

and Tectonics of the Caucasus Region Revisited

Tuesday, 20 June 2023 11:07 (1 minute)

The Caucasus region lacked a comprehensive catalog, despite its role in Arabia-Eurasia convergence between the Black and Caspian Seas. The Lawrence Livermore National Laboratory and the Institute of Earth Sciences (IES) at Ilia State University generated a new, comprehensive seismic catalog for the period from 1951 to 2019 for the Caucasus region by combining data in the IES bulletin with bulletins of the Republic Seismic Survey Center of Azerbaijan, monitoring centers in Turkey and Armenia, and the ISC.

We present ~20,000 newly relocated events in this bulletin. We relocated each event using the single-event location algorithm iLoc and regional seismic travel time predictions and identified GT events. We relocated the entire seismicity of the Caucasus region with the multiple-event location algorithm Bayesloc, using the iLoc results as initial locations and the GT events as constraints.

We show that each relocation step leads to significant improvements, as indicated by tightening of event clusters. The improved view of the seismicity reveals a narrow band of crustal events along the southern flank of the Greater Caucasus we interpret as a megathrust, and confirms both a region of deep seismicity beneath the northeastern Caucasus and a possible area of slab detachment in the central part of the range.

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Promotional text

Strengthen the engagement of the scientific communities working in test-ban monitoring. As a result of the contribution of this large dataset, regional earth models will be improved, which will reduce the uncertainties in regional discrimination studies.

Oral preference format

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Session Classification: Lightning talks: P1.2-2

Track Classification: Theme 1. The Earth as a Complex System: T1.2 The Solid Earth and its Structure