



## **Evidence for Holocene faulting events and fast uplift rates along the Selianitika fault (Central Gulf of Corinth – Greece)**

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Faulting and folding of Late Holocene deposits were observed on a recent roadcut NW of Selianitika village. To understand the origin of these deformations and their significance we started a multidisciplinary investigation, as a contribution to the assessment of the seismic hazard in the area. The roadcut exposes a sequence of silt, fine sand layers and some gravel lens onlapping and interfingering with slope wash deposits draping the local hills. The onlapping sequence likely belongs to an alluvial fan fed by the small stream crossing Selianitika village to the west. Observations on specific lithofacies characteristics and paleontologic content, with the presence of scattered marine bivalve shells and crab fragments, bioturbations (Thalassinoides) and tide-related structures, suggest the vicinity of the sea and possible connection to temporary beach-bay conditions. Merging radiocarbon dating, archaeological estimates and preliminary paleomagnetic data, the onlapping sequence is younger than 6000 BP. Near the roadcut, the alluvial fan is crossed by one of the major splays composing the Selianitika fault. This fault has been recognized as part of the Aigion-NeosErinos-Lambiri fault zone (ANELFZ) one of the potential seismic sources in the area.

Unfortunately, the intense modification of the past decades has completely erased the original morphology of the area of the roadcut as well as the fault trace at the surface. However, 1944 RAF airphotos allow a rough reconstruction of the scarp; the roadcut is located near a complex step-over between two sections of the fault, belongs to the fault footwall and is almost parallel the fault itself. Further complexity is added by the presence of a wide amphitheater that may represent a zone of collapse related to the fast fault footwall uplift near the shoreline. The roadcut exposure is slightly curved (orientations between 270° and 300°), is ~150m long, 3-5m high, and dips do the N. It was surveyed through Laser Scanner and mapped in detail (the 1:20 scale) by merging the measured clouds of points and photomosaicing.

Stratigraphy and tectonic structures show evidence for a minimum of 3 possibly 4 individual events of deformation during the past 6000yrs that are likely related to surface faulting earthquakes on the Selianitika fault. A paleoseismological trench located 1.5km to the SE shows evidence for 6 surface faulting events during the past 4000yrs.

The data collected at the reoadcut can also contribute to a better estimate of the slip rate of the ANELFZ at Selianitika. In fact, in the assumption that the onlapping sequence was deposited in the vicinity of the sea level, its present elevation (12m asl) and age yield a Holocene maximum uplift rate of ~2mm/yr (regional and fault footwall components). This value is in good agreement with the rates obtained from Late Pleistocene marine terraces to the S and from uplifted Holocene notches to the N. This is a further evidence of the critical role played by the costal faults in accommodating an important part of the deformation across the Gulf and therefore of their seismic potential.