

Tectono-sedimentary cenozoic evolution of the el habt and ouezzane tectonic units (External rif, morocco)

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Abstract

An interdisciplinary study based on lithostratigraphic, biostratigraphic, petrographic and mineralogical analyses has been performed in order to establish the Cenozoic tectono-sedimentary evolution of the El Habt and Ouezzane Tectonic Units (External Intrarif Subzone, External Rif, Morocco). The reconstructed record allowed identification of the depositional architecture and related sedimentary processes of the considered units. The Cenozoic successions were biochronologically defined allowing, at the same time, identification of unconformities and associated stratigraphic gaps. The presence of five unconformities allowed for the definition of the main stratigraphic units arranged in a regressive trend: (1) lower Paleocene interval (Danian p.p.) assigned to a deep basin; (2) Eocene interval (lower Ypresian-lower Bartonian p.p.) from a deep basin to an external carbonate-siliceous platform; (3) lower Rupelian-upper Chattian p.p. interval deposited on unstable slope with turbidite channels passing upward to an external siliciclastic platform; (4) Burdigalian p.p. interval from a slope; (5) Langhian-Serravallian p.p. interval from slope to external platform realms. The petrography of the arenites and calcarenites allowed for the identification of the supplies derived from erosion of a recycled orogen (transitional and quartzose subtypes). The clay-mineralogy analysis indicates an unroofing (first erosion of Cretaceous terrains followed by upper Jurassic rocks) always accomplished by erosion of Cenozoic terrains. Several tectofacies checked in some stratigraphic intervals seem to indicate the beginning of deformation of the basement generating gentle folds and first activation of blind thrusts, mainly during the Paleogene. A preorogenic tectonic framework is considered as response to the generalized tectonic inversion (from extension to compression) as frequently registered in the central-western peri-Mediterranean areas. The large volumes of reworked terrigenous supply during the latest Oligocene-Miocene p.p. indicates the beginnings of the synorogenic sedimentation (foredeep stage of the basins) controlled by active tectonics.

Author keywords

Cenozoic

El Habt Tectonic Unit

External Rif

Morocco

Ouezzane Tectonic Unit

Tectono-sedimentary evolution