

## **Evidence of regional Adria rebound as post-orogenic phase of the Central/Southern Apennines (Italy)**

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Until the Lower Pleistocene the Central/Southern Apennines were dominated by compressional tectonics which resulted in the emplacement from the west of Apennine thrust sheets. The Adria continental foreland, in its turns partially involved in compressional structures, was pushed (internal sector) and pulled (external sector) down through a regional tilting toward the chain. At the Early/Middle Pleistocene boundary the compression regime stopped, but an important vertical movements prosecuted, uplifting the chain. This last process has been alternatively ascribed to mantle wedging at the subduction hinge, or to thickening at depth of the accretionary wedge, or to a rebound of the chain/foreland system, related to the lateral propagation of a slab tear cutting the Adria foreland: if the two first hypothesis should imply uplift of the chain alone, the rebound should imply uplift of both the chain and foreland. This is an important possibility to discriminate a crucial component of the present geodynamics of the study area.

Several evidence of Middle/Upper Pleistocene eastward tilting has been focused by analysis of geometries of the Plio-Quaternary seismic sequence of the Apennine foredeep. The east-ward deepening of the foreland can be easily recognized and measured in the Plio-Quaternary sequences from the Central Adriatic Sea to the Taranto Gulf shoreline, along the Apennine foredeep basin on the West Apulia onshore. The effects of the eastward tilting are generally masked along the chain, due to complex deformation and erosion which occurred during compressional and post-compressional regime. Anyway, recent uplift of the chain accords well with the measured tilting of the foreland, favouring an eastward regional tilting as the main source of Middle/Late Pleistocene uplift of the chain. This process i) re-activated some of the normal faults developed during the orogene-ward tilting and some of the Mesozoic normal fault systems separating the shallow water from pelagic domains in the Adria continental margin; ii) increased the chain erosion (uplift and erosion mutually supported the one with the other) originating the high depositional rate of the Middle/Late Pleistocene prograding sequence in the Central Adriatic Sea; iii) originated an east steeper slope of the chain that facilitated the development of the transverse rivers network.

All the observed data converge towards a hypothesis of a post-compressional unloading and rebound of the Adria foreland with a main role in the present geodynamics of the area.