

DEEP ELECTRICAL STRUCTURE BENEATH TIANSHAN MOUNTAIN OROGENIC ZONE AND THE VICINITY

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Tianshan orogenic zone is one of the youngest (20Ma) and highest (elevation 7000m) orogenic zones in the world. There is a well-known seismotectonic belt. Some important mineral resources are developed. Two large hydrocarbon-rich basins, Junggar basin and Tarim Basin are located to its north and south respectively. Magnetotelluric measurement, one of important parts of synthetic geologic and geophysical investigation has been carried out recently. The MT sites distributed along a profile about 700 km and oriented approximately N-S in western Xinjiang Autonomous Region, which stretched from the middle of Tianshan Mountain in the south, through the Junggar basin, ending in the Altai mountains at the north end. Another profile is located to the south of Tianshan mountain. Impedance tensor decomposition and 2-D inversion methods have been used for data interpretation. Electrical structure of the crust and lithosphere beneath two profiles are obtained. The thickness of lithosphere for Tianshan fold system is about 160km that is greater than those in both sides to north and to south. A zone with a marked conductivity gradient inclined to the north appears at a depth of about 50km at the south end of the first profile, which can be compared with the electrical structure beneath southern profile.