

Magnitude Calibration of the Seismographic Sub-network in NW Saudi Arabia

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ABSTRACT

Two magnitude formulas were developed for the seismographic sub-network in NW Saudi Arabia. These were empirically determined through magnitude calibration of the amplitude and total trace duration data from the seismic stations of the network. The relationship found between magnitude and duration indicates negligible correction factor for distance of earthquake events less than 200 km epicentral distance from the network, while for the adapted local magnitude scale in terms of sustained maximum amplitude can be used beyond 200 km epicentral distance. These findings make the two magnitude scales supplementary to each other and their complimentary roles could possibly cover a wider area in the observation of earthquake events in the eastern Mediterranean region. A wider scatter plot of data is observed to occur from trace duration compared to amplitude. This observation seems to suggest better reliability in using amplitude in estimating magnitudes of earthquake events.