

Global warming greatest in the past decade: study

Surface temperatures in the Northern Hemisphere were warmer over the last 10 years than any time during the last 1,300 years, according to a study.

If climate scientists include the somewhat controversial data derived from tree-ring records, the warming is anomalous (deviating from the normal or common order) for at least 1,700 years.

'Some have argued that tree-ring data is unacceptable for this type of study,' said Michael Mann, associate professor of meteorology and geosciences and director of Penn State's Earth System Science Centre.

'Now we can eliminate tree rings and still have enough data from other so-called 'proxies' to derive a long-term Northern Hemisphere temperature record.'

The proxies used by the researchers included information from marine and lake sediment cores, ice cores, coral cores and tree rings.

'We looked at a much expanded database and our methods are more sophisticated than those used previously,' said Mann.

The researchers noted that 'conclusions are less definitive for the Southern Hemisphere and globe, which we attribute to larger uncertainties arising from the sparser available proxy data in the Southern Hemisphere'.

The research team included Mann, Ray Bradley, university distinguished professor, geosciences and director of Climate System Research Centre at the University of Massachusetts; Malcolm Hughes, regents' professor, and Fenbiao Ni, research associate at the Laboratory of Tree Ring Research, University of Arizona; Zhihua Zhang and Sonya Miller, research associates, meteorology, Penn State; and Scott Rutherford, assistant professor of environmental sciences at Roger Williams University.

Results of this study without tree-ring data show that for the Northern Hemisphere, the last 10 years are unusually warm for not just the past 1,000 as reported in the 1990s paper and others, but for at least another 300 years going back to about A.D. 700 without using tree-ring data. The same conclusion holds back to A.D. 300 if the researchers include tree-ring data.

'Ten years ago, we could not simply eliminate all the tree-ring data from our network because we did not have enough other proxy climate records to piece together a reliable global record,' said Mann.

'With the considerably expanded networks of data now available, we can indeed obtain a reliable long-term record without using tree rings,' he added.

The new study shows that, with caveats, tree-ring data can be used, but that even without including that data, it is clear that the anomalous nature of recent warmth, which most scientists believe to be a result of human impacts on climate, is a reality.

These findings were published on Tuesday's online edition of the Proceedings of the National

Academy of Sciences.

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