

Integrated research on great earthquakes and disaster mitigation in Nepal Himalaya

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This project has been started in 2016, and will continue for five years under the Science and Technology Research Partnership for Sustainable Development (SATREPS) program of the Japan Science Technology Agency (JST) and the Japan International Cooperation Agency (JICA). Since Nepal is located at a convergent boundary, where tectonic plates collide with each other, it is suffering from great earthquakes and steep topography. Hazards of great earthquakes can get larger by mountainous topography such as basins. In addition, the population concentration to basins increases seismic vulnerability. However, few experts in seismology, which is a geophysical discipline for earthquake studies, have been struggling against the situation mentioned above. Consequently, Nepal is one of the highest risk countries in the world against earthquakes. It is urgent for Nepal to perform an integrated research on great earthquakes and disaster mitigation, in collaboration with Japanese researchers.

Based on these backgrounds, the overall goal of the project is set to mitigate future earthquake disasters in Nepal. The project consists of research activities on seismic potential evaluation, ground motion prediction, seismic hazard assessment, earthquake observation system, and education and policies (Figure). 1. We evaluate the seismic potential of the Central Seismic Gap in the Main Himalayan Thrust and construct the source model of a future great earthquake. 2. We model the velocity structure in the Kathmandu Valley and perform scenario ground motion predictions using the constructed source and velocity structure models. 3. We assess the seismic hazards in the Kathmandu Valley due to the future great earthquake. 4. We enhance the seismic observation network and earthquake data processing system. 5. We educate graduate students and experts in seismology and earthquake engineering, and recommend policies for earthquake disaster mitigation.

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