

EnCeladus hellenIc Supersite (Evoikos, Corinth rift and Ionian Sea)

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The Aegean area is among the most active areas in the world exhibiting shallow and intermediate depth seismicity with earthquakes having maximum magnitudes up to 8.0.

The area of the Hellenic Supersite covers the most seismically active area of Central Greece. In more specific it comprises the areas of:

- Ionian Islands, where the highest seismicity in Europe is observed and the highest acceleration in Greece have been recorded. The area is undergoing rapid and intense ground deformation with large magnitude of recorded uplift (> 4 mm/yr) that took place in the western part of Cephalonia Island for the period of 2003 to 2010.
- Corinth Rift, that is an ideal natural laboratory to investigate rift deformation mechanisms. Both 5-10-yr GPS and 100-yr triangulation GPS velocity estimates suggest N-S extension at < 5 mm/yr in the east and > 15 mm/yr in the west.
- Evoikos Rift, that shows a strongly thinned continental crust below the central section of the northern part with thicknesses of only 19-20km and a local uplift rate exceeding 1mm/year. A rotation rate of $3-5^\circ$ /Myr is reported for the eastern central Greece domain.

The Cephalonia Transform Fault (CTF) zone is located in the western part of the supersite area and is a strike slip faulting area with length of about 100 km consisting of the Cephalonia and Lefkas segments.

The structure of central Greece is dominated by a series of roughly WNW–ESE-trending extensional faults which have created a series of half-grabens, the most prominent of which are the Gulf of Corinth and the Evoikos Gulf.

The Corinth Gulf, located in Central Greece is considered to be an active extensional marine sedimentary basin assumed to have started deforming during the late Miocene - Pleistocene epoch, having a length of approximately 105 km, width about 30 km and a basement depth of 3 km at its center. This half graben basin is formed by a N100°E-oriented rift which separates the Peloponnese peninsula from the continental mainland of Greece. It is considered to be one of the fastest expanding ($6-15$ mm yr⁻¹ of \sim N–S extension) and most seismically active continental rifts around the world. Seismological and tectonic studies indicate that the morphology of the Gulf of Corinth is mainly due to repeated earthquakes that have generally occurred on 40° to 60° north-dipping normal faults. The Gulf is characterized by the long-term subsidence of the northern coast and upward displacement of the main footwalls.

The Gulf of Corinth has experienced several large earthquakes that destroyed some of the ancient cities. The high extension rates, have produced periodically significant earthquakes, as well as an important number of micro-

earthquakes. The seismicity of the gulf with the frequent occurrence of damaging, even moderate magnitude earthquakes and its proximity to Athens and other important cities as Patras, Corinthos