

Geoelectric structure of the collision zone between the Siberia plate and the North China Craton and Discussion on the deep Suture Boundary

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In this paper, the two-dimensional electrical structure are obtained in Chagan Obo-Huadebased on the inversion of the 410 km magnetotelluric (MT) profile. It provides the evidence to study the deep structure and collision boundary between the Siberian plate and the North China Craton. By combining it with artificial seismic reflection data and geological data we can obtain the following conclusions: (1) There are many 'U' type low-resistivity anomalies in the crust of the collision zone between the Siberian plate and the North China Craton corresponding to arcs, tilted or crocodile mouth-shaped reflection interfaces. The lithospheric mantle is a high-resistivity block except for the Bai Nai Miao island arc. These physical features reflect the structural traces formed by the north-south convergence. (2) The collision zones are divided into two different periods—the Erenhot-Hegenshan and the Soren-Xilamulun convergence systems, respectively. The Erenhot-Hegenshan convergence system which is formed in the Late Devonian-Late Carboniferous is composed of Erenhot-Hegenshan accretional complex belt, Baolidao Island arc Geological body and fault zone, and the deep suture boundary is located in Erenhot. And the Late Permian-Early Triassic Soren-Xilamulun convergence system consists of the Erdaojingzi accretional complex belt and the Wenduermiao accretional complex belt and the fault zone, and the deep suture boundary is located in the Sonid Zuoqi. (3) There are high resistivity anomalies in asthenosphere of Xilinhaote area, which may be the fragments of subducted oceanic crust or detachment lithosphere after collision orogeny.