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cabled seismic network above the Japan Trench seismo-tsunamigenic zone

The Japan Trench, off northeast Japan, is one of the most destructive tectonic plate boundaries. The 2011 Tohoku earthquake (Mw9.0) generated there huge tsunamis that caused severe destruction along the Pacific coastline. A seafloor cabled system with 3 seismometers and 2 tsunami gages had been working above the rupture area since 1996. The system recorded the seismic waves, and the two gages caught 5 m height tsunamis before they reached the coast. The system, however, stopped just after the waves reached the coastline because the landing station was washed out, whereas the seafloor instruments and cables in marine still work after the strong seismic waves and the huge tsunamis. We restarted it in April 2015 and are going to install another new system which consists of 3 observatories in September 2015. Each of the new 2 observatories is equipped with a seismometer and a pressure gauge. The other has a seismometer and an auxiliary port which passes electronic power with data. Currently, NIED is constructing a large-scale seafloor cabled network with 150 stations and 5,700 km of cable in total, to monitor earthquakes and tsunamis around the Japan Trench, named S-net. Our two systems with the adjacent S-net stations will work as a 20-km spacing network.

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