



Seismic databases and earthquake catalogue of the Caucasus

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The Caucasus has a documented historical catalog stretching back to the beginning of the Christian era. Most of the largest historical earthquakes prior to the 19th century are assumed to have occurred on active faults of the Greater Caucasus. Important earthquakes include the Samtskhe earthquake of 1283, $M_s \sim 7.0$, $I_o = 9$; Lechkhumi-Svaneti earthquake of 1350, $M_s \sim 7.0$, $I_o = 9$; and the Alaverdi earthquake of 1742, $M_s \sim 6.8$, $I_o = 9$. Two significant historical earthquakes that may have occurred within the Javakheti plateau in the Lesser Caucasus are the Tmogvi earthquake of 1088, $M_s \sim 6.5$, $I_o = 9$ and the Akhalkalaki earthquake of 1899, $M_s \sim 6.3$, $I_o = 8-9$.

Large earthquakes that occurred in the Caucasus within the period of instrumental observation are: Gori 1920; Tabatskuri 1940; Chkhalta 1963; 1991 $M_s = 7.0$ Racha earthquake, the largest event ever recorded in the region; the 1992 $M = 6.5$ Barisakho earthquake; $M_s = 6.9$ Spitak, Armenia earthquake (100 km south of Tbilisi), which killed over 50,000 people in Armenia.

Recently, permanent broadband stations have been deployed across the region as part of various national networks (Georgia (~25 stations), Azerbaijan (~35 stations), Armenia (~14 stations)). The data from the last 10 years of observation provides an opportunity to perform modern, fundamental scientific investigations. A catalog of all instrumentally recorded earthquakes has been compiled by the IES (Institute of Earth Sciences, Ilia State University). The catalog consists of more than 80,000 events. Together with our colleagues from Armenia, Azerbaijan and Turkey the database for the Caucasus seismic events was compiled. We tried to improve locations of the events and calculate Moment magnitudes for the events more than magnitude 4 estimate in order to obtain unified magnitude catalogue of the region. The results will serve as the input for the Seismic hazard assessment for the region.