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Development of a local magnitude scale for South Korea

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A local magnitude scale in South Korea is developed using synthetic Wood-Anderson seismograms from local earthquakes in the distance range of 10-600 km recorded by broadband seismic networks, operated in South Korea between 2001 and 2016, The magnitudes of the earthquakes ranged from ML 2.0 to 5.8 based on the catalog of the Korea Meteorological Administration. Total numbers of events and seismic records used in this study are 269 and 6,327, respectively. Wood-Anderson peak amplitudes measured on the records whose signal-to-noise ratios are greater than 2.0. We simultaneously estimate the distance attenuation, the station correction terms, and the magnitude of the events by parametric and non-parametric methods for the vertical peak amplitudes and the geometrical mean of the two horizontal peaks, respectively.