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Statistical Evaluation of Turkey Earthquake Cataloque: A Case study (1900-2015)

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In this study, Turkey earthquake catalog of the events within the time period of 1900-2015 prepared by Boğaziçi University Kandilli Observatory and Earthquake Research Institute is analyzed. The catalog consists of earthquakes occurred in Turkey and surrounding area (32o-45oN/23o-48oE). The current earthquake catalog data has been checked in two aspects; the time dependent variation and compliance for different regions. Specifically the data set prior to 1976 was found deficient. In total, 7 regions were evaluated according to the tectonic specifications and data set.
In this study for every region original data were used without any change; b- values, a- values, Magnitude of completeness (Mc) were calculated. For the calculation of b- values focal depth was selected as h= 0-50 km. One of the important complications for the seismic catalogs is discriminating real (natural) seismic events from artificial (unnatural) seismic events. Therefore within the original current catalog events especially artificial quarry blasts and mine blasts have been separated by declustering and dequarry methods. Declustering process eliminates induced earthquakes especially occurred in thermal regions, large water basins, mine regions from the original catalogs. Current moment tensor catalog prepared by Kalafat, 2015 the faulting type map of the region was prepared. As a result, for each region it is examined if there is a relation between fault type and b- values. In this study, the hypothesis of the relation between previously evaluated and currently ongoing extensional, compression, strike-slip fault regimes in Turkey and b- values are tested one more time.

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