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Lithospheric properties on a continent-continent collisional scenario: the Pyrenean range

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Continent-continent collision is a fundamental tectonic process that plays a primary role in the development and evolution of continents. The Pyrenees resulted from the continental collision between the Iberian and European plates during the Alpine orogeny. This mountain range offers an unique opportunity to study orogenic processes due to the well constrained geological evolution and the significant amount of geophysical data available. In this paper present a joint quantitative interpretation of the available geophysical and geochemical data along two transects across the Pyrenean orogeny. These new results confirm the previous hypothesis of partial melting of the subducted Iberian lower crust and constrain the depth of the lithosphere-astenosphere boundary (LAB). The bulk mantle electrical conductivity and seismic velocities have been modelled using the software package LitMod, which allows for coupled petrological and geophysical modeling of the lithosphere and sublithospheric upper mantle within an internally consistent thermodynamic [U+2010] geophysical framework.