

How complex is seismically active "Deren" area, 180km south of Ulaanbaatar?

Abundant seismicity is recorded instrumentally for a sufficiently long period of time in the region of Deren, 180km south of Ulaanbaatar. These earthquakes have been roughly assigned to Deren fault which expresses NS trending thrust morphology. In order to define and accurately characterize active faults in the region, we used 2 different datasets from 2 distinct temporary seismic deployments. The datasets, particularly 55 events within the magnitude 1.5 to 4.5 from the regional temporary seismic array that has a station spacing of about 50km and 1111 events from a temporary local network that adapted to the size of seismicity have been separately analyzed by means of precise relative location. The relative hypocenter locations reveal new features about crustal structures of Deren, particularly EW trending structure of about 50km long and its eastern end bifurcated at N20o and N70o. Equally, relocation reveals 3 parallel N20o oriented structures that roughly 10km detached one another on the west of total seismicity. The fine-scale seismicity in combination with geomorphic data sets and focal mechanism solutions proposes that the whole fault system comprises a mix of EW trending sinistral and N20o trending faults on a combination of east-west compression with some right-lateral strike slip motion.

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