



The lithosphere structure beneath the central Mediterranean from S receiver functions

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The last piece of Mesozoic oceanic lithosphere from the Neo-Tethys Ocean is being consumed beneath Eurasia in the Central Mediterranean area, squeezed by the continuing convergence of Africa with the Eurasian plate. Convergence between Africa and Eurasia has been ongoing since the Cenozoic, forming a series of arcuate shaped subduction zones, and producing the current complex plate boundary that strikes across the Mediterranean area. Moreover, geophysical imaging depicts a variable lithospheric structure related to remnants of both oceanic and continental lithosphere within this convergent margin, which contributes to its complexity. In fact, the subduction/collision of blocks with different rheologies and thicknesses (e.g. continental or oceanic) has resulted in complex setting that includes accretionary wedges, orogenesis, and formation of an intricate back-arc/fore-arc/trench system.

In order to shed light on these tectonic structures, we provide observations and interpretations of the lithospheric structure of the central Mediterranean via S receiver functions analysis. Teleseismic observations recorded at permanent and temporary seismic stations have been employed to produce images of the lithospheric discontinuities with tens of kilometers lateral resolution. We illustrate the feasibility of the lithosphere-asthenosphere boundary detection on a regional scale, and detect the occurrence of deeper seismic discontinuities due both to positive and negative seismic velocity jumps.