Quaternary Neotectonic Elevation of the Sais Basin Between the Rifian and Atlasic Belts (Morocco): Sedimentary Dynamics and Geomorphologic Impact

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The Sais basin is located between the Rifian and Middle Atlas mountain chains; its Plio-quatrenary evolution can be sumarized as follows:

Upper Pliocene: The Sais, then filled, formed a continental lacustrine basin alimented by the Sebou paleoriver. We define the discharge system of PaleoSebou in the Eastern part of the basin at Fez.

Quaternary: The creation of belts is made by the progress of prerifian ramp which overthrust Pliocene deposits of the northern edge of Sais.

The Prerifian ridges migrate toward the south by means of the Zalagh, Sebou and Sidi Hrazem ramps. The “South Rifian Front” towards the south in the plain reorganized a change of course of the Sebou paleoRiver. This deformation translates NS to NNW-SSE compresional strain and allows reactivation of the preexistent Miocene basin structures

A change in the evolution of Sais results also from major neotectonic reactivation of the flexures of the northern middle Atlas.

This new structural state allows the rise of the Sais who becomes an elevated plain related to the northern Middle Atlasic catchment basin. The Sais Pliocene formations and their Miocene substrate are subject to intense erosion whith incisions exceeding 100m.

Currently, the Sais plain corresponds to the median part of the Sebou catchment basin located between the Middle Atlas upstream and Prerif downstream.