

Aftershocks Properties of the 2010 ML 6.4 Jiashian earthquake in Southern Taiwan

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Large earthquakes often occur in unexpected locations and are followed by numerous aftershocks. Nevertheless, the aftershock properties of large earthquakes are not usually discovered in detail because a significant portion of aftershock sequences is missing in existing earthquake catalogues, mainly due to overlapping arrivals of seismic waves from these events. We examined waveform data of aftershocks of the 2010 ML 6.4 Jiashian earthquake recorded by the 19 stations of the Central Weather Bureau Seismic Network. We utilize a matched filter technique which Peng and Zhao (2009) used in detecting early aftershocks to discovery missing aftershocks. We use waveforms of 574 aftershocks as templates and scanned three-day data since the original time of mainshock. We identify ~ 4 times more aftershocks than listed in the catalogue of Central Weather Bureau. We find that newly detected events mainly concentrated within first 24 hours and most of them occurred with magnitudes < 2.0. The aftershocks migrated westward from the epicenter of mainshock, ~ 90 degree counterclockwise from the trend of adjacent faults. The seismicity rate of detected aftershocks is proportional to the inverse of time since the mainshock following the Omori Law.

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