Application of on-site EEW technology in South Korea.

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The potential seismic hazard in South Korea is known to be that mid-sized earthquakes could occur nationwide. Because the damages of mid-sized earthquake are concentrated only in the vicinity of the epicenter, on-site EEW technology is known to be effective as a means to reduce absence of alarm near the epicenter and to ensure safety from earthquake threat. This study aims to simulate on-site EEW suitable for South Korea's seismic observation environment and verify its reliability. Seismic observations of 267 events occurred in South Korea, have been collected over the past five years for the simulation. Filter Picker was utilized to detect P-wave features from more than 37,000 data sets using a time window suitable for mid-sized earthquakes. The ground noises are removed from the detected P-waves, and a linear empirical relationship between the maximum P-wave amplitudes in vertical direction and observed PGVs on the base rock are derived. Convert the forecasted and observed PGVs to MMI, respectively. Assuming a successful prediction within the MMI±1 margin of error by comparing the two values, the results of this study showed an 80% success rate in the range above MMI 4. Through this study, feasibility and performance of on-site EEWS using domestic earthquake records were verified in South Korea. It is expected that this will contribute to the reduction of earthquake damage near the epicenter through an on-site warning in Korea.