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A comprehensive earthquake catalog in Central Asia

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The Lawrence Livermore National Laboratory (LLNL), Michigan State University (MSU), and national data centers in Central Asia (Kazakhstan, Kyrgyzstan and Tajikistan) digitized analog seismic bulletins in order to produce a new, unified seismic catalog. The main objective of the project is to provide a reliable seismicity map for new probabilistic seismic hazard analysis of Central Asia. The national network bulletin data are supplemented by data from the International Seismological Centre (ISC) bulletin.

We present the preliminary relocation results of more than 350,000 events recorded by hundreds of seismic stations in the region. Digitized bulletins extend to the early 1950s, providing millions of amplitude and phase arrival data. We relocated each event with iLoc, a single event location algorithm, using both ak135 and Regional Seismic Travel Time (RSTT) predictions to improve locations and to measure the performance of the RSTT model. The results show significant improvements in the understanding of regional seismicity in Central Asia. When data ingestion and relocation are finalized, the result will provide a basis for many other studies (e.g., travel-time tomography, seismicity) that have not been previously possible.

Promotional text

Strengthen the engagement of the scientific communities working in test ban monitoring. As a result of exchange of data from diverse institutions we improve the earthquake locations and earth models in Central Asia.

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