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T1.5-P15. Developing an early warning system using first arrivals of P wave of earthquakes recorded in Iran

Seismic records of Iran indicate the occurrence of many devastating seismic events, some of which were in densely populated areas in the vicinity of major faults. Iran, as an example, is surrounded by many active faults. Therefore, an earthquake early warning can be a useful short term solution to reduce damages and potential casualties of large earthquakes. In this study one of the necessary factors for early warning is investigated. We need to evaluate the accurate estimation of magnitude using initial 3 seconds of P wave. This goal requires systematic procedure calculating empirical relationship between estimated magnitude and seismic wave arrivals. Generally, calculated magnitude with initial seismic wave arrivals are underestimated and need a regression equation to reach the real magnitude. In this study, using first 3 seconds of initial arrival waves of significant earthquakes located around Iran, local magnitude is calculated and calibrated to real magnitude scale. For this purpose, ground motion data was used from Iran Building and House Research Center (BHRC). Around 30 big earthquakes with their aftershocks were selected. Processing gives a relation of M(real)=1.223M(P Arrival)-0.6579 to estimate rapid magnitude evaluation using p arrival waves.

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