

Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench (S-net) - Current status of the S-net construction -

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The only real time seafloor monitoring system situated inside the 2011 off the Pacific coast of Tohoku earthquake (the 2011 Tohoku earthquake) source area at the time of the earthquake was the ocean-bottom seismic and tsunami observation system off the Sanriku coast deployed and maintained by Earthquake Research Institute, University of Tokyo. Three seismic and two tsunami observatories were installed on the system. We did not have adequate observatory networks which could measure and monitor earthquakes and tsunamis on the seafloor, even though a lot of earthquakes occur beneath the seafloor around Japan.

NIED (National Research Institute for Earth Science and Disaster Prevention) has launched the project of construction of an observatory network for tsunami and earthquake on the seafloor just after the occurrence of the 2011 Tohoku earthquake. It reflected on the situation that we could not monitor the outspread of the earthquake and the tsunami outbreak on site and in real time due to poor coverage of observation in ocean area. The project has been financially supported by MEXT (Ministry of Education, Culture, Sports, Science and Technology - Japan).

The seismic and tsunami observatory network was named “S-net” . The S-net consists of 150 seafloor observatories and covers the focal region of the 2011 Tohoku Earthquake and its vicinity regions. Each observatory equips two sets of pressure gauge and 4 sets of three component seismic sensors. The 150 seafloor observatories are connected in line with submarine optical cables. And those optical cables are landed at 5 sites (Hachinohe-city, Miyako-city, Watari-town, Kashima-city and Minami-Boso-city) on the Pacific coast of Tohoku district, so then the S-net provides a real-time monitoring of earthquake and tsunami on the seafloor.

Six years has passed since the project started in 2011, the S-net seafloor observatory network is going to reach completion. Some data are being transmitted to Japan Meteorological Agency, and have been already used for surveillance of earthquakes and tsunamis. Full-scale operation of the S-net is expected to start in April, 2017.

We will report the current status of the construction of S-net seafloor observatory network in this presentation.

Keywords: S-net, seafloor observatory network, earthquake, tsunami