MYANMAR TRIP REPORT

Activity: SeisComp3 training, ShakeCast server installation and training, training on building survey for ShakeCast customization, and technical inputs to the 11th Monsoon Forum
Project: Strengthening of Myanmar's Multi-Hazard Early Warning System
Period: 11-15 November 2013
Submitted by: Teraphan Ornthammarath and Bebz Barry Abonales

1. Objectives

- SeisComp3 Training for NEDC staffs
- ShakeCast server installation
- ShakeCast introduction, training, and maintenance training for DMH staffs
- Training on building survey for ShakeCast customization
- Earthquake preparedness presentation at 11th Monsoon Forum

2. Highlights and Outcomes

2.1 SeisComp3 Training

A two-day hands-on training on SeisComp3 for earthquake data acquisition and analysis was delivered. The training included:

- Basic seismology
- Interpretation of ground motion data from different earthquake events (e.g. how to differentiate between shallow and deep events, how to interpret ground motion data from megathrust earthquake, etc.)
- Determination of earthquake magnitude using SeisComp3
- Hands-on exercises on earthquake data processing, using SeisComP
- SeisComp3 configuration, troubleshooting, and maintenance

Figure 1. SeisComp3 training at DMH office, Nay Pyi Taw

2.2 ShakeCast Server Installation and Training

One ShakeCast server was installed at NEDC. In addition, a two-day ShakeCast hands-on training was provided to NEDC staffs. The training consisted of:

- o Introduction on ShakeCast
- o Reading and interpretation of the rapid earthquake damage assessment provided by ShakeCast
- o Importing building property, township, and population data into ShakeCast
- o Exercise on ShakeCast operation, using past moderate to big earthquake events in Myanmar
- o ShakeCast configuration, troubleshooting, and maintenance
- o Building damage classification for different building types, based on observed general characteristics of buildings in Nay Pyi Taw
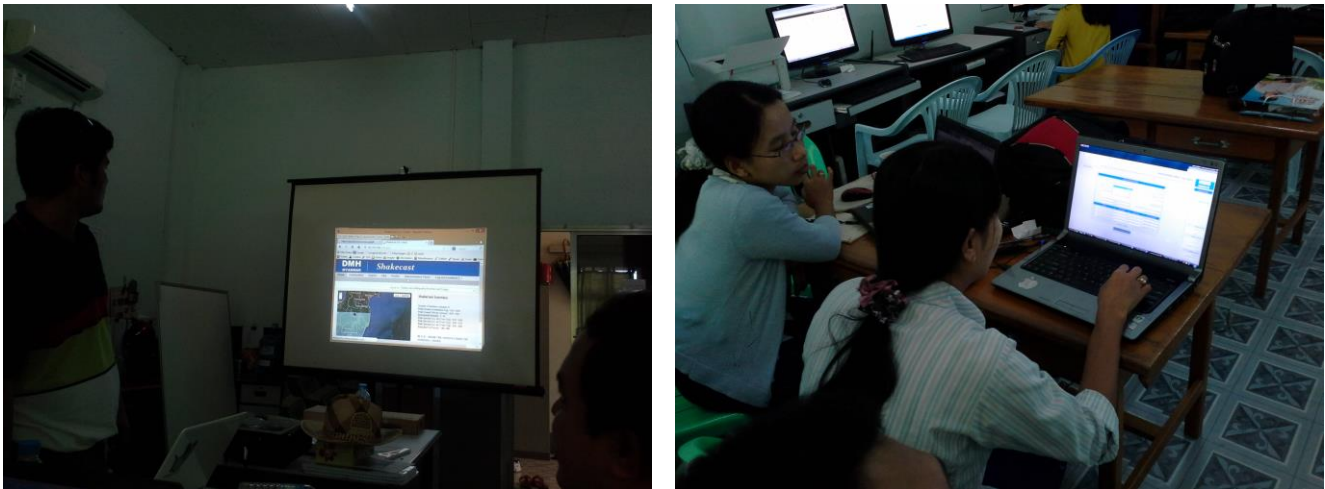

Figure 2. ShakeCast Training at DMH office, Nay Pyi Taw (L); exercise on township data input into ShakeCast (R)

2.3 Training on Building Survey for ShakeCast Customization

Three NEDC staffs were trained on survey of building properties. Participants were taken around Nay Pyi Taw's central business district center (CBDC) to identify building materials and number of storeys. Participants were asked to classify the potential damage based on ocular inspection of building structure, using the knowledge gained from the ShakeCast training.

From observation, most buildings within the CBDC were constructed after 2005, when Nay Pyi Taw became a capital city of Myanmar. Due to increasing price of land, construction materials, and labor, these new buildings were constructed with small column girth (in order to save on construction cost), high column (in order to have larger space for commercial products), unsymmetrical shape, and non-engineered design. These buildings are categorized as having strong beam, but weak column, which could result in total collapse of the ground floor, should there be a large earthquake with epicenter close to the city. The team notes that Nay Pyai Taw is located along Sagaing fault, which has potential to generate earthquake magnitudes larger than 6.5. Hence, buildings of this construction type could be easily damaged. This assessment indicates:

- o Low public awareness on earthquake hazard vis-à-vis the Sagaing fault
- o Construction methods do not consider earthquake risk

Figure 3. Non-symmetric building with long column at ground floor
in Central Business District of Nay Pyi Taw

Figure 4. A typical commercial building in Nay Pyi Taw, with long but small column girth
at the ground floor (strong beam and weak column building category)

2.4 Data Collection for ShakeCast Customization

Location-specific population data for Yangon and Nay Pyi Taw, the pilot site for ShakeCast identified during the inception meeting, have been received from GAD. These data have been used for data input into ShakeCast during the training. Similar data is needed for the whole country, for generating more useful results from ShakeCast.

2.5 Technical Inputs at the 11th Monsoon Forum

Noting the relatively low awareness on earthquake risk in the country, and in response to user demands from past Monsoon Forums for a learning session on earthquake, RIMES delivered a presentation in the 11th Monsoon Forum, held on 13 November 2013, on:

- o   Neo-tectonic setting of Myanmar
- o   Assessment of earthquake hazard and risks
- o   Cost and benefit of earthquake risk mitigation

Numerous questions were received on earthquake risks in Nay Pyi Taw vis-à-vis the Sagaing fault. The topics on earthquake risk assessment and mitigation aimed at increasing decision-makers' understanding of the hazard and associated risks, and mitigation options that are available to them.

3. Further Action Needed

1) DMH has to ensure stable Internet connection for optimum SeisComp3 and ShakeCast performance.
2) Integration of ShakeCast information in NEDC SOP for dissemination
3) Table-top exercise on ShakeCast information, involving NEDC, RRD, and GAD, should be performed.
4) Increased public education and awareness on the country's earthquake risk from Sagaing fault.