

Moho Undulations beneath South of Egypt, Using the Seismic Waves Generated by Tele Earthquakes

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Abstract : The Moho discontinuity undulations beneath the southern part of Egypt have been defined using the seismic waves generated by tele earthquakes. These earthquakes have been recorded by the Aswan seismic network, which consists of 10 seismic stations established around the lake of Nasser. An additional seismic station was located towards the east of the Lake of Nasser by about ~ 150 km. Receiver functions and H-k stacking methods were used for obtaining the depths of Moho discontinuity and the Vp/Vs ratios beneath each seismic station. Our results revealed that, the depths of Moho discontinuity beneath the stations located around the Lake of Nasser range from 36 to 39 km, with an average value of 37.5 km. These results are consistent with the previous works done on the same area. The obtained Vp/Vs ratios for the crust of this area were ranged from 1.73 to 1.86, with an average value of 1.79. While beneath the station located towards the east, the Moho discontinuity was detected at a shallowest depth of 27 km and the Vp/Vs ratio was 1.82. The difference in the Moho depths beneath the stations located around the Lake of Nasser and the station located to the east revealed the boundary position between the Saharan Metacraton to the west and the Nubian-Arabian Shield to the east. This structural boundary delineates the position of the old collision of the Oceanic crust of the Nubian-Arabian Shield to the east with the Continental crust of the Saharan Metacraton to the west.

Keywords : Moho undulations, south of Egypt, seismic waves, earthquakes

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