

Wei-Chyung Wang fabricated some scientific claims

Douglas J. Keenan, The Limehouse Cut, London E14 6N, UK; doug.keenan@informath.org
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Introduction

This report concerns two research papers co-authored by Wei-Chyung Wang, a professor at the University at Albany, State University of New York. The two papers are as follows.

Jones P.D., Groisman P.Y., Coughlan M., Plummer N., Wang W.-C., Karl T.R. (1990),
“Assessment of urbanization effects in time series of surface air temperature over land”,
Nature, 347: 169–172.

Wang W.-C., Zeng Z., Karl T.R. (1990),
“Urban heat islands in China”,
Geophysical Research Letters, 17: 2377–2380.

Each paper compares temperature data from some meteorological stations in China, over the years 1954–1983. (The first paper also considers data from stations in the USSR and Australia; Wang was only involved in Chinese data, and so the other stations are irrelevant here.) The first paper is quite important: it is cited for resolving a major issue in the most recent assessment report of the Intergovernmental Panel on Climate Change [IPCC, 2007].

Background

Meteorological stations sometimes move, and this can affect the temperature measurements of the stations. For example, one of the stations relied upon by the above two papers was originally located on the upwind side of a city and later moved, 25 km, to be on the downwind side of the city. Such a move would be expected to increase the measured temperatures, because a city generates heat. Another station relied upon by the papers was originally located in the center of a city and then moved, 15 km, to be by the shore of a sea. Such a move would be expected to decrease the measured temperatures.

It is clear that when a station moves, the temperature data from before the move is not, in general, directly comparable to the data from after the move. This problem can occur even if the move is over a small distance. For example, if a station moves from being in the middle of a field to being by an asphalt area, then the measured temperatures would be expected to increase, even though the distance moved might be only 100 m. (A related issue is that the land use around a station can change over time, and this can affect measurements.)

In global warming studies, an important issue concerns the integrity of temperature measurements from meteorological stations. The latest assessment report from the IPCC indicates that the global average temperature rose by roughly 0.3 °C over the period 1954–1983. Thus, if errors in temperature measurements were of similar size to, or larger than, 0.3 °C, there could be a serious problem for global warming studies. The papers of Jones et al. and Wang et al. both consider this issue. The paper of Jones et al. is one of the main

works cited by the IPCC to support its contention that measurement errors arising from urbanization are tiny, and therefore are not a serious problem.

Fabrications

Regarding station movements over time, the papers of Jones et al. and Wang et al. make the following statements.

The stations were selected on the basis of station history: we chose those with few, if any, changes in instrumentation, location or observation times. [Jones et al.]

They were chosen based on station histories: selected stations have relatively few, if any, changes in instrumentation, location, or observation times.... [Wang et al.]

Those statements are essential for the papers.

Each paper gives the same reference for its statement: a report resulting from a project done jointly by the U.S. Department of Energy (DOE) and the Chinese Academy of Sciences (CAS). The DOE/CAS report (available via <http://cdiac.esd.ornl.gov/ndps/ndp039.html>) resulted from concern over “possible CO₂-induced climate changes”. Its purpose was to present “the most comprehensive, long-term instrumental Chinese climate data presently available”. It contains, in particular, histories of some Chinese meteorological stations, including the different locations of those stations and the dates on which they moved, if any.

The DOE/CAS report was formally published in full in 1991—Wang et al. and Jones et al. used a pre-publication version of the report. A revised version of the report was published in 1997, but the station histories are the same in the two versions.

Jones et al. and Wang et al. consider the same 84 meteorological stations in China. Regarding 49 of those stations, the DOE/CAS report says, “station histories are not currently available” and “details regarding instrumentation, collection methods, changes in station location or observing times ... are not known” (sect. 5). For those 49 stations, then, the above-quoted statements from the two papers are impossible.

Regarding the remaining 35 stations that were analyzed by the two papers, I have prepared a summary of the relevant information from the DOE/CAS report. The summary is available at <http://www.informath.org/apprise/a5620/b17.htm>. As an example from the summary, one station had five different locations during 1954–1983, with the locations as much as 41 km apart. Two other stations each had four different locations. At least half the stations had substantial moves (two other examples, of 25 km and 15 km, were given above). Moreover, several stations have histories that are inconsistent, making reliable analysis unattainable.

(The station that moved five times during the study period, #54511, is discussed by Yan et al. [*Advances in Atmospheric Sciences*, 18: 309 (2001)]; the authors conclude that some of the moves affected temperature measurements by 0.4 °C. The authors also discuss another station, #58367, which had a single move of 4 km; the authors conclude that the move affected temperature measurements by 0.3 °C. The authors’ statistical analysis, though, is invalid—e.g. it does not consider significance—so the conclusions are unproven.)

Additionally, the following statement from the DOE/CAS report seems apposite: “Few station records included in the PRC data sets can be considered truly homogeneous [i.e. have no

significant changes in location, instrumentation, etc.]. Even the best stations were subject to minor relocations or changes in observing times, and many have undoubtedly experienced large increases in urbanization.”

