

New Seismic Database from the Continuous Recording of the Taiwan Strong Motion Instrument Program and its Potential Application

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The Taiwan Strong Motion Instrument Program (TSMIP) of Central Weather Bureau (CWB) has installed more than 700 seismometers near two decades which covered the entire Taiwan to record strong motions for seismic hazards, wave propagation and earthquake source physics investigation. Traditionally, those instruments are operated as the trigger mode to detect local events with significant ground shaking. Usually, regional and teleseismic events are rarely reported by TSMIP. However, after several generations' upgrade, new TSMIP seismometers have equipped GPS and provided real time data transmission function through internet. In 2018, TSMIP has selected 356 stations (at least one station for each country) to require seismic signal continuous transmission to CWB through the campus internet network for the purpose of quick report seismic intensity of an earthquake. The continuous recording string of TSMIP created a new database of seismic events based on earthquake catalog. Regional and teleseismic events can be archived through global seismic catalogs without to rely on triggering. In this study, we will present several successful cases to demonstrate the well recording of large regional and teleseismic events from TSMIP. Although the raw data do not show clear seismic signal as local event, however, its signals can be well presented after de-spike and low pass filter processing. For the dense spatial distribution of TSMIP stations, the recording data provided a new data set of seismic travel times and waveforms which was never reported in Taiwan and proposed many potential applications to study the crustal structure and wave propagation of Taiwan and the same as deep earth model.

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