

Seafloor Observation Network for Earthquakes and Tsunamis along the Japan Trench (S-net) - Construction of subsea part of the S-net -

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NIED (National Research Institute for Earth Science and Disaster Prevention) has launched the project of constructing an observatory network for tsunami and earthquake on the seafloor, after the occurrence of the 2011 off the Pacific coast of Tohoku earthquake by the reflection that we could not monitor the expanse 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 observatory network was named "S-net". S-net consists of 150 seafloor observatories which are connected in line with optical cables. The total length of submarine optical cable is about 5,700km. S-net system extends along Kuril and Japan trenches around Japan islands from north to south covering the area between southeast off island of Hokkaido and off the Boso Peninsula, Chiba Prefecture. Each observatory equips two sets of quartz type pressure gauge and four sets of three-component seismometers. Digitized data from those sensors are transmitted to land and used for early warning and precise measurement for earthquakes and tsunamis.

Two Japanese cable layer ships, which are specially designed for installation and repairing of submarine telecommunication cables, have been used for installation of the S-net submarine cable system. The S-net submarine cable system including the observatories is buried 1m beneath the seafloor to prevent from interference with fishing industry in the area shallower than 1,500m water depth. Those cable layer ships have capabilities of burying submarine cables. The S-net submarine cable system was originally designed to be deployed with the cable layer ships.

Three of authors are now board on C/S SUBARU, which is one of two cable layer ships described above, and in charge of installation of a subset of the S-net submarine observatory network which covers the area between east off Aomori Prefecture and south off island of Hokkaido. Installations of 23 observatories and about 800km length optical cable on the seafloor will be completed shortly after.

We will report the progress of the construction of S-net submarine cable system in this presentation.

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