

Nation-wide deep electrical conductivity structure in the China Mainland

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This presentation gives a description of very deep electrical conductivity structure beneath mainland China by using geomagnetic depth sounding (GDS). We have obtained the C-responses at 42 observatories in the mainland China in the period range from 1.3d to 113.8d. The hourly data of the 3 component magnetic field (1995-2016) were retrieved from the National Geomagnetic Network Center (GNC). Both the Occam 1-D inversion and rho+ 1-D inversion were applied to the C-responses. We examined whether the 1-D assumption at each station is denied or not by evaluating RMS values. Except LSA (Lasa) whose RMS slightly exceed the acceptable RMS and the observatories near the coast, all of the other observatories passed the rho+ 1-D inversion check. The resulting conductivity model was compared with the previous work. We found that the mantle transition zone has a large gradient of conductivity, resulting in a relatively high value about $0.3\text{S}\cdot\text{m}^{-1}$ at the depth of 660km beneath northeastern part of China, which is more conductive than those of other tectonic settings by at least one order magnitude. In the North China, it shows obviously the different characteristics among the Ordos block, western part and the gravitational gradient zone along Daxinganling Mountain-Taihang Mountain, which is correspond to the differences in thickness and stability of lithosphere. This feature may be due to the subduction of India plate from the southwest and Pacific Plate from the east. We will also try to evaluate the ocean effect on the C-response to get a more realistic electrical conductivity model of deep structure of mainland China.