
Tsunami-Made Electric Current Could Offer Warning

Killer ocean waves apparently generate electric currents in the ocean that might be used to detect tsunamis quickly.

By [Larry O'Hanlon](#) | Fri Jan 22, 2010 07:52 AM ET

THE GIST:

- A new model predicts that tsunamis can generate small surges of electricity.
- Tsunamis generate electricity by moving seawater through Earth's magnetic field.
- These surges could be absorbed and detected by undersea cables.

A killer surge of sea water racing across an ocean should, theoretically, generate an electrical current that ought to be detectable by existing undersea cables, say researchers.

The idea has been successfully modeled using what's known about the 2004 Indian Ocean Tsunami. It looks like the wave moving through the Earth's magnetic field probably generated a small electrical current. That, in turn, could be absorbed by undersea cables and ought to be noticed as a telltale power surge.

If so, then undersea cables could be a quick way to detect and monitor dangerous tsunamis in the open ocean.

"This should be seen as a technical demonstration paper," said Manoj Nair of the University of Colorado, referring to his paper in the February issue of the journal *Earth, Planets and Space*. "We have a long way to go."

According to Nair and his co-authors' model, the 2004 Indian Ocean Tsunami surging along, and interacting with the Earth's magnetic field as it went, should have induced a 500-millivolt (or half of one volt) electrical current in undersea cables.

Just how the electricity is generated harkens back to the 19th century scientist Michael Faraday, who showed that water flowing through a magnetic field can induce a flow of electrons -- a.k.a. an electrical current. Ocean water is particularly good at this because it is very salty, making it a better conductor of electricity as it flows through the Earth's magnetic field, Nair explained.

As for the cables that could absorb some of that electrical flow, they are the sorts used for telecommunications across oceans. Today's modern fiber optic cables would not, of course, carry the current, Nair said, but they could just if a bit of copper wire were added to them.