

Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench (S-net) (3)

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Huge tsunami, which was generated by the 2011 off the Pacific Coast of Tohoku Earthquake (Mw9.0), attacked the coastal areas in the north-eastern Japan and gave severe casualties and property damages. Before this disaster, there were poor on-line real-time seismic and tsunami observation networks in sea area around Japan, and information of ground motion and tsunami heights were very limited. To break this serious situation, the project to construct a large-scale seafloor network of cable-linked observatories around Japan Trench and Kuril Trench, named Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench (S-net), started in 2011. This network is for earthquakes, tsunamis and vertical crustal deformations. Such real-time data from the seafloor observatories make it possible to forecast the next-generation early tsunami warning which could precisely predict coastal tsunami height. Also the data may make it possible to forecast an earthquake warning much earlier than the present system.

The network consists of about 150 ocean bottom observation stations. Ocean bottom fiber optic cables, about 5,700 km in total length, connect the stations to land. Observation stations with tsunami meters and seismometers will be placed on the seafloor off Hokkaido, off Tohoku and off Kanto, in a spacing of about 30 km almost in the direction of East-West (perpendicular to the trench axis) and in a spacing of about 50 - 60 km almost in the direction of North-South (parallel to the trench axis). Two or more sets of tsunami meters and seismometers will be installed in one station for redundancy. The digitized data will be transmitted to the data centers, JMA (Japan Meteorological Agency), and so on, using IP network.

This cable system is divided into 6 subsystems. The sea floor part of the coast off Boso subsystem was deployed by C/S Subaru from 9 July, 2013 to 24 October, 2013. The northern part of the coast off Sanriku subsystem was deployed by C/S KDDI Pacific Link from 4 April, 2014 to 13 August, 2014. The coast off Iwate and Miyagi subsystem is now under construction and the deployment will be finished by April 2015. Another subsystems and entire land part systems estimate completion in FY 2015.