

Now a reality: Integrated earthquake monitoring in Myanmar

Case Study

December 2014

Nay Pyi Taw, Myanmar – Resting on one of the main earthquake belts in the world, the growing cities of Myanmar including Mandalay and Yangon are at constant risk of earthquakes. The active fault line has not exhibited significant seismic activity for the past 50 to 75 years, which might mean that the stress in the fault is accumulating and could result in a strong seismic event. The rapid urbanization is increasing the number of people and infrastructure at stake in the earthquake-prone cities.

“The risk of earthquakes has significantly increased due to the urbanization. A big earthquake hitting a densely populated city could have devastating impacts,” says Dr. Peeranan Towashiraporn, Director at Asian Disaster Preparedness Center (ADPC).

ADPC has been improving Myanmar’s resilience to natural hazards since the devastating Cyclone Nargis hit the country in 2008. A recent project conducted with support from the Royal Norwegian Ministry of Foreign Affairs focused on improving the country’s capacity in earthquake monitoring. ADPC together with experts from the University of Bergen in Norway worked closely with the Department of Meteorology and Hydrology of Myanmar to improve the systems for seismic instrumentation, data collection, and analysis, as well as to identify the best locations for new earthquake monitoring stations.

“The series of training workshops and hands-on demonstrations has resulted in a significant change in the way Myanmar monitors earthquakes,” comments Dr. Towashiraporn.

The new digital database facilitates research

Seismic activity is currently monitored at nine stations around Myanmar. A variety of different earthquake monitoring systems is in use and the



Photo by ADPC

Professor Lars Ottemøller from the Department of Earth Science at the University of Bergen demonstrates the usage of the new digital cataloging system at the National Earthquake Data Center.



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difficulty of integrating them poses a challenge for the Department of Meteorology and Hydrology. To add to the workload, some of the stations still rely on analog technology and are currently being converted into digital – station by station.

“Initially the local officials were hesitant about moving to a digital system, but we were able to support the transition with a comprehensive capacity building program conducted in cooperation with ADPC,” says Professor Lars Ottemøller from the Department of Earth Science at the University of Bergen. “There are obvious advantages in recording and processing data digitally, and this is a must to initiate scientific research,” he adds.

“Before the training, the National Earthquake Data Center used a paper database for earthquake cataloging, but now we are able to move into using a digital one. We may say that this training established our digital database system,”

says Mr. Tun Lin Kyaw, Deputy Superintendent of the Department of Meteorology and Hydrology.

ADPC, by involving experts from the University of Bergen, initiated the integration of the different seismic data processing systems in early 2014 and built the capacity of the local staff in the efficient usage of the systems through classroom training, hands-on exercises, and field demonstrations. The officials in Myanmar also had the opportunity to visit the University of Bergen in Norway and learn from renowned researchers in the field.

The department now has the capacity to process data from the different systems jointly and to define the location and magnitude of seismic events.

Finding appropriate locations for new stations

ADPC and the University of Bergen also trained the local technical officers to conduct site surveys in order to choose appropriate locations for new monitoring stations. In this task, it is important to detect background noise and vibration that could make instruments incorrect while detecting and measuring earthquakes.



With support from ADPC and the University of Bergen, the Department of Meteorology and Hydrology is working to process data from the different systems jointly and to define the location and magnitude of seismic events.

“We don’t have enough knowledge about site selection for new stations so we conducted training in Meiktila and Mandalay to teach our staff to measure noise that could disrupt equipment. We still need more time for this kind of training,”

said Dr. Yin Myo Min Htwe, Assistant Director of the Department of Meteorology and Hydrology.

With support from various donor countries, the Department of Meteorology and Hydrology is planning to establish eleven additional earthquake monitoring stations by the end of 2015. These stations will utilize the latest technology – different from the technologies currently in use – presenting another integration challenge. ■



Department of Meteorology and Hydrology of Myanmar has been able to significantly improve its capacity to detect the location and magnitude of seismic events.

“It is good to work with ADPC now so we can eventually be independent. This project has established our new digital database system and we can now generate digital maps,”

said Dr. Yin Myo Min Htwe.



Future aim: independence in earthquake monitoring

Myanmar is planning to establish more earthquake monitoring stations that can immediately detect the location and magnitude of an earthquake.

With help from Asian Disaster Preparedness Center (ADPC) and the University of Bergen in Norway, the Department of Meteorology and Hydrology of Myanmar hopes to meet international standards.

“It is good to work with ADPC now so we can eventually be independent. This project has established our new digital database system and we can now generate digital maps,” said Dr. Yin Myo Min Htwe, Assistant Director of the Department of Meteorology and Hydrology, referring to ADPC’s project on improving Myanmar’s capacity in earthquake monitoring.

To establish a reliable seismic network, all stations in the country must be fully integrated into it. This requires sustainably building the capacity of technical officers of the Department of Meteorology and Hydrology in utilizing the right tools to analyze data for improved earthquake monitoring and information dissemination.

“We need more upgrades for our instruments, human resources and the capacity building of our staff,” said Ms. Tin Yi, Director at Department of Meteorology and Hydrology.

The SeisAn seismic analysis system that was introduced to the officials in Myanmar by the University of Bergen and is now in use at the Nay Pyi Taw processing center, can cross-check the processed data with various other international sources such as those in the United States, Europe and Thailand.



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