



## Mapping crustal thinning beneath the Eastern Pyrenees

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The eastern termination of the Pyrenees is a complex region marked by two large tectonic events, the building of the Pyrenees during the Alpine orogeny and the Neogene extensional processes associated to the rotation of the Sardinia-Corsica block and the opening of the Valencia Trough. This complex tectonic history has left major imprints in crustal structures. Previous studies based on gravity data and active seismic profiles have documented a crustal thinning from 40-45 km about 80 km to the west of the Mediterranean coastline to less than 25 km beneath the eastern termination of the Pyrenees.

To progress in the knowledge of the geometry of this transition, two passive seismic profiles have been acquired from mid 2015 to late 2016 within the OROGEN project, an academic-industrial collaboration between CNRS-Total-BRGM and CSIC. Up to 38 broad-band stations were deployed along two orthogonal lines, with an interstation spacing close to 10 km. First results of receiver function migration on the E-W profile suggest a smooth Moho thinning smoothly from 40 km beneath the western termination of the line to 23 km close to the coastline. The NNE-SSW profile shows a clearly defined Moho beneath Iberia, slightly deepening from 32 to 35 km northwards, a 28-30 km thick crust underneath the North Pyrenean Front Thrust and a complex geometry in the Axial Zone.

Data from natural events located in the Gulf of Roses and near the intersecting point of the profiles have been recorded along the lines, hence allowing to produce wide angle reflection/refraction profiles providing additional constraints on the geometry of the crust/mantle boundary in the Eastern Pyrenees. These new results will be integrated with the available geophysical and geologic information for a more accurate geodynamical interpretation of the results. (Additional funding by the MISTERIOS project, CGL2013-48601-C2-1-R)