

India must cooperate on tsunami warning system

Sir – Following the 26 December tsunami, international survey teams working in the affected areas ("On the trail of destruction" *Nature* **433**, 350–353; 2005) have held educational seminars attended by government ministers, local professionals, emergency management and, on occasion, even students. The emphasis has been on explaining tsunami generation and impact, lessons learned from recent tsunamis, information on the operation of tsunami warning centres and preliminary findings.

Unlike similar meetings in Sri Lanka, the Maldives and Indonesia, the meeting hosted by the Indian National Academy of Sciences in Delhi on 21–22 January was more focused on presenting national capabilities in remote sensing, seismology and storm warnings. The meeting concluded with a list of action items. There was little discussion of arguably the most fundamental aspect of a warning system – the communication of the warning and actions resulting from this. This omission was supposedly justified by India's experience with storm warnings.

Yet neither this storm-warning experience nor the existence of India's sophisticated seismic networks led to warnings being issued on 26 December, once the tsunami had struck the Andaman and Nicobar Islands. The tsunami did not hit the Indian mainland for another two hours. Allegedly, communications links had survived in Port Blair on the Andaman Islands, not to mention nearby airforce and navy bases that were affected. Some have argued that up to 40,000 people might have been saved if they had been warned. Further, India issued an incorrect warning a few days after the tsunami hit, triggering massive panic in India and Sri Lanka.

At the same meeting, India announced that it could develop new systems and models "based on end-to-end principles" in two years, using the best brains in India. For reference, the United States and Japan took more than 20 years to develop validated numerical models to predict tsunami evolution. And it took the US National Oceanic and Atmospheric Administration 30 years to fully develop its bottom-pressure recorders, which have been reliably detecting tsunamis for the past ten years.

India has an opportunity to establish a regional warning centre for the Indian ocean, thus ending its self-imposed isolation in sharing seismic data. It has the communications infrastructure and the scientific talent to serve its citizens and the international community. But the idea that India can do it alone is misguided.

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