The Performance of Earthworm Based Earthquake Alarm Reporting system in Taiwan

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The Central Weather Bureau of Taiwan has operated an earthquake early warning (EEW) system and issued warnings to schools and government agencies since 2014. Because the real-time seismic data streams are integrated by the Earthworm software, some EEW modules were created under the Earthworm platform. The system is named Earthworm Based Earthquake Alarm Reporting (*e*BEAR) system, which is currently operating. The *e*BEAR system consists of new Earthworm modules for managing P-wave phase picking, trigger associations, hypocenter locations, magnitude estimations, and alert filtering prior to broadcasting. Here, we outline the methodology and performance of the *e*BEAR system. The online performance of the *e*BEAR system indicated that the average reporting times afforded by the system are approximately 15 and 26 s for inland and offshore earthquakes, respectively. Comparing to the earthquake catalog, the difference of the epicenters are less than 10 km for inland earthquakes; the difference of the magnitude are about 0.3. No false alarms generated by the system, but there were three false alarms issued by human. Due to the wrong operations, the EEW information created by off-line test were sent. However, we have learned from it and improved the standard operation procedure in the EEW system.

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