

Seismicity and Seismotectonics of the Sudan and South Sudan

Earthquake data collected from regional and international seismological stations was compiled in order to produce a seismicity map for the Sudan and South Sudan. The seismicity and tectonic information were used to identify the relationship between the distribution of earthquakes and active geological structures and to create seismic source zones. The results showed that the study area lies within seismically-active region which can be divided into three major seismic source zones, namely the Southern Seismic Source Zone (SSSZ; $M_s=7.2$), the Northeastern Seismic Source Zone (NSSZ; $m_b=5.9$), the Central Seismic Source Zone (CSSZ; $M_s=5.5$). The SSSZ is bounded by latitudes $3^{\circ} 00'$ and $10^{\circ} 00'$ N and longitudes $22^{\circ} 00'$ and $36^{\circ} 00'$ E. The seismic activity with this zone is attributed to the extension of the western branch of the East African Rift System into South Sudan, or possibly related to rejuvenation of movement in the fault-bounded basins of South Sudan. The NSSZ is located to the west of the presently active seismicity along the Red Sea trough. The third zone seismicity is possibly related to rejuvenation of movement along the Central African Shear Zone (CASZ). Additional minor seismic activity is probably related to Cenozoic volcanicity in Jebel Merra and Bayuda volcanics .

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