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1.5-P13. Determination of Local Magnitude, ML Scale for Uganda

We derived ML scale for Uganda using waveform data from temporary broadband seismic network deployed in Uganda and permanent IMS broadband station, AS103 MBAR. We used 54 earthquakes recorded between July 2007 and November 2008. We first determined hypocenters of these earthquakes using P and S phase arrivals, most of their epicenters associated with the western rift of the EARS. To develop ML, we removed instrument responses in waveforms and applied frequency response of the standard Wood-Anderson torsion seismograph for amplitude measurements. We obtained 529 amplitude data from horizontal components of 52 earthquakes whose focal depths are up to 34 km. We performed simultaneous linear inversion to determine coefficients of distance correction function and local magnitudes to obtain the ML formula. We observed that the obtained coefficients of our formula are smaller than those for Southern California, and closer to those obtained for Tanzania. We also compared hypocenters of 7 earthquakes determined by this study to those reported by NEIC's PDE catalogs and IDC bulletins, and compared ML magnitudes of 4 earthquakes obtained from this study to the mb magnitudes determined and reported by USGS in NEIC's PDE catalogs. They do not differ much and roughly consistent with each other.

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