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## New insights to characterize the La Cerdanya basin structure from 3D gravity modelling

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The acquisition and interpretation of gravity and magnetic data represents a cost-effective tool in geophysics since it allows to determine the geometry and distribution of the density and magnetic properties at depth of the subsurface rocks. The study area, where gravity and magnetic data have been interpreted, is the La Cerdanya basin (Eastern Pyrenees), a Neogene ENE-WSW oriented half graben located in the Axial Zone, the central part of the Pyrenees mainly formed by Paleozoic rocks. It is situated in the NW block of the La Tet fault and its Neogene sediments lie unconformably on top of the Paleozoic basement. Its dimensions are approximately 30 km long and 7 km wide. The tectonic evolution and geometry of the La Cerdanya basin is not well known and this work aims to add new constraints to help solving the Neogene tectonic evolution of the Eastern Pyrenees and to improve the knowledge of its 3D geometry.

The magnetic anomaly map of the study area, based on airborne magnetic data, shows very little contrasts of the magnetic properties between the Neogene rocks of the La Cerdanya basin and the Paleozoic rocks surrounding it. Gravity data consist of previous and new acquired gravimetric stations and the residual Bouguer anomaly map shows density contrasts big enough to model the geometry of the basin and the neighbor intrusive bodies. They have been incorporated into a 3D geological model based on available geological and petrophysical data using the 3D GeoModeller software. The 3D potential fields model has been made taking into account the three most representative units outcropping in the study area: the Neogene rocks, the Late Carboniferous intrusive bodies and the Paleozoic basement. The resulting potential fields response of the model is consistent with the observed data. The 3D model shows a basin slightly deeper than shown in previous works and has helped to better define the 3D geometry of the basin and the along-strike geometry of the La Tet fault.