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# Detecting Tsunami Genesis and Scales Directly from Coastal GPS Stations

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Different from the conventional approach to tsunami warnings that rely on earthquake magnitude estimates, we have found that coastal GPS stations are able to detect continental slope displacements of faulting due to big earthquakes, and that the detected seafloor displacements are able to determine tsunami source energy and scales instantaneously. This method has successfully replicated several historical tsunamis caused by the 2004 Sumatra earthquake, the 2005 Nias earthquake, the 2010 Chilean earthquake, and the 2011 Tohoku-Oki earthquake, respectively, and has been compared favorably with the conventional seismic solutions that usually take hours or days to get through inverting seismographs (reference listed). Because many coastal GPS stations are already in operation for measuring ground motions in real time as often as once every few seconds, this study suggests a practical way of identifying tsunamigenic earthquakes for early warnings and reducing false alarms.

Reference

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