

Lithospheric thickness under the Dinarides

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The nature of the interaction between Adriatic and Euroasian lithospheric plates in the Dinarides is important for understanding the complex tectonic history of the central Mediterranean. Using the data from permanent and temporary seismic stations in the wider Dinaric region, we imaged the lithospheric and upper mantle structure under this area. Specifically, we focused on mapping the lithosphere-asthenosphere boundary (LAB) using the S receiver functions in order to establish boundaries between different tectonic domains present in this region. The lithospheric thickness in the investigated area varies between \sim 50 and \sim 160 km with the high degree of variability between adjacent tectonic realms. Below northwestern Dinarides the LAB depth varies between 100 and 120 km thinning towards Adriatic sea and Pannonian basin, to 90 and 70 km respectively. In the central Dinaric region (Lika region) we find anomalously thin lithosphere with thickness varying between 50 and 70 km and weak velocity gradient defining the LAB. Further south the signal from the LAB is more pronounced with lithosphere getting thicker again with average depths around 90 km. The intriguing observation of thinned lithosphere under the central part of the Dinarides coincides with the zone of lower seismicity and with the tomographic images showing the slab gap in this area.