

The ambient noise analysis for the Tatun Volcano Group, Northern Taiwan

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The Tatun Volcano Group (TVG) locates in the north part of Taiwan, where is close to the metropolitan Taipei with distance less than 20 km. Thus, the monitoring for the potential activity is required for geohazard assessment. Near forty broadband seismic stations have been installed in the TVG area to monitor the volcanic activity up to recent time. The dense seismic network with long-term continuous seismic data would provide the information to study the temporal or spatial change of properties of the TVG. In the study, we use ambient noise between stations to determine the temporal variation related to the 2014 M_L 4.0 Shilin earthquake, which is one of the largest event occurred in the TVG area. The daily empirical Green's functions are derived from cross-correlation of continuous vertical-component data during the time period one year before and after the earthquake occurrence. The time shift between specified and reference empirical Green's function is then estimated to detect the small seismic velocity change of the medium associated to the Shilin earthquake. Besides, the auto-correlation of individual stations nearby the main shock epicenter is also applied to improve the ability of detection.

Keywords: seismic ambient noise, cross-correlation