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CLARITY ON UNCERTAINTY

The Intergovernmental Panel on Climate Change (IPCC) is being confronted by various claims that their latest report fails to account for the full range of uncertainty in climate change.

The release of the report in February saw a leap in how climate scientists communicated their findings to a wider audience. Using finely tuned and carefully deliberated terminology, the panel assigned probabilities to specific impacts of climate change (*news@nature* doi:10.1038/445580a; 2007). For example, they were “virtually certain” — or could assign a 99% probability — that hot days will get hotter and more frequent in the future. In doing so, the IPCC has made it easier for the media, the public and policymakers to understand the risks associated with global warming.

But in a recent Commentary (*Nat. Rep. Clim. Change* 2, 23–24; 2007), Stephen Schwartz of the Brookhaven National Laboratory in Upton, New York, USA and co-authors argue that the models have not accounted for the full range of uncertainty in some factors that drive temperature change, such as atmospheric aerosols. They say that this has led to a false sense of confidence in model projections, which essentially means that future warming could be greater or more moderate than models suggest (*Science* 317, 28; 2007). Their claims have been rebuffed by the IPCC (*Nat. Rep. Clim. Change* 4, 63–64; 2007) and by various climate bloggers who point out that the IPCC uses far more than model results, including real world observations, to reach their best uncertainty estimates.

Now, Michael Oppenheimer of Princeton University, USA and co-authors have weighed in on the issue of assessing uncertainty in climate models (*Science* 317, 1505–1506; 2007). Their concern is the exclusion from uncertainty estimates of the ‘wild cards’ of climate change, that is, those highly tentative but potentially catastrophic events, such as the melting of the West Antarctic ice sheets, which could raise sea levels by an additional 5 metres.

Although the IPCC acknowledges such possibilities, it does so as caveats detailed in the text of the full report. In such cases, where processes are poorly understood and have few data, the IPCC does not, and indeed cannot, include them in their calculations of uncertainty. Although some argue that this approach is too ‘conservative’ (*news@nature* doi:10.1038/news070326-11; 2007), the fact that the report reflects a consensus of the science by so many is the linchpin of its credibility.

Accounting for highly tentative processes in the uncertainty estimates could threaten this credibility. And including all caveats in the Summary for Policymakers would sacrifice brevity, confusing those it is intended to influence. Yet what is evident from all of this is the importance of communicating uncertainty in climate change clearly and, here, there is clearly room for improvement. Even IPCC scientists have acknowledged that their treatment of uncertainty is “difficult to communicate”. Effectively communicating to a wider audience and reaching the level of transparency now being asked of the IPCC will require a careful balancing act.

OLIVE HEFFERNAN, EDITOR

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