Structures of the external domain of the Lesser Caucasus

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The Lesser Caucasus mountain belt and the Eurasian plate basins present key areas for the reconstruction of the Tethysian belt evolution. Three main domains are distinguished from SW to NE: 1) the autochthonous South Armenian Block (SAB), a Gondwana-derived terrane, eastward extension of the Taurides-Anatolides continental micro-plate 2) the ophiolitic Sevan-Akera suture zone and 3) to the north the Eurasian plate. Our works performed during the MEBE programme, allow us to bring new insights on the subduction, obduction and collision processes recorded in the Lesser Caucasus.

The external domain of the Lesser Caucasus belt is characterized by a thin-skin tectonic evolving with time to a thick skin one's. This is particularly well expressed in the Vedi region in Armenia, where Palaeozoic to Turonian rocks of the SAB and the obducted Mid to Upper Jurassic ophiolites are unconformably covered by Upper Cretaceous formations. The Palaeocene to Lower Eocene series corresponding to a flexural basin in front of the belt overlie the SAB and the ophiolites. This basin exposes a huge Middle Eocene unconformity covering the Devonian formation of the SAB in some place.

According to our results, the onset of collision or the continental subduction of the SAB below the Eurasian margin is dated as Palaeocene. This process occurred around 20 my later than obduction (Late Coniacian-Santonian, 88-83 Ma) of the marginal basin over the SAB. It leads to the uplift of the Sevan-Akera suture zone, its folding, erosion, and to the transfer of detrital materials in a flexural basin in front of the belt, above the obduction structures. From late-Middle Eocene to Miocene all the belt is deformed by SW verging thrusts and reverse faults in the internal part (Transcaucaus to Karabakh,) and by N 130° E trending fold and thrust belt in the external domain. The structures of the external domain are related to a significant evolution from thin-skin to thick-skin tectonics mainly due to the reactivation of the previous normal faults in the SAB basement at depth (possible normal faults of passive margin).

As the results of these types of structures the SAB is underthrusted below a huge folded ophiolite nappe, and may have extension also below the Sevan Lake.