



Find Low-Frequency Earthquakes in Southern Taiwan Triggered by the 2005 Mw8.6 Nias Earthquake from Micro-Tremor Records

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We utilize a matched filter technique to detect a total of 41 low-frequency earthquakes within 700-second waveform of triggered tremor recorded in the southern Central Range in Taiwan during the surface waves of the 28 March 2005 Mw8.6 Nias earthquake. Recent studies have shown that deep “non-volcanic” tremor consists of many low-frequency earthquakes (LFEs) with weak P and S waves, which provide an exciting new approach to accurately locate tremor. Next, we also relocate these LFEs based on differential P- and S-wave arrival times and absolute S-P times at nearby stations. The depth distributions of LFEs concentrate at depth of 12-38 km below the background seismicity and above the Moho depth inferred from receiver functions. We find that the locations of LFEs are close to the downward extension of the Chaochou-Lishan fault and near a region of relatively high V_p/V_s ratios from recent 3D seismic tomography. We suggest that the triggered LFEs and tremor reflect possible deep fault slips at the lowermost crust that are facilitated by elevated fluid pressures and dynamic stresses from teleseismic events.

Keywords: deep fault slip, low-frequency earthquake, triggered tremor