



Quantification of denudation of Iberian basins, the erosional signal of continental scale capture processes

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In central and northern Iberia, the development of the present-day drainage network was related to the opening of formerly closed fluvial systems developed within the ancient Cenozoic basins. The lowering of base level, induced by tectonic activity, fluvial capture or eustatic or climate variability, was transmitted upstream along fluvial channels in the form of erosional waves. For the main foreland basins in Iberia (Duero, Tajo and Ebro Basins) the opening of an outward drainage system leads to high incision and denudation rates, within intrabasinal areas. These processes had main influence in the evolution of the Iberian topography, since the late Cenozoic. Although, key questions on the timing and processes involved in the basin opening, as well as the influence of tectonics on it, remain open.

Signals of this change in drainage conditions are still preserved in some areas, and can be analyzed by the study of longitudinal profile shapes, and by the analysis of the present topography and the spatial distribution of surface erosion associated to the exorheic history of the basins.

The analysis of the denudation processes for these main basins, through the reconstruction of the former (Late Miocene) sedimentary infill, provides a quantification of the sediment fluxes in response to the drainage opening. Maps of denudation are performed for the different basins, and an integrated analysis of erosional volumes and spatial distribution of dissection are approached in terms of timing, tectonic influences and the fluvial response to the captures.

The analyses of the longitudinal river profiles and the erosional patterns and volumes within the main Iberian Basins, seems to highlight important questions about the different response of the studied catchments, which may help to understand the processes and timing involved in the post Neogene drainage, and the topographic evolution of the former internally drained central Iberia.