



Salt tectonics on propagating passive roof detachments: The case of the Sivas Basin (Turkey)

Etienne LEGEAY (1,2), Charlie KERGARAVAT (1,2), Jean-Claude RINGENBACH (2), Charlotte RIBES (1,2), Alexandre PICHAT (1,2), and Jean-Paul CALLOT (1)

(1) LFC-R - IPRA, Université de Pau et Pays de l'Adour, Pau, FRANCE, (2) TOTAL, Centre Scientifique et Technique Jean Feger, Pau, FRANCE

The Sivas Basin is located in a particular position at the junction of three crustal domains: the Pontides to the North, the Anatolide - Tauride platforms to the South, and the Central Anatolian Crystalline Complex to the West. This Tertiary basin is formed during the closure of the Northern branch of Neotethys. In regard to subsurface data, this basin developed over an ophiolitic basement obducted from the North during the Late Cretaceous, outcropping mainly to the North and South of the basin boundaries.

Following the campanian obduction, the basin infill starts with the development of carbonate platforms directly on the topographic highs of ophiolitic basement, comparable to the present day Omanese ophiolite. Onset of Tauride compression results in a general deepening of the southern basin during Paleocene to Eocene, with the deposition of thick marine deposits. From the southern edge to the central part, we recognized proximal and coarse marine deposits passing to turbidites and volcanoclastic alternances. The late Eocene records a very quick shallowing due to the onset of the Taurus retro-arc development, marked by a thick evaporitic sequence over a wide area, followed by a continental clastic succession, grading northward into evaporites. The Oligocene and Miocene stages are characterized by the northward migration of the foreland basin, associated to the emplacement of salt controlled mini-basins, on top of the evaporitic sequence north of the former foreland through, mostly with continental filling, except a transgression at Aquitanian.

The facies evolution of the Sivas Basin is closely related to the tectonic setting. The southern part of the basin corresponds to the Taurus retro-arc during Eocene to Oligocene times, resulting into the development of the foreland through and northward directed thrusts. This process allows for the development of slices of Eocene turbidites, thus modifying deeply the Eocene to Oligocene paleogeography, and depositional geometries. The northward migration of the foreland allows rapid filling and strong subsidence rates for the deposition of a thick evaporitic sequence.

As a result, the Oligo-Miocene sequences are deposited on salt, allowing the development of halokinesis during on-going shortening, marked by the development of minibasins. The shortening within the Eocene foreland results in the development of a triangular zone composed of Eocene slices detached into the ophiolite, associated to the propagation of a succession of south verging passive roof thrusts rooted ontop of the Eocene evaporite. The deformation of the minibasins is in turn strongly controlled by the development of these southward verging thrusts. This triangular leading edge separates the foreland province East-West trending from the roof top, salt controlled minibasin province to the North.