

# RELATIONSHIP BETWEEN MOMENT MAGNITUDE $M_W$ AND SURFACE WAVE MAGNITUDE $M_S$ FOR THE CAUCASUS REGION AND ADJACENT AREAS

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**Abstract.** Using CMT and NEIC catalogues and data characterizing spectral and source parameters of earthquakes of Northern Caucasus that are published by the Geophysical Survey, Russian Academy of Sciences, correlation relationships between magnitudes  $M_S$  and  $M_W$  were obtained for the Caucasus region in a surface wave magnitude range  $2.2 \leq M_S \leq 7.3$ . It was showed that for  $M_S \leq 5.1$  in the region studied and adjacent areas, the usage of CMT data in the construction of dependence  $M_W$  ( $M_S$ ) is incorrect.

The basic conclusion of the work is that magnitudes  $M_W$  and  $M_S$  are connected by a uniform relationship in a rather wide interval: from events with  $M_S \approx 2.0-2.5$  up to the values of  $M_S$  scale saturation. Due to limited data set available on weak and moderate earthquakes ( $M_S \leq 5.1$ ) the above conclusion can be considered as preliminary and requires verification and additional adjustment in process of updating the data.

**Keywords:** Earthquake catalogues, correlation relationships, moment magnitude, surface wave magnitude, scalar seismic moment.

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