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Undersea internet cables could detect tsunamis

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Recent natural disasters have made it all too clear that we need cheap and simple ways to prepare for nature's wrath. That's the thinking behind a novel approach to tsunami detection, which would use the submarine cables that supply your broadband.

Existing warning systems use pressure sensors on the seafloor to detect the weight of a tsunami in the water column above. Only five countries own suchsensor arrays – the US, Australia, Indonesia, Chile and Thailand – partly due to the high cost of installation. This lack of coverage leaves many countries vulnerable to a tsunami strike.

Now a team led by Manoj Nair at the National Oceanic and Atmospheric Administration in Boulder, Colorado, have proposed a cheaper way to detect an approaching tsunami: use undersea telecommunications cables to detect its electric field. Such fields are created as electrically charged salts in seawater pass through the Earth's magnetic field.

Computer modelling by Nair's team shows that the electric field generated by the tsunami that struck south-east Asia in 2004 induced voltages of up to 500 millivolts. Their calculations show this is big enough to be detected by voltmeters placed at the end of the fibre-optic and copper cables that carpet the floor of the Indian Ocean. The work will appear in the journal Earth, Planets and Space.