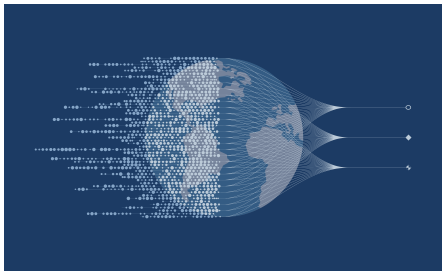

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# -step relocation of the seismicity of Oman

The Oman National Bulletin produced by the Earthquake Monitoring Center, Sultan Qaboos University between 2014 and 2024 were combined with regional and teleseismic data from the International Seismological Centre bulletin. The resulting comprehensive bulletin contains 2994 events within our area of interest. We applied a two-step relocation procedure to improve the view of Oman's seismicity. We first relocated the bulletin with iLoc, a single-event location algorithm that takes into account potential correlated travel time and uses RSTT. The global 3-D RSTT crust and upper mantle velocity model was developed by Lawrence Livermore, Los Alamos and Sandia National Laboratories. Before applying the second step of our location procedures, we performed further quality control on the iLoc results by removing events recorded by less than three stations or four arrival times. We then relocated the events with Bayesloc, a non-linear Markov Chain Monte Carlo multiple event location algorithm, using the reviewed iLoc locations as input and setting tighter a priori constraints for suspected explosions. Bayesloc was run with 10 Markov chains for 80 000 iterations. The results demonstrate significant improvements in the view of seismicity and can help to identify anthropogenic events, which represent the majority of onshore events in the region.

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