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Seismogenic structures in western Yunnan revealed by three-dimensional magnetotelluric imaging

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Influenced by the extrusion of Tibetan blocks and Indo-Burmese collision, the region in western Yunnan is associated with active seismicity and Quaternary volcanoes. Based on broadband magnetotelluric data collected in western Yunnan, we obtain a three-dimensional crustal electrical resistivity model after various data processing and three-dimensional inversion test. The above resistivity model reveals the seismogenic structures of the moderate and strong earthquakes in this tectonic region. We investigate the possible relationship between the seismicity and the electrical structure in western Yunnan region. The results indicate that earthquakes in this region tend to occur in the transition zone between the resistive and conductive structures. Our results also show that one resistive body imaged at the mid-lower crust may have blocked the previously proposed crustal channel flow along this intra-continental block boundary to the east of Tibetan Plateau. Our resistivity model suggests a bifurcation of the crustal flow in western Yunnan. This bifurcated crustal flow structure may play an important dynamical role in the seismogenesis of the earthquakes in western Yunnan.