

Completeness magnitude of earthquakes and b-value in Myanmar

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In order to estimate completeness magnitude of earthquakes and b-value of events in Myanmar and surrounding areas, we examined the NEDC (National Earthquake Data Center, Myanmar) local dataset listed from local magnitude (ML) of 1.0 to 6.3 in the period from 2014 to 2018. The study area was set as the latitudes range of 16-28° N and the longitudes of 92-102° E. We adopted 1,350 hypocenters determined using SEISAN (Havskov and Ottemoller, 2010) and 21 seismic stations. The completeness magnitude (M_c) was estimated as ML 2.8 with a b-value of 0.68 ± 0.02 in the whole study area, and the b-values regionally varied from 0.52 to 1.0. The tendency relation between b-value and faulting styles was found along the Sagaing Fault. The southern part with a smaller b-value indicates thrust type focal mechanism, whereas the northern part with a larger b-value shows strike-slip type focal mechanism. The b-value generally increases with the increase of depth in the whole study area. In the active fault region, the b-value decrease with the increase of depth at depths of less than 15 km, which might be related to high-stress accumulation in continental crust portion. At a depth of more than 15 km, the b-value then increases with a function of depth. In contrast, a significant decrease of b-value with depth was observed at depths of 75-85 km in the subduction zone of the study region, which might be discussed with the process of dehydration in the ocean crust. The methodology of this study might be fruitful to understand the seismically complex tectonic system beneath Myanmar.