

Three-dimensional electrical structure and its dynamic implication in southeastern Tibetan Plateau

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SUMMARY

The southeastern Tibetan Plateau plays an important role in the tectonic evolution and dynamics of the Tibetan Plateau, and is the most important object for interpretation and verification of two widely popular dynamic models (lateral extrusion model and lower crustal flow model). A large number of geophysical studies have been carried out in the southeast of the Tibet Plateau, but most of them are focused on the deep structure of local areas. In this paper, a reliable three-dimensional crustal and upper mantle electrical structure is obtained from 399 broadband magnetotelluric sites in the southeastern Tibetan Plateau. The results reveal that the most prominent feature of the deep region (from the lower crust to the lithospheric mantle scale) in the southeastern Tibetan Plateau is a "two conductors sandwiching one resistor" structure extending from northwest to southeast: the high conductor C1 in the western Sichuan block (WSB) in the northwest, the high conductor C2 in the central Yunnan block (CYB) in the southeast, and a northeast-trending high resistor R between them. This structure indicates limited connectivity between C1 and C2, with R acting as a barrier. Thus, the lower crustal flow from northwest to southeast does not significantly traverse the high resistor R into the central Yunnan block (CYB) at the southeastern margin of the Tibetan Plateau. The high conductor C2 in the central Yunnan block (CYB) is intrinsic.

Keywords: The Southeastern Tibetan Plateau, Dynamic Model, Electrical Structure, MT, 3D
