

## Observation of submarine earthquakes and tsunamis with permanent deep seafloor seismic observatory

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Great earthquakes occurred repeatedly in the Kurile subduction zone. Submarine earthquakes in the subduction zone was, however, poorly resolved because no permanent seismic observatory was deployed there.

In order to monitor seismicity and tsunami in the southern Kurile subduction zone, we developed a permanent cable-connected real-time observatory and installed it at the continental slope southeast off Hokkaido, in July 1999.

Several small-to-moderate sized earthquakes have been occurring within short epicentral distances of hundreds kilometers from the observatory since the commencement of the observation in August 1999. We will present here observed data such as seismic waveforms and tsunami gauge data related to these events, and will discuss performance of the observatory.

In the Kurile subduction zone, in which the Pacific plate is subducting beneath the Kurile Islands and Hokkaido, seismicity is very high. Great earthquakes with  $M > 7.5$  occurred repeatedly there and tsunamis generated by these great earthquakes caused loss of life and property in coastal regions around the northwest Pacific. Submarine earthquakes in the subduction zone was, however, poorly resolved because no permanent seismic observatory was deployed there.

In order to monitor seismicity and tsunami in the southern Kurile subduction zone, we developed a permanent cable-connected real-time observatory and installed it at the continental slope southeast off Hokkaido, Japan along the southern Kurile subduction zone, in July 1999. The observatory consists of three ocean bottom broadband seismometers, two tsunami ( pressure ) gauges, a cable end station for monitoring of deep sea floor environments, and two branch MUX units. Acquired data are transmitted from these units to the shore via fiber optical cable.

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