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Spatial variation of seismic b-values of Azerbaijan and surrounding areas

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Although Azerbaijan is one of the most seismically active areas in the world, an exhaustive description of the statistical properties of the time, space and magnitude distribution of its seismicity is still lacking. Therefore, the aim of this work is to fill this scientific gap. The accurate estimation of b-value of Gutenberg–Richter (GR) frequency- magnitude relationship is very crucial in seismic hazard analysis of a region. In our work, we estimate the b value by means of maximum likelihood method (Aki 1965). In this study, we investigate the seismicity occurred from 2003 to 2016, in the territory of Azerbaijan and surrounding regions by employing several and independent statistical approaches. Our aim is to get the most exhaustive description of the earth- quake process involving the territory of Azerbaijan, by furnishing a complete space-time dynamical characterization of the Azerbaijani seismicity.

The statistical analysis has been performed by using standard and non-standard methodologies to get the most exhaustive description of the catalog. The main findings are as follows: 1) The Gutenberg-Richter law is satisfied for M$\geq$ 2.9 with a b value of 0.76, 2) The spatial variation of the seismic parameters (Mc , number of events with magnitude larger or equal to Mc , b value) show a highly space variability connected with the peculiar seismo-tectonic settings of the different areas of Azerbaijan.

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