

Enhancement of Earthquake and Volcano Monitoring and Utilization of Disaster Mitigation Information in the Philippines

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We launched a five year (2010-2014) project of enhancing earthquake and volcano monitoring capabilities and promoting effective utilization of the disaster information in the Philippines, under SATREPS (Science and Technology Research Partnership for Sustainable Development) program funded by JST and JICA.

We install broadband and strong motion seismometers to selected stations of the existing seismic network and an automated waveform analysis system to promptly obtain the source parameters of large earthquakes. We deploy a prototype network for rapid earthquake intensity notification system using a low-cost strong-motion sensors and the Internet. We also carry out a feasibility study of Earthquake Early Warning in the Philippines.

We evaluate earthquake generation potential along Philippine Trench, Cotabato Trench and the Philippine Fault by carrying out campaign and continuous GPS measurements in Mindanao. We also carry out trench excavation, coastal terrace survey and tsunami deposit survey to clarify the sizes and recurrence periods of large historical earthquakes.

We install broadband seismometers, infrasonic sensors, GPS receivers and electro-magnetic sensors at Taal and Mayon volcanoes and transmit the data to Manila in real time. Broadband seismic and infrasonic waveforms and GPS data are analyzed to determine source parameters of volcano-seismic events, to monitor eruptive activities, and deformation of the volcanoes.

Continuous magnetic observation and magneto-telluric (MT) survey will provide information of shallow hydrothermal systems and ascent of hot magma, and temporal variation of thermal and electric conductivities.

Obtained information will be provided to the public through a newly developed earthquake and volcano information portal site on the Web. The Rapid Earthquake Damage Assessment System (REDAS) developed by PHIVOLCS is enhanced to quickly estimate strong ground motions, liquefactions and tsunamis from the earthquake source information. A simple seismic diagnosis method for houses in the Philippines will also be developed. We promote effective utilization of the information by the national and local governments, media, lifeline companies, and local communities by hosting seminars in order to enhance earthquake and volcano disaster preparedness of the Philippines.

Keywords: Philippines, Earthquake Observation, GPS Observation, Volcano Observation, Disaster Mitigation Information