

Development of a web-application system for seismic waveform data observed at real-time with the seafloor seismic network, DONET

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It is well-known that devastating earthquakes have struck the Southwest coast of the Japanese Islands repeatedly in the past. Of these earthquakes, those that occurred in the Nankai Trough region are very significant, because they have caused extreme hazards in these coastal areas due to large tsunamis. In order to detect tsunamis in the earthquake source areas, JAMSTEC deployed the seafloor seismic network, DONET in 2010. The DONET system consists of an array of 20 stations in total, each of which are composed of multiple types of sensors, including strong-motion seismometers and quartz pressure gauges. The recorded data are transferred to a land station through a fiber-optic cable in real time. We have developed a web application system, REIS (Real-time Earthquake Information System) that provides seismic waveform data to some local governments close to the Nankai Trough. The main purpose of REIS is to inform local government officers as to what has actually occurred in the Nankai trough region when there is a large earthquake. REIS itself is not designed to issue early tsunami warnings, but it should be useful for local government officers to get every possible piece of information to quickly assess large earthquakes. We have ensured that the display of real-time waveform data from DONET is performed with a maximum delay time of approximately 2 seconds, even though we do not use dedicated internet connection at the REIS users' sites. This delay time is considered appropriate to allow local government officers to promptly identify current seismic activity around Nankai Trough region. In 2016, the network has been enlarged to the west of DONET and about 30 new stations, DONET2, are added to the network. We have renovated the REIS system so that it may handle additional seismic waveform data without any problems. Also, since April 2016, the ownership of DONET has officially transferred to the National Research Institute for Earth Science and Disaster Prevention (NIED). JAMSTEC has a contract for the operation of DONET with NIED and will keep the operation of REIS and event data system as it is.

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