



India sets up tsunami warning centre

Updated: 10-16-2007

Hyderabad, Oct 15 (IANS) Learning lessons from the tsunami of December 2004, India Monday unveiled an early tsunami warning system, the first of its kind in the world, which will sound an alert 13 minutes after an undersea earthquake in two potential source regions. Set up at the Indian National Centre for Ocean Information Services (INCOIS) at Jeedimetla on the city outskirts, the centre is equipped to warn in real-time if sub-duction zone related earthquakes in Andaman-Nicobar-Sumatra island arc and the Makran sub-duction zone north of the Arabian Sea can trigger tsunamis.

Science and Technology and Earth Sciences Minister Kapil Sibal Monday inaugurated the centre, built indigenously in two years at a cost of Rs.1.25 billion with the involvement of 14 different organisations and 150 scientists.

An early tsunami warning can help the 400 million people living in India's coastal to save themselves. The information can also be shared with neighbouring countries.

Sibal said efforts were being made to reduce the warning time to six minutes and thus extend the time-line for alert and evacuation in the areas likely to be hit by tsunami.

The earth sciences ministry has established the centre in collaboration with the department of science and technology, the department of space and the Council Of Scientific and Industrial Research (CSIR).

P.S. Goel, secretary, ministry of earth sciences, said the centre comprised a real-time network of seismic stations, bottom pressure recorders (BPR) and tide gauges to detect tsunami-genic earthquakes and to monitor tsunamis.

The centre receives real-time seismic data from the national seismic network of the Indian Meteorological Department (IMD) and international seismic networks. The system detects all earthquakes of a magnitude of more than six on the Richter scale in the Indian Ocean in 13 minutes of their occurrence.

BPRs installed in the deep ocean are the key sensors to confirm the triggering of a tsunami. The National Institute of Ocean Technology (NIOT) has installed four BPRs in the Bay of Bengal and two BPRs in the Arabian Sea. In addition, NIOT and the Survey of India (SOI) have installed 30 tide gauges to monitor the progress of tsunami waves.

Seismic and sea level data are continuously monitored in the warning centre using a custom-built software application jointly developed with Tata Consultancy Services (TCS) that generates alerts in the warning centre whenever a pre-set threshold is crossed.

Tsunami warning watches are then generated based on pre-set decision support rules and disseminated to the control room of the home ministry for further dissemination to the public. For the dissemination of alerts to the ministry, a satellite-based virtual private network for disaster management support has been established.

'Since it is taking seven minutes to analyse seismic data, we are trying to get data directly from BPRs. This will reduce the warning time to six minutes,' Goel said while announcing that four more BPRs would be installed in the Bay of Bengal and two in the Arabian Sea.

A host of communication methods are employed for timely reception of data from the sensors as well as for

dissemination of alerts. The Indian Space Research Organisation (ISRO) has made an end-to-end communication plan using INSAT. A high-level of redundancy is being built into the communication system to avoid single-point failures.

Messages will also be sent by phone, fax, SMS and e-mails to authorised officials. In case of confirmed warnings, the centre is being equipped to disseminate the advisories directly to administrators, media and public through SMS, fax and e-mails.

Underlining the need to take benefits of the warning system to the people who could potentially be affected by tsunamis, Sibal said efforts were on to improve the information dissemination.

'We plan to issue alerts through SMS in the local language,' the minister said.

The efficiency of the end-to-end system was proved during the large undersea earthquake of 8.4 magnitude that occurred on Sep 12, 2007 in the Indian Ocean.

Shailesh Nayak, director, INCOIS, said a tsunami was likely to hit the Chennai coast three hours after the earthquake hit Indonesia, but a warning was issued within 30 minutes of the quake. However, the warning was later withdrawn as the undercurrent was not strong enough to trigger a tsunami.

Communication of real-time data from seismic stations, tide gauges and BPR's to the early warning centre is very critical for generating timely tsunami warnings.

This network enables early warning centre to disseminate warnings to the home ministry as well as to the State Emergency Operations Centres.

More than 200,000 people were killed in Dec 26, 2004 tsunami, which was triggered by an undersea earthquake off Sumatra, Indonesia.

Peter Koltermann, head of the tsunami unit of the Secretariat of the UNESCO Intergovernmental Oceanographic Commission (IOC), said the Indian tsunami warning centre was the best so far, adding that a system set up in the Pacific after the 1960 earthquake in Chile was outdated.

Andhra Pradesh Chief Minister Y.S. Rajasekhara Reddy promised to allot 10 acres of land for INCOIS, which plans to set up a joint marine meteorology centre and an operative oceanographic centre.