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New magnetostratigraphic ages for sediments at the northern margin of the Ebro foreland basin, a rejuvenation of the frontal deformation in the South-Western Pyrenees

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Foreland basins record the tectonic and denudation history of orogens. The large scale final architecture of the basin infill depends on supply and grain-size distribution of sediments from the catchment, and the distribution of accommodation available in the basinward regions for sediment accumulation. Therefore, tectonic uplift (generating relief prone to erode) and subsidence (providing accommodation space) are the main drivers of the long-term basin evolution, with the modulation of climate. At the margins, the geometry of sediment strata can be genetically linked to specific tectonic structures (thrust sheets, folds) and a synkinematic nature is deduced. This study provides a new time framework for the alluvial sediment sequences in the northern margin of the Ebro foreland basin, where the architecture and grain size evolution of the sediments is known and related to tectonic activity. New magnetostratigraphic results of the Uncastillo Fm at a 1.2 km-thick, mudstone and sandstone section (i.e. Fuencalderas section) located eastward of the Luesia fan apices, are presented. Overall, these sediments correspond to the medial-distal part of the Luna fluvial system and they are genetically related to the latest evolution of the south Pyrenean thrust system in the Gavarnie unit, involving the External Sierras. The sampled sediments correspond to mudstones. The results indicate ages younger than previously thought for the latest Pyrenean frontal deformation. A rejuvenation of $\sim$ 4, $\sim$2.5 and $\sim$1.2 Ma is found for the beginning of the deformation connected to the Punta Común thrust sheet (from C10 to C7), Lower Riglos thrust sheet system (from C6C to C6B) and the Upper Riglos thrust system (from C6B to C6A), respectively.