

The LAB beneath the world oldest oceanic plate

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Recent studies show that the top of mantle lithosphere, the lithosphere/asthenosphere boundary (LAB) and the geometry of subducting slabs are defined by sharp velocity contrasts in Receiver Functions (RF). With respect to other seismological techniques S-to-P converted phases are particularly suitable in order to detect the LAB beneath seismic stations. Here we propose the application of the SRF technique in order to retrieve the LAB depth beneath the world oldest oceanic plate, i.e. the Ionian Plate. Teleseismic events recorded by two OBS stations deployed in 2007 and 2013 have been employed. Although the short recording time of the OBS, we isolated good quality records, that allow to infer the location of the bottom of the lithosphere in the area. Results show a lithosphere thickness of ~ 75 km for the Ionian plate, that compared to depth estimates measured worldwide, marks absence of age dependence. Moreover SRF from the station located on the Etna scarp show backazimuthal differences, sampling a thicker (~ 110 km) lithosphere below Sicily.