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Strong Ground Motion Simulation and Source Modeling of the December 16, 1993 Tapu Earthquake, Taiwan, Using Empirical Green's Function Method

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The Tapu earthquake (ML 5.7) occurred at the southwestern part of Taiwan on December 16, 1993. We examine the source model of this event using the observed seismograms by CWBSN at eight stations surrounding the source area. An objective estimation method is used to obtain the parameters N and C which are needed for the empirical Green's function method by Irikura (1986). This method is called "source spectral ratio fitting method" which gives estimate of seismic moment ratio between a large and a small event and their corner frequencies by fitting the observed source spectral ratio with the ratio of source spectra which obeys the model (Miyake et al., 1999). This method has an advantage of removing site effects in evaluating the parameters. The best source model of the Tapu mainshock in 1993 is estimated by comparing the observed waveforms with the synthetic ones using empirical Green's function method. The size of the asperity is about 2.1 km length along the strike direction by 1.5 km width along the dip direction. The rupture started at the right-bottom of the asperity and extended radially to the left-upper direction.