

## Modelling the currently active tectonics of Western Alps

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The active tectonics of the Western Alps reveals contrasting regimes: ongoing extension at the heart of the chain and transpression/compression at its external sectors. This constitutes a geodynamic problem whose solution has to be looked for in the active processes currently affecting the Western Alps, which are still a matter of debate.

The classical geodynamic models proposed in the literature invoke the Eurasian/Adriatic plate collision, the counter-clockwise rotation of the Adria microplate, the slab retreat of the continental lithosphere subducted under the Western Alps and the detachment of the subducted lithosphere. More recently, on the basis of seismotectonic and geodetic studies, several authors prefer the hypothesis of tectonics driven by isostasy/buoyancy forces. In order to better understand the role of the various processes in determining the velocity, strain and stress fields at the surface and in the crust, we developed 2D viscoelastic numerical models along a vertical cross section perpendicular to the Western Alps and following the trace of the ECORS-CROP seismic profile.

Our strategy was to simplify as much as possible the vertical structure of the area and to run our simplified models with different driving forces in order to investigate, one by one, the different geodynamic processes proposed in the literature. In this work we discuss the different models and the results of numerical simulations, which are compared with the available geodetic, geological and seismotectonic data.

