

EGU2020-12276

<https://doi.org/10.5194/egusphere-egu2020-12276>

EGU General Assembly 2020

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Study on Seismicity and Its Geodynamic Genesis in Ngari Areas

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The Ngari area in Tibet is in the forefront of land-continent collisions. The area is accompanied by the polymerization of plates, forming complex structures such as the Tethys Himalayan pleat belt, the Yarlung Zangbo suture belt, and the Gangdese continental margin magma arc from the south to the north. The multi-period dive collision-inland convergence process, the geological structure is complex and the seismicity is very high. Based on the Chinese historical earthquake catalogue, the China Modern Earthquake Catalogue and the seismic data from the International Seismological Center (ISC), we analyzed the seismic activity, focal mechanism and modern tectonic stress field in the Ngari area, and then analyzed the seismicity and its source of geodynamics. The main conclusions are as follows:(1) The seismic activities in the Ngari area are mainly distributed in the Himalayan tectonic belt, the Bangong-Nujiang tectonic belt, the Alkin-East Kunlun tectonic belt, and some near north-south trending tectonic belts; (2) Earthquakes near the Himalayan tectonic belt is dominated by reverse faulting events. The seismic activity near the Bangong-Nujiang tectonic belt and the Alkin-East Kunlun tectonic belt is dominated by strike-slip earthquakes. Near the north-south extensional tectonic belt, the earthquakes show as the normal faulting events. (3) The main direction of the modern tectonic stress field in the study area is near north-south direction; (4) Seismic activity, focal mechanism and modern tectonic stress field show that the geodynamic source in the Ngari region is from Collision and squeezing the between the Eurasian plate and the Indian Ocean plate.