

Lithospheric thickness under the Dinarides

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The eastern Adriatic margin, where the Adriatic plate (Adria) is subducted beneath Eurasia to form the Dinaric mountain belt, is one of the most enigmatic segments of the Alpine-Mediterranean collision zone. Formation of the Dinarides started after the closure of Neotethyan ocean in Middle Jurassic when the subduction was gradually replaced by collision process involving nappe stacking and folding.

Since the inception of the collision the outer parts of the Dinarides were influenced by several tectonic process, such as the extension in the Pannonian basin or extrusion in the eastern Alps. As expected, this led to the formation of a highly complex structure of the crust and the upper mantle.

To provide insight into the region's geodynamics, we have investigated the crustal and the lithospheric thickness using P-to-s and S-to-p converted phases of teleseismic events recorded at the Croatian Seismological Network. For 22 permanent seismic stations, Ps and Sp receiver functions were calculated, stacked and migrated with 1D velocity model. On most of the stations we have observed strong positive Ps phases from the Moho and found a good agreement with the previous depth estimations. Furthermore, preliminary results show presence of a discontinuity in the upper mantle which we associated with the transition of lithosphere to asthenosphere (LAB). This transition zone is deeper under the central areas of the Dinarides (>100 km) and is gradually getting shallower towards Pannonian basin and Adriatic sea. In the next step, we plan to use these results to shed some light on how the geodynamical processes in the region influenced the evolution of the Dinarides.