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Tsunami warning through submarine cables

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HYDERABAD: Scientists have found ways to monitor tsunamis through underwater network of communication cables, says a new study.

The study was conducted by [Manoj Nair of the University of Colorado](#), [T. Harinarayana of the National Geophysical Research Institute \(NGRI\)](#), Alexei Kuvshinov of the Swiss Federal Institute of Technology and S. Neetu of the National Institute of Oceanography.

The scientists used computer models to estimate the size of an electric field created by the force of the 2004 Indian Ocean tsunami as it travelled over major submarine cables. Salty seawater, a good conductor of electricity, generates an electric field as it moves through earth's geomagnetic field.

An NGRI press release here on Thursday quoted the scientists as saying: "We estimate that the 2004 tsunami induced voltages of about 500 millivolts (mV) in the cables. This is very small compared to a 9-volt battery, but still large enough to be distinguished from background noise on a magnetically quiet day. By monitoring voltages across this network of ocean cables, we may be able to enhance the current tsunami warning system."

It said that vessels far out in the sea may not notice the waves passing underneath at the speed of jetliner, as the wave heights are very small in the deep ocean. "This makes their detection and monitoring a challenge."

Present system

The current tsunami warning system relies on a global seismometer network to detect earthquakes that may indicate that a tsunami had formed. Deep-ocean pressure sensors and coastal tide gauges are the only tools available to detect and measure an actual tsunami. "The electric current induced in submarine cables may provide an additional way to confirm and track a tsunami," the release said.

The release pointed out that since the 2004 tsunami, the international warning system had expanded to include 47 deep-ocean pressure sensors, most of them in the Pacific area.