

**Shoreline displacement, drainage diversion in NW Peloponnese (Greece) as  
result of the geology, tectonics and human activity the last 100ky**

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**Abstract**

It is well known that shoreline displacement or drainage changes could be attributed to endogenous or exogenous forces. In tectonically and seismically active areas like NW Peloponnese the aforementioned effects are usually due to the combination of the endogenous and exogenous forces.

The broader Kyllini (NW Peloponnese) area located close to the Hellenic Arc system is one of the most active areas in Greece, and a great number of changes in the morphogenetic procedures have taken place during the neotectonic period, as well as the last 100ky. It has to be mentioned that the last 25 years several destructive earthquakes took place in the broader Kyllini area: Vartholomio (16-10-1988,  $M_L=5.5$ ), Pyrgos (26-3-1993,  $M_s=5.2$ ), Vartholomio (2-12-2002,  $M=5.5$ ) and Andravida (8-6-2008,  $M_w=6.4$ ) earthquakes being the most recent ones.

Pineios river being the 3<sup>rd</sup> longer river in Peloponnese, downstream crosses the study area and flow out at present time, southern of the Kyllini peninsula, in the Ionian Sea. The Greek historian, geographer and philosopher Strabo reported in his Geography (1<sup>st</sup> century A.D. – VIII, 3,5,1) that the mouth of Pineios River was situated during the ancient times to the north of the Kyllini peninsula and the river flowed out into the Ionian Sea southwest of the Kotichi Lagoon. Furthermore, published data from drill cores and archaeological studies, topographic maps and literature indicate that the Pineios River may have shifted north and south of the Kyllini peninsula throughout the Holocene, it was diverted in the Roman times and the 18<sup>th</sup> century A.D. and the current delta has been evolving since then.

In this paper, we present the effects of the geological, tectonic and neotectonic structure and the impact of the human presence and activity on the drainage network structure in order to determine the causes of the diversions of the Pineios River and the shoreline displacements. For this reason, we used, analyzed and evaluated (a) geomorphological, geological, tectonic and neotectonic data of the study area, (b) mythological studies, historical information and archaeological findings from buried and eroded archaeological sites of the wider study area, (c) published data related to drill cores and radiocarbon dates and (d) satellite and aerial photos of different periods, as well differential GPS measurements.

It is concluded that the studied shoreline displacements and drainage diversions are due to the combination of active tectonics (endogenous forces), climatic changes and human presence and activities during the last 100ky.