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From Early Tertiary onwards, the Iberian microplate has been subjected to stress sources with varying magnitudes and orientations. In a short amount of time, the plate experienced N-S to NNE-SSW compression (Paleogene-Early Neogene) generated by the collision of Eurasia and Iberia, NNW-SSE compression (Middle Miocene-present day) due to the collision of Eurasia/Iberia and Africa, and WNW-ESE extension (Early Miocene-Pliocene) by the opening of the Valencia Trough along the eastern coast. The construction of more confident stress patterns for these stress fields is carried out by structural geological fieldwork and focal mechanism solution determination. In time and place these stress fields have, superimposed, caused multiple reactivation of large Late Hercynian basement faults in the interior of the plate. Dating the activity of several of these faults has been able using sedimentological data. To have better constraints on the vertical motions, fission track analysis is being carried out.
The special setting of Iberia, with different stress orientations in short time span causing deformation with diverse structural style, is an excellent starting point to study intraplate tectonics. The enormous amount of data enables us to study the relative importance of different sources of stress (e.g. ridge-push, collisional boundary forces) and their interplay in time and space. Finite element modelling is applied to explain the large scale major Tertiary and Quaternary deformation of the Iberian Peninsula.