

From: Tim Osborn <t.osborn@uea.ac.uk>  
To: evelyn.smith@noaa.gov, "Christopher D Miller" <Christopher.D.Miller@noaa.gov>  
Subject: Fwd: confidential assessment of GC04-203  
Date: Fri Oct 24 10:20:33 2003

Dear Evelyn and Chris,

re. proposal review GC04-203, Meko et al. "A synthesis of 19th century climate data for the United States from paleo, archival and instrumental sources".

I have read the "Reviewer conflict of interest and confidentiality..." document and can state that I have no conflict of interest and will abide by the confidentiality provisions etc.

I reviewed a very similar proposal by this group 1 year ago, and enclose my review of that proposal below. The new proposal has taken into account my two main concerns from last time, which were:

(i) that creation only of a blended data set that contained a time varying mixture of proxy and instrumental data would limit the usefulness because its quality would be time varying, perhaps in an unquantified way, and independent study of errors between proxy and observed data would be prevented; and

(ii) that the proposed work was not very innovative in terms of the applications for which the new information would be used.

Both of these points have been addressed adequately and so I now rate it "Excellent (5)" for scientific/technical merit, and "High (5)" for importance/relevance and applicability.

One issue that I would like to raise, however, is that the need for quantifying uncertainty/error in the reconstructions/database is not given much coverage in the proposal. It is mentioned, but not focused on. For many applications (testing models, comparison with other reconstructions, detection of unusual climate trends/events), explicitly quantified error estimates are essential. These often change magnitude through time, and thus should be estimated in such a way as to allow this. They may also change with time scale (often being lower for, e.g., a decadal mean than for a single year's value), and again the error estimation method should capture this. I do not think that this issue detracts from the quality of the proposal. Instead I am mentioning it in the hope that this comment can be passed on to the proposers, in the event that the project is funded, so that they can be prompted into placing the appropriate emphasis on quantifying uncertainty.

Apologies for being late yet again, and best regards,

Tim

Date: Thu, 24 Oct 2002 17:14:31 +0000  
Subject: confidential assessment of GC03-512  
From: Tim Osborn <t.osborn@uea.ac.uk>  
To: <irma.dupree@noaa.gov>  
CC: <t.osborn@uea.ac.uk>,  
<christopher.d.miller@noaa.gov>

Dear Irma and Chris,

Re. proposal review GC03-512, PI: David Meko "A 19th century data catalog"

First of all, I confirm that there is no conflict of interest etc.

Now to my review...

(1) Scientific Merit

Rating: Good

Comments:

I completely agree with the rationale behind improving data sets of 19th century climate (see my comments below on "Relevance to climate change programme"), and the proposers have identified the most relevant data sources available for the US. The objectives and workplan are generally reasonable, but I have rated it "good" rather than "very good" or "excellent" because it does not seem as scientifically innovative or challenging as it might. Some particular concerns are highlighted below. I am very wary about the proposed approach of integrating the data sources together to produce a single climate product. Obviously the data sources have to be used in combination, for calibration of proxy data or for assessment of possibly dubious early instrumental data, \*but\* combining them all into a single product only will be very restrictive for future use, assessment, improvements. Much better would be to produce instrumental-only series for whatever length is available, and tree-ring only series for the full length (i.e., into the late 19th and 20th centuries, despite the availability of instrumental data for these periods). Blending them into a single analysis is of some, but limited, use and comparisons of different periods and with (e.g.) model simulations can only ever be done by taking into account error bars that vary dramatically in time and are only

estimates of the "true" errors - and the error estimates may be underestimates if based only on residuals or covariances during the 20th century.

No mention is made of using the 19th century data to consider key issues such as difference between tree-ring and ground borehole temperatures (they differ more in the 19th century, in terms of trend, than in other centuries), possibly taking into account land-use change. No mention is made of using the 19th century data to assess multi-century temperature reconstructions and why they differ. These are issues of great importance. No mention is investigating seasonal dependence of temperature changes, which are greater in existing temperature products during the 19th century than in the 20th century and which has important implications for the calibration of proxy (including tree-ring) data against summer or annual data and the need to more clearly define the true seasonal response of proxy data.

Despite these concerns, the proposed work is certainly worthy of funding and the extra items of interest that I mention above could be achieved using the data generated here, in some future project.

(2) Relevance to climate change programme

Rating: High

Comments:

The 19th century is certainly of particular importance, not just for the reasons outlined in the proposal but also because this century shows some of the biggest disagreements in warming trend between various quasi-hemispheric temperature reconstructions and between proxy and instrumental data and between different seasons of instrumental data. Additional data sources are definitely required, and additional digitisation, homogenisation and intercomparison of data sets is necessary. For these reasons, work such as that proposed here is essential for helping to refine answers to questions such as how unusual is late twentieth century climate and detection of climate change signals against the noise of natural climate variability.

Best regards

Tim