

Ambient Noise Analysis across the Tatun Volcanic Area of Northern Taiwan

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Abstract

We apply ambient noise surface wave analysis to the continuous waveform records acquired from the seismic array sited in the Tatun Volcanic Area (TVA) from January 2004 to September 2005. The seismic array consisting of 8 seismic stations is initiated in May 2003 by Lin et al. (Lin et al., 2005). Each station is equipped with a short-period three-component sensor to enhance the understanding of the seismic characteristics of TVA. The Green's functions of elastic waves can be retrieved by computing cross-correlations of continuous waveform records between station pair (e.g. Shapiro and Campillo, 2004). The stacked cross-correlation results are then treated as surface waves traveling between the station pairs, and their dispersion characteristics of group-velocity are analyzed. We present the dispersion curves for each path with a frequency-time analysis method in the period band from about 0.2 to 4 second. From the dispersion characteristics, we can extract the information of velocity structure of each path without seismic events. Finally, we demonstrate the anomaly below TVA with group velocity map, and compare this with the result from the observation of micro-earthquakes in TVA (Lin et al., 2005).

Reference

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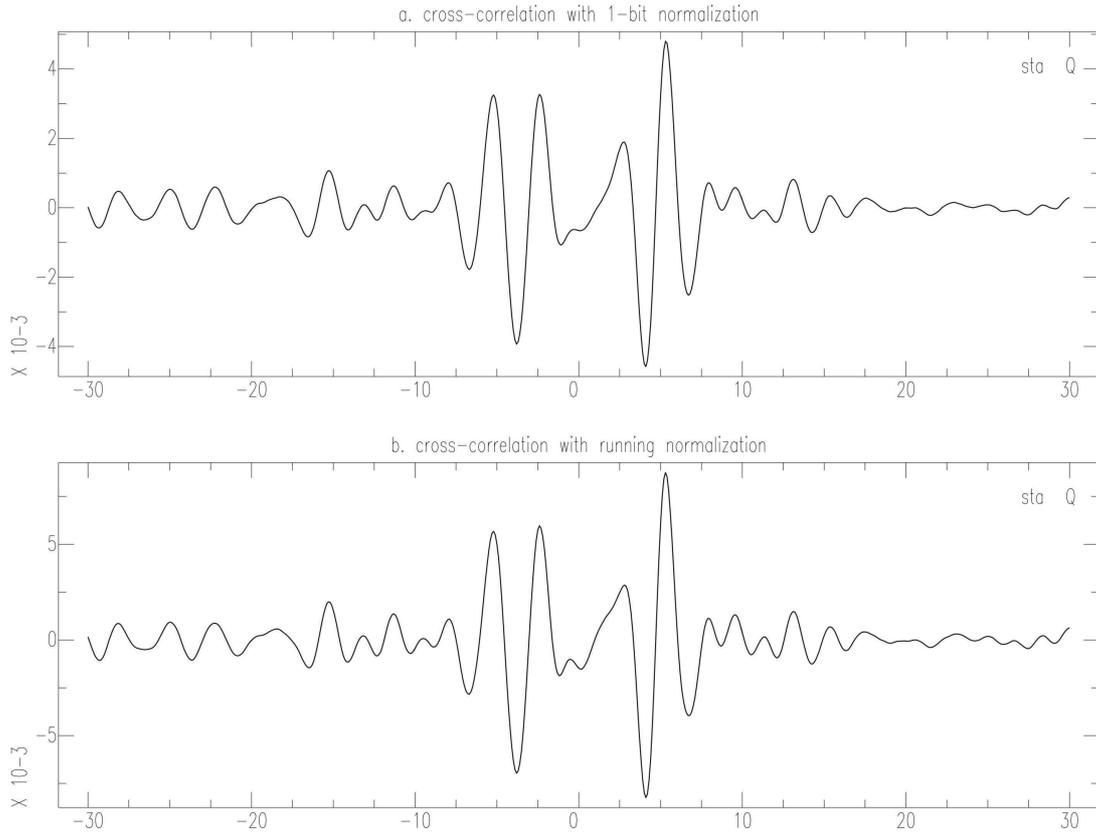


Fig.1 Stacking for a month of cross-correlations of the continuous waveform records between YM04 and YM06 with different normalization on May 2005. a. 1-bit normalization, b. running normalization.