



## Seismic structure of Taal volcano

Shuei-Huei You (1), Yuancheng Gung (1), Konstantinos I. Konstantinou (2), Cheng-Horng Lin (3), and Emmy T. Y. Chang (4)

(1) Department of Geosciences, National Taiwan University, Taipei, Taiwan (r95224102@ntu.edu.tw), (2) Department of Earth Sciences, National Central University, Taoyuan, Taiwan, (3) Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan, (4) Institute of Oceanography, National Taiwan University, Taipei, Taiwan

In order to investigate seismicity and tectonic structure under Taal volcano, Philippines, a temporary seismic array consisting of 8 stations was deployed in this area since March 2008. As a pioneer seismic study in this area, our first goal is to build a robust 1-D velocity model using local earthquakes. In the mean time, we also apply ambient noise cross-correlation technique to the continuous records, aiming to search for the potential volcanic structure perturbations. While we were trying to retrieve Empirical Green's functions from cross-correlation functions (CCF) of ambient noise, unexpected linear drifting of clock time are clearly identified by the gradual shifting of symmetric center of daily CCFs. The clock errors have been further confirmed by comparing earthquake signals from teleseismic events. The errors are corrected before further data processing. Over 1100 local events are recorded in the duration from March 2008 to November 2008. Phase pickings from about 450 events are used to invert for event locations and 1-D velocity model by using the standard packages HYPO71 and VELEST. The obtained 1-D velocity model of Taal volcano is lower than the global average (AK135) at the depths less than 10 km, and most events ( $\sim 90\%$ ) are also located at this shallow depth range. Two groups of seismicity are noticed, with the major one clustered under the western shore of Taal lake ranging, and the other spread from Main Crater Lake to the eastern of Taal volcano complex.