

Integrated lithospheric modelling in the Red Sea area

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Abstract: The paper is the first attempt to apply 2D integrated geophysical modelling to the determination of the lithospheric structure and its thickness in the Red Sea area. The results show large differences between continental and oceanic lithospheric structure and thickness. The oceanic crust of the Red Sea is much thinner (12-15 km) in comparison with the continental crust which is located on both sides of the Red Sea, and reaches the thickness of around 28-33 km. The density of the lowermost part of the upper mantle in the Red Sea area is very low indicating possible presence of partial melting in the upper mantle and supporting the theory of uplift of the asthenospheric masses in the Red Sea that is accompanied by the process of underplating beneath the Moho discontinuity.

Key words: the Red Sea, integrated modelling, lithospheric thickness, upper mantle

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