

# MARCAS PROJECT: STUDY OF THE MESOZOIC EXTENSION AND ALPINE COMPRESSION IN THE CENTRAL PART OF THE CANTABRIAN PLATFORM (NORTH IBERIAN MARGIN – SPAIN)

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The North Iberian Margin occupies the southern part of the Bay of Biscay (BB) and is the conjugate of the Armorican Margin. The geological history of the area started by the Permo-Jurassic rifting of the Iberian and Eurasian plates that was followed by Cretaceous seafloor spreading in the centre of the Bay. The extensional episode led to the separation of both margins and the opening of the Bay of Biscay, which is a V shaped deep basin opened to the west. This event lasted until late Cretaceous when the whole area, including the nearby Pyrenean Orogen, underwent a compression episode during the Alpine cycle due to the convergence between Iberia and Eurasia. The Alpine compression which affected all crustal levels, including the development of a crustal root beneath the Cantabrian Mountains, resulted in the partial closure of the Bay of Biscay, and the deformation and shortening of the North Iberian Margin. Onshore data in the Cantabrian Mountains and Vasco-Cantabrian Basin show that both the Mesozoic extension and the Alpine compression decrease eastwards. The Mesozoic Vasco Cantabrian Basin in the east and its continuation offshore is more than 12.000 meters thick, whereas in the Cantabrian Mountains the maximum thickness of the Mesozoic deposits does not reach 3.000 meters and no Mesozoic basins developed in the westernmost part. The Alpine compression resulted in the inversion of previous Mesozoic extensional structures and the development of new Alpine ones recorded in the Cenozoic deposits.

There are detailed studies of the offshore structure in the eastern apex of the Bay of Biscay but there is a lack of them in the central and western part of the Cantabrian Platform. The MARCAS project aims to study the Mesozoic structure and Alpine inversion of structures in the central part of the platform as well as their lateral changes and evolution. The objective is to compare them with those onshore. The detailed cross section of the Meso-Tertiary basin that occupies the Iberian continental shelf, shows structures from all three tectonic events undergone by the margin: **a)** normal faults and asymmetric basins from the Permian to lower Cretaceous extensional stage. **b)** upper Cretaceous sediments deposited under stable conditions during the passive margin period. **c)** Inverted faults, thrusts and folds related to the Alpine compression.