



## LETTERS

edited by Jennifer Sills

### Tracking the Source of Glacier Misinformation

A RECENT NEWS OF THE WEEK STORY ON HIMALAYAN GLACIERS (“NO SIGN YET OF HIMALAYAN meltdown, Indian report finds,” P. Bagla, 13 November 2009, p. 924) highlights how inadequately reviewed material makes its way into the public consciousness. One source, Working Group II (WG-II) of the Intergovernmental Panel on Climate Change (IPCC) [pp. 493 and 494 in (1)] reproduces several errors. The Working Group writes that “[g]laciers in the Himalaya are receding faster than in any other part of the world” and that “the likelihood of them disappearing by the year 2035 and perhaps sooner is very high if the Earth keeps warming

at the current rate. Its total area will likely shrink from the present 500,000 to 100,000 km<sup>2</sup> by the year 2035.” Another source (2) advances a no-less mistaken conjecture, not discussed in Bagla’s News of the Week story, that Himalayan glaciers are responding to the climate of as long as 15,000 years ago.

The IPCC Fourth Assessment, particularly of the physical science basis for the changes, is mostly accurate, but the first WG-II sentence above derives from a World Wildlife Fund report (3), which cites a news story (4) about an unpublished study (5) that neither compares Himalayan glaciers with other

rates of recession nor estimates a date for disappearance of Himalayan glaciers. Himalayan rates of recession in the WG-II report (1) are not exceptional (6). In the second WG-II sentence, “its” cannot refer to Himalayan glaciers [area about 33,000 km<sup>2</sup> (7)], and may refer to the world total area of glaciers and ice caps. A bibliographic search suggests that the second WG-II sentence is copied inaccurately from (8), in which the predicted date for shrinkage of the world total from 500,000 to 100,000 km<sup>2</sup> is 2350, not 2035.

The claim that Himalayan glaciers may disappear by 2035 requires a 25-fold greater loss rate from 1999 to 2035 than that estimated for 1960 to 1999 (7). It conflicts with knowledge of glacier-climate relationships and is wrong. Nevertheless, it has captured the global imagination and has been repeated in good faith often, including recently by the IPCC’s chairman (9).

These errors could have been avoided had the norms of scientific publication, including peer review and concentration upon peer-reviewed work, been respected.

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#### References and Notes

1. R. V. Cruz *et al.*, in *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M. L. Parry *et al.*, Eds., (Cambridge Univ. Press, Cambridge, 2007), pp. 469–506.
2. V. K. Raina, *Himalayan Glaciers* (Discussion Paper, Ministry of Environment and Forests, Government of India, New Delhi, 2009).
3. WWF, *An Overview of Glaciers, Glacier Retreat, and Subsequent Impacts in Nepal, India and China* (WWF Nepal Program, Kathmandu, 2005).
4. F. Pearce, *New Scientist*, **162** (2189), 18 (1999).
5. S. I. Hasnain, “Report on Himalayan glaciology: Appendix 6, unpublished minutes of the July 1999 meeting” (Bureau of the International Commission for Snow and Ice, 1999); [www.cryosphericsscience.org/docs.html](http://www.cryosphericsscience.org/docs.html).
6. WGMS, *Fluctuations of Glaciers 2000–2005, Vol. IX* (World Glacier Monitoring Service, Zurich, 2008).
7. M. B. Dyurgerov, M. F. Meier, *Occasional Paper 58* (Institute of Arctic and Alpine Research, Univ. of Colorado, Boulder, CO, 2005).
8. V. M. Kotlyakov, *Tech. Doc. Hydrol.* **1**, 61 (1996).
9. C. Morris, “Why are the Himalayan glaciers melting?” ([http://news.bbc.co.uk/2/hi/south\\_asia/8337604.stm](http://news.bbc.co.uk/2/hi/south_asia/8337604.stm)).
10. This Letter was published online 20 January 2010 ([www.sciencemag.org/sciext/eletters/#12949](http://www.sciencemag.org/sciext/eletters/#12949)).

### A Role for Postdocs in Undergraduate Education

IN HIS EDITORIAL, “GALVANIZING SCIENCE departments” (4 September 2009, p. 1181), C. Wieman described ongoing programs at University of Colorado, Boulder and University of British Columbia in Vancouver that are successfully implementing new effective, research-based teaching methods in several science, technology, engineering, and mathematics (STEM) departments. As Wieman points out, transformations in the STEM teaching culture at large research universities are sorely needed, but such institutional change is notoriously difficult to bring about. It is therefore worth a closer look at how these two programs work. Their success has been primarily due to the science education specialists Wieman mentions, who are called Science Teaching Fellows (STFs) in Boulder. It may not have been clear from the Editorial that these are postdocs. Most earned Ph.D.s in their respective science disciplines (not education), but developed strong interests in pedagogy and educational research during their training.

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