

Intra-Mountainous Late Orogenic High-Angle Normal Faulting in Parnon Mt Tectonic Window, Peloponnesus, Greece

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The outer part of the Hellenic arc undergoes a late-orogenic extension since the Miocene, which was installed in an area that had initially undergone the stacking of a number of thrust nappes. This build-up was the direct result of the orogenic process caused by the subduction of the African plate to the south beneath the Eurasian plate in the north, which culminated in the Upper Tertiary, simultaneously eliminating a large number of paleogeographical domains that were part of the Tethys' ocean.

This late-orogenic extension was expressed: a) by the exhumation of the deepest tectonic units metamorphosed in low-grade conditions in the Upper Oligocene - Lower Miocene, constituting the footwall of low-angle normal faults (detachment faults) and building up the core of the large tectonic windows in the high mountain ranges of Crete and the Peloponnese; b) the creation of tectonic post-alpine basins defined by high-angle normal faults and filled by syn-rift sediments of Upper Miocene-Quaternary age.

This paper describes an intra-mountainous high-to moderate-angle normal fault system that constitutes the eastern margin of the tectonic window of Mt Parnon in the eastern Peloponnese. It is a significant tectonic structure which is at the same time a) the main eastern marginal fault of the metamorphic rocks of the deepest Plattenkalk Unit and b) the morphological boundary between the high topographic area of the mountain range and the lower hills of the Kynouria sector. With a length of 35 km striking NW-SE and having NE dips, it consists of four segments separated by lateral NE-SW high-angle normal faults that have cut the northern part of the metamorphic core. Its central segment, the Platanaki fault, controls an impressive slope of about 500m height (Fig. 1).

This fault system is the last expression of the late-orogenic extension that affected the area, overprinting the earlier detachment faults formed in the Middle Miocene-Lower Pliocene. Although an intra-mountainous one it must be regarded as contemporary with those faults that control the western margin of Mt Parnon that led to the final exhumation of the marbles of Plattenkalk Unit on the earth surface and its elevation at altitudes >1800m, feeding material to the Upper Pliocene-Quaternary basins of the southern Peloponnese.



Figure 1. The Platanaki fault segment. View from the north (Google Earth image).