

Design and Implementation of the National Seismic Monitoring Network in the Kingdom of Bhutan

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Bhutan-Himalayan district is located along the plate collision zone between Indian and Eurasian plates, which is one of the most seismically active region in the world. Recent earthquakes such as M7.8 Nepal earthquake in April 25, 2015 and M6.7 Imphal, India earthquake in January 3, 2016 are examples of felt earthquakes in Bhutan. However, there is no seismic monitoring system established in Bhutan, whose territory is in the center of the Bhutan-Himalayan region.

In this project, we are establishing the first national permanent seismic monitoring network in the Kingdom of Bhutan that is utilized for not only for seismic disaster mitigation of the country but also for studying the seismotectonics in the Bhutan-Himalayan region which is not precisely revealed due to the lack of observation data in the past.

We started establishing permanent seismic monitoring network of minimum requirements which is composed of six (6) observation stations in Bhutan with short period high sensitivity and strong motion seismometers as well as three (3) broad-band seismometers. Obtained data are transmitted to the central processing computers in the DGM (Department of Geology and Mines, Ministry of Economic Affairs) office in Thimphu. In this project, DGM will construct seismic vault with their own budget which is approved as the World Bank project and Japan team assists the DGM for site survey of candidate observation site, designing the observation vault, and designing the data telemetry system as well as providing instruments for the observation such as seismometers and data recorders.

We already started the operation of the first telemetry seismic station located in Thimphu city, the capital in western Bhutan, and will soon start operation in Bumthang district, central Bhutan. Continuous seismic record from Thimphu station is already stored in the data center in DGM. We also deployed two offline seismic stations with short period seismometers in Gasa (Northern Bhutan) and Wangdu (Central) to assist permanent seismic network.

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