The essential point here is that the quoted statements from Jones et al. and Wang et al. cannot be true and could not be in error by accident. The statements are fabricated.

Responsibility

Who is responsible for the fabrication? Phil Jones is the lead author of one paper; so I asked him about the roles the different authors had. He replied as follows (17 May 2007).

In late 1989 or early 1990 I contacted the co-authors on the paper from 1990 to ask them about rural station data in their (three regions). The purpose of the study was to extend the work undertaken with Tom Karl a year or two early on the contiguous US.

Each of the three: Groisman (Russia), Plummer/Coughlan (Australia) and Wang (China) selected the rural stations in their region, based on their knowledge of the networks in those countries. Each had worked extensively on their respective networks. For China there was the additional network of urban stations.

I did all the analyses with the data they provided. I wrote the first draft of the paper and they provided comments on subsequent drafts before it was submitted.

To further clarify things, I asked Jones the following: “Your message says “For China there was the additional network of urban stations”. Who was responsible for selecting the stations in that network? (Wang?)”. Jones replied, “Yes” (18 May 2007).

There is good evidence to support the version of events described by Jones. First, Jones is not a co-author of the paper of Wang et al., nor is he listed in the Acknowledgements section of the paper; so it seems very unlikely that he was responsible for the quoted statement in the paper. Second, the papers of Jones et al. and Wang et al. analyze the same data, but come to very different conclusions about that data (Wang et al. say, “The reasons for this are not clear”); the only explanation for the difference that I can think of is that Wang supplied the data to Jones—thereby meriting co-authorship—but had little role in the analysis of that data, just as Jones says. Third, Wang was sent a draft of this report (on 11 June 2007), and he did not deny the version of events presented by Jones.

Given the above, and that Wang is the lead author of one paper, it seemed clear that Wang is the person responsible for the fabricated statements. So, on 11 April 2007, I e-mailed Wang, asking him “how did you ensure the quality of the data?”. Two days later, I telephoned Wang, but he declined to discuss things, saying “I’m in a meeting; can I get back to you?”.

On 20 April 2007, with still no response from Wang, I sent another e-mail. The e-mail asked Wang to, among other things, retract the paper of Wang et al. and also the claims made by Jones et al. for which he was responsible. Wang replied two days later, explaining that he was then in China, and that he would respond further when he returned. His reply also claimed “My understanding was that you are going to call me again, but you never did”.

On 30 April 2007, Wang e-mailed me the following.

The discussion with Ms. Zeng last week in Beijing have re-affirmed that she used the hard copies of station histories to make sure that the selected stations for the study of urban warming in China have relatively few, if any, changes in instrumentation, location, or observation times over the study period (1954-1983).

The “hard copies” to which Wang refers could not have been found by the authors of the DOE/CAS report, who endeavored to be comprehensive. Additionally, that report clearly shows that many of the stations used for the studies did have substantial changes in location.

Moreover, Zeng is one of the four authors of the DOE/CASE report; so what Wang now claims Zeng says is in contradiction to what Zeng wrote in 1991 and 1997. On the other hand, Zeng is a co-author of the paper of Wang et al. Why is Zeng a co-author of a paper that contradicts the DOE/CAS report? Perhaps she just went along with what the lead author, Wang, wanted—similar to how Wang is a co-author of Jones et al. even though Wang explicitly disagreed with the analysis of Jones. In any case, none of this would seem to remove the culpability of Wang. (Note: Zeng is not a co-author of the paper of Jones et al., nor is she mentioned in the Acknowledgements section of the paper.)

Finally, it should be noted that the DOE/CAS report was published as part of the Carbon Dioxide Research Program. The Chief Scientist of that program was Wang.

Additional considerations

The problem with Jones et al. and Wang et al. was first raised on the ClimateAudit blog of Stephen McIntyre (who exposed the “hockey stick” graph of temperatures over the past millennium). McIntyre noted that the stated claims about Chinese data seemed “absurd”. Indeed, for anyone familiar with Mao’s Great Leap Forward and the Cultural Revolution, the claim to have obtained substantial reliable data for 1954–1983 makes little sense.

During the Great Leap Forward, tens of millions of people are believed to have died, but it is not known *how many* tens of millions. And official records of grain harvests were often substantially exaggerated: this was not generally considered fraud, but instead making the records conform with “socialist reality”. During the Cultural Revolution, schools and universities were shut down and many intellectuals were beaten, internally exiled, or killed for being too bourgeois, and there was sometimes near-anarchy, especially in urban areas. Even as late as 1980, censuses were so poor that China’s population was only known to within about 100 million [Lavelly W.R., *Australian Journal of Chinese Affairs*, 18: 167 (1987)].

In other words, the claim to have gotten large numbers of highly-reliable, homogeneous records from the study period is a priori extremely difficult to believe.

Jones is a professor at a public university in the United Kingdom (the University of East Anglia); so any data held by him is requestable under the UK Freedom of Information Act. McIntyre and I each made formal requests under the Act, and by this means, obtained the list of meteorological stations that were used in the papers of Jones et al. and Wang et al. (see <http://www.cru.uea.ac.uk/cru/data/jonesetal1990/>). The Act was essential for this report.