. Isn’t it obvious that **this** is what needs to be explained?

I have tried to do this ... below (written as though it were coming from Phil)..

The following email, which I can confirm is genuine, has caused a great deal of ill-informed comment, but has been taken completely out of context.

"I've just completed Mike's Nature trick of adding in the real temps to each series for the last 20 years (ie from 1981 onwards) and from 1961 for Keith's to hide the decline."

This email refers to a single diagram used in the World Meteorological Organization's statement on the status of the global climate in 1999 (WMO-No.913).



The diagram shows three paleoclimate reconstruction curves as 50-year average temperature variations for the last 1000 years. Each curve referred to a scientific paper and a key gives their details.

The email contains the word “trick” and the phrase “hide the decline”, both of which have been misinterpreted.

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The phrase “hide the decline” refers to the Briffa curve and to what is known in the tree-ring literature as the divergence problem. The Briffa curve (the correct reference year, by the way, is 2000) is based on tree-ring density, which is strongly related to temperature. However, over the past 50 to 100 years¹ this relationship has broken down. In many areas, tree-ring densities have declined, while temperatures have risen. Reconstruction curves based on density are therefore only valid up to the early or mid 20th century. After this they no longer act as satisfactory proxies for temperature. Although they show a decline, this is not related to temperature, and it is common practice to curtail the reconstruction at some point in the 20th century and show, instead, the actual temperatures. In this sense, the last part of the density-based reconstruction, if not shown, is indeed hidden – but justifiably so as it is not related to temperature. It was, of course, not possible to put this explanation in the WMO report, but it can be found in the cited Briffa reference.

+++++

I suggest you revise this as you see fit and put it up to replace the previous inadequate response.

Tom.

¹ Note that the start year for divergence in Briffa (2000, Fig. 5) is 1920.

Extract from “A Review and Assessment of Past and Future Changes in Global-Mean Temperature”, a report to EPRII by Tom M.L. Wigley (Feb. 2010).

6.5: Reliability of tree-ring chronologies:

A new criticism of the Hockey Stick has recently emerged from McIntyre and McKittrick. (Note that this criticism is unpublished, but it appears on the ClimateAudit blog.) McIntyre claims that one of the tree-ring chronologies used in constructing the Hockey Stick, from the Yamal Peninsula in northwest Siberia, is unrepresentative of the region it comes from. Since this particular chronology, first published by Briffa (2000) and referred to as B2000 below, has a marked hockey stick shape, McIntyre has suggested that it might unduly influence the Hockey Stick and similar reconstructions. However, the B2000 chronology is used in only a few of the reconstructions shown in Figure 7 (see Table 3) – and, even when it is used, from a statistical point of view, its contribution to any final reconstruction must be very small. Focusing in this way on a possible error at a single location is similar to M&M’s claims with regard to the bristlecone pine data and the Gaspé chronology (see Section 3). Both of these criticisms were found to be unjustified.

Table 3. List of NH temperature reconstructions shown in Figure 6 and the contribution of the Briffa (2000) Yamal chronology to each study. See Jansen *et al.* (2007) for full references. (From K.R. Briffa, personal communication.)

Study/reconstruction	Contribution of the Briffa (2000) Yamal chronology
Jones <i>et al.</i> (1998)	Not used
Mann <i>et al.</i> (1999)	Not used
Briffa <i>et al.</i> (2001)	Not used
Esper <i>et al.</i> (2002)	Not used
Briffa (2000)	Briffa (2000) Yamal was used
Mann and Jones (2003)	Briffa (2000) Yamal was used in a composite of three ring-width chronologies from northern Eurasia
Rutherford <i>et al.</i> (2005)	Not used
Moberg <i>et al.</i> (2005)	Only high-frequency information from the Briffa (2000) Yamal chronology was used
D'Arrigo <i>et al.</i> (2006)	Briffa (2000) Yamal was used, though possibly labelled as Polar Urals
Hegerl <i>et al.</i> (2006)	Not used
Pollack and Smerdon (2004)	Not used
Oerlemans (2005)	Not used

It is clear from Table 3 that the B2000 chronology was rarely used, so the McIntyre's implication that it is important to paleoclimatic reconstructions is incorrect. In particular, it was not used in the original MBH Hockey Stick reconstructions (Mann *et al.*, 1998, 1999).

McIntyre's suggestion that the chronology is not representative of the region is also incorrect. There are four tree-ring chronologies from the region, one of which is the original B2000 chronology. Of the three additional chronologies, two are very similar to B2000 while one ("KHAD") does not show the marked 20th century increase in growth characteristic of the other three (K.R. Briffa, personal communication). When all four are averaged together to get a regional chronology, the resulting composite is very similar to B2000. So, how did McIntyre come to a different conclusion?

McIntyre produced two new chronologies from the available data. One of these is similar to what is obtained by averaging the four local chronologies, and so is similar to B2000.

However, he also produced another 'regional' chronology by taking some of the tree-ring series out of B2000 and replacing them with series from the KHAD chronology. Not surprisingly, since KHAD appears to be anomalous, this new McIntyre chronology looks quite different from B2000.

It is extremely unlikely that this second McIntyre chronology can be considered representative of the region. Although McIntyre has been careful to give two options, his colleague Ross McKittrick and many of the people who read and post comments on the ClimateAudit blog have chosen to focus on the second (KHAD) option.

All of the criticisms arising from McIntyre's work are unjustified. First, the Briffa (2000) chronology is almost certainly an excellent proxy for the regional tree-ring fluctuations; second, this chronology has only been used rarely in large-scale paleoclimatic reconstructions; and third, even in the few cases where it was used its influence on the overall reconstruction must have been minimal.