

Observation of source rupture directivity and site effect using earthquake early warning systems

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The National Center for Research on Earthquake Engineering (NCREE) in Taiwan has developed an on-site Earthquake Early Warning System (NEEWS). The Meinong earthquake with a moment magnitude of 6.53 and a focal depth of 14.6 km occurred on February 5, 2016 in southern Taiwan. It caused 117 deaths, injured 551, caused the collapse of six buildings, and serious damage to 247 buildings. During the Meinong earthquake, the system performance of sixteen NEEWS stations was recorded. The directivity of the earthquake source characteristic and also possibly the site effects were observed in the diagram of the distribution of PGA difference between the predicted PGA and the measured PGA. In addition, based on a preassigned PGA threshold to issue alarms at different stations, no false alarms or missed alarms were issued during the earthquake. About 4 seconds to 33 seconds of lead-time were provided by the NEEWS depending on the epicenter distance.

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