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Drainage architecture and sediment routing in erosive catchments within the Ebro Eiver sedimentary basin (NE Iberian Peninsula)

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The Ebro Basin (EB) is the result of filling a foreland basin located between active mountain ranges during the Paleogene compressive phases, and later affected by phases of distension in the Neogene. The arrangement of filler material is monocline in the eastern margin and in the contact with the Catalan Coastal Range (CCR). This has repercussions on the model of emptying the erosive basins and in the drainage that took place in the margins of the original sedimentary basin. One can speak of a drainage architecture and sediment routing associated to a monocline erosive basin model.

The monocline topography in the original margin of EB encouraged the formation of a string of erosive basins around the contact with CCR, which are the result of headward erosion towards the center of the EB of the rivers draining the CCR towards the Valencia Trough. At the time, the transition from the EB in its initial condition of endorheic to exorheic was through one of these monocline erosive basins.

The erosive basins emptied by means of two vectors. On the one hand, growth in surface of the basin by deepening anaclinal streams through resistant beds of monocline stratigraphic succession that empty and link small depressions that increase laterally on the less resistant lithologic member. Moreover, the new drainage system entrenches as the exit point of the basin does, thanks to gradients created by distensional movements of the Neogene Valencia Trough.

Growth and entrenchment model of river basins, as well as, sedimentary deposits and landforms generated by these processes are described and analyzed.