

MAGNETOSTRATIGRAPHIC RECORD OF THE SYNTECTONIC INFILL IN THE WESTERN EBRO BASIN. CONSTRAINTS ON TECTONIC EVOLUTION OF THE SIERRA DE CANTABRIA THRUST (NORTH SPAIN).

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The Pyrenees are well known by the preservation of the syntectonic record which has allowed precise dating and kinematic analysis of the thrust and fold structures as well as establishing tectono – sedimentation relationships between thrust evolution and foreland basin infill. From these relationships, well established in the Central Pyrenees, it can be argued that the Pyrenean structure become younger westward, mostly along its thrust front. However, no precise dating of the synorogenic Tertiary deposits is available in the Center Pyrenees to fully support along strike younging of the Pyrenean structures as well as the kinematic history of this part of the chain in continuation with the Cantabrian Pyrenees, westwards.

The chronostratigraphy of this Tertiary unit is very poorly constrained because of the scarcity of mammal fossil localities. An Oligocene age was attributed on the basis of the Late Eocene age of underlying marine sequences of the South Pyrenean basin, and the younger Early Miocene age of undeformed continental sequences towards the center of the basin.

To overcome this uncertainty a magnetostratigraphic study was conducted in the westernmost Ebro foreland basin along a reentrant of the South Pyrenean foreland thrust (known as Sierra de Cantabria thrust). In this area a thick package of the Ebro foreland basin succession is accessible because of the steep attitude of bedding to vertical and even overturned, by folding in the immediate footwall of the thrust front. The total exposed thickness is about 4,000 – 5,000 meters of continental Tertiary sediments. This succession is characterized by alluvial – fluvial deposits grading to shallow lacustrine and evaporitic facies.

The sampled composite section covers 3,000 meters of the continental deformed units with a stratigraphical interval average of 7 – 8 meters. Thermal demagnetization techniques applied to up to 400 specimens allowed getting a local magnetic stratigraphy. The long pattern of magnetozones allowed an independent correlation with the geomagnetic polarity time scale (GPTS) based on the recognition of the characteristic chron C12r (Early Oligocene) in the lower part of the succession. This new chronology provides further constraints on the timing of the deformation in the Pyrenean frontal thrust.

Key words: Western Pyrenees, Foreland basin, Syntectonic, Tertiary, Magnetostratigraphy