

known as the hockey stick, and was featured prominently in the executive summary for policy-makers in the 2001 report on global warming from the Intergovernmental Panel on Climate Change (IPCC).

Shortly after it appeared in the report, two Canadians, economist Ross McKittrick and mineral-exploration consultant Stephen McIntyre, attacked the methodology behind the graph, claiming that it was based on insufficient data and flawed statistical analysis. US politicians amplified their complaints, most prominently Representative Joe Barton (Republican, Texas), who in 2005 wrote to Mann demanding he share his data with critics and congressional overseers. In an effort to quell the controversy, the chairman of the House Committee on Science, Representative Sherwood Boehlert (Republican, New York), commissioned the academy to examine the earlier work.

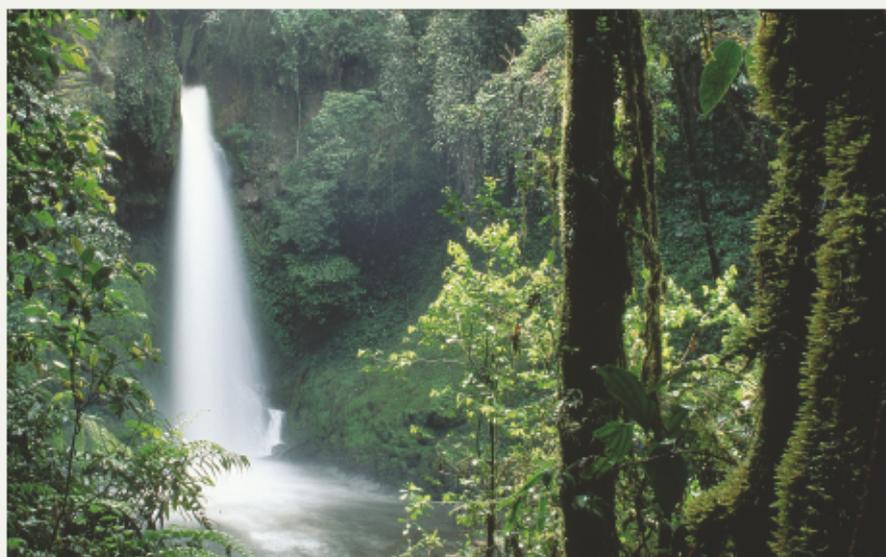
The academy essentially upholds Mann's findings, although the panel concluded that systematic uncertainties in climate records from before 1600 were not communicated as clearly as they could have been. The NAS also confirmed some problems with the statistics. But the mistakes had a relatively minor impact on the overall finding, says Peter Bloomfield, a statistician at North Carolina State University in Raleigh, who was involved in the latest report. "This study was the first of its kind, and they had to make choices at various stages about how the data were processed," he says, adding that he "would not be embarrassed" to have been involved in the work.

Panel members were less sanguine, however, about whether the original work should have loomed so large in the executive summary of the IPCC's 2001 report. "The IPCC used it as a visual prominently in the report," says Kurt Cuffey, a panel member and geographer at the University of California, Berkeley. "I think that sent a very misleading message about how resolved this part of the scientific research was."

"No individual paper tells the whole story," agrees North. "It's very dangerous to pull one fresh paper out from the literature."

Mann says that he is "very happy" with the committee's findings, and agrees with the core assertion that more must be done to reduce uncertainties in earlier periods. "We have very little long-term information on the Southern Hemisphere and large parts of the ocean," he says. As for the report's effect on the policy debate, Mann says: "Hopefully this is the beginning of us, as a community, putting that silliness behind us." ■

Geoff Brumfield



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## Experts comb tropics for clues to vCJD

Some people in Papua New Guinea who once feasted on their own relatives did not succumb to the prion disease kuru until 50 years later, say researchers who have laboriously tracked down the last sufferers in remote villages. The discovery renews concern that another human prion disease, variant Creutzfeldt-Jakob disease (vCJD), might be incubating silently in some populations and could rear its head decades from now.

Neurologists have long been fascinated by kuru, which caused an unprecedented epidemic of neurodegenerative disease in the Fore people of Papua New Guinea that peaked in the 1950s and early 1960s. In death rituals, families steamed and ate the bodies of their relatives — along with, it was later discovered, infectious prion proteins that caused the debilitating and fatal disease. The ritual was prohibited in the mid-1950s by the Australian authorities who governed that part of Papua New Guinea, and the disease eventually became less frequent.

Interest in kuru reawakened with the realization that vCJD,

transmitted from cows infected with bovine spongiform encephalopathy, might cause a similar epidemic among those who ate infected meat in the 1980s and 1990s. So far, only 156 deaths from vCJD have been reported in Britain, the worst-affected country, and the number of new cases peaked in 2000, suggesting that vCJD takes about ten years to incubate. But debate continues about whether another wave of cases could yet appear.

John Collinge at University College London and his colleagues went to Papua New Guinea to find out. Most people with kuru have already died, but the team ramped up existing disease monitoring to find the last of the epidemic. Working with local communities, they scoured isolated villages that are typically more than 2,000 metres above sea level, lost in dense rainforest and connected only by tracks. "It's arduous trekking," says Collinge.

Between 1996 and 2004, the researchers found what they believe are the last 11 cases of kuru. Patients' histories were collected, to piece together when they were probably

infected. The longest incubation time was calculated to be at least 56 years, and perhaps seven years longer — although the average incubation time seems to be 12 years (J. Collinge *et al. Lancet* 367, 2068–2074; 2006). "For the first time we can see the extraordinary incubation period in human prion disease," says Collinge. "It's sobering that, half a century on, this disease has not disappeared."

Collinge says that vCJD could have a much longer average incubation time, of 30 years or more, because the prions are passing from cows to humans rather than between humans. A species barrier extends incubation times in animal tests. People who have already succumbed to vCJD might have been particularly genetically susceptible, as other evidence has suggested.

Mathematical models used to predict the size of a vCJD epidemic could now include these findings. "Most people seem to think we're over the worst," Collinge says. "We have to be cautious about assuming this disease is going away." ■  
Helen Pearson