Geodynamic of the Mediterranean

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One century of geological and geophysical studies have been devoted to understand the geodynamic evolution of the Mediterranean and of its Alpine belt.
For example, the discovery in the Alps of the large scale overthrust and of the presence of oceanic rocks dates back to the end of the 19th century and represents a major break-through in geology. During the last decades several geophysics and geological projects have been carried out and several models have been proposed to explain the evolution of the Alpine belt and of its surrounding deep oceanic-floored basins.

Here, we present the Mediterranean as a test site to understand the linkage between surface tectonic structures and the style of mantle convection, using different sets of data, such as past and present-day plate kinematics, and tectonic constraints from geological studies and seismological data, such as mantle tomography, to unravel the style and the history of subduction. The model validity is tested using experimental and numerical simulation. The result of this analysis allows a complete backtrack of the mantle flow field during the last 30 Ma, giving insight into fundamental process such as i) slab 660 km interaction, ii) ii) slab disruption iv) back-arc extension and v) microplate formation.