



A close-up on the southern Apennines crustal structure

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The southern Apennines of Italy undergoes intense tectonic activity and has been theater of large and destructive earthquakes. The region is characterized by deep structural complexities, which have been investigated in this study through the application and analysis of receiver function data. The structural complexities are reflected in the computed receiver functions, that in most cases lack of a clear P-direct phase on the radial component, hint of very low velocities in the first kilometers; the receiver functions also show strong amplitudes in the transverse component, hint of strong anisotropy. However the large data-set analyzed and the technique adopted for the analysis allowed us to reconstruct the crustal structures to some degree of detail. At shallow depth our analysis, accordingly with previous studies, reveals basin sequences and flysch units overriding limestone from former carbonate platform. In the middle crust, at about 20 km depth, an anisotropic layer has been detected, with anisotropy reaching up to 15%. We interpret this layer as the transition between the upper and the lower crust, and infer that its strong anisotropic signature is due to the texture acquired by the rocks behaving plastically under the rigid movements of upper crustal blocks during the Plio-Pleistocene collisional phase which lead to the growth of the Apennines.