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## Post-orogenic sediment drape and flux of mountain range-foreland basin systems: An example from the Northern Pyrenees

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The transition from syn- to post-orogenesis is generally identified in foreland basins by a switch from active subsidence and deposition to isostatic rebound and erosion. However, the nature of the interplay between isostatic rebound and sediment supply, and their impact on the topographic evolution of a range and foreland basin during this transition has not been fully explored.

Here, we use a box model to explore the syn- to post-orogenic evolution of foreland basin/thrust wedge systems. Using a set of parameter values that approximate the northern Pyrenees and the neighbouring Aquitaine foreland basin, we evaluate the controls on: 1) the sediment drape over the frontal parts of the retro-wedge and 2) the sediment accumulation into surrounding continental margins following cessation of crustal thickening. Conglomerate and sandstone sediments preserved at approximately 600 m elevation, which is ~300 m above the present mountain front in the northern Pyrenees record an age of ca. 12 Ma, approximately 8 Myrs younger than the last evidence of crustal thickening in the wedge. These sediments formed a regional drape that reached up to approximately 800 m elevation, but are now preserved in low gradient patches, and are associated with more regional surfaces across the northern Pyrenees. Using the model, this post-orogenic sediment drape can be explained by the combination of a sustained, high sediment influx from the range into the basin relative to the efflux out of the basin, combined with cessation of basin subsidence. The model also predicts higher sediment flux out of the system during the post-orogenic phase involving an increase of sediment accumulation as observed in the Bay of Biscay during this interval.

Post-orogenic sediment drape and increased sediment flux out the mountain range-foreland basin system are proposed as generic processes of these systems.

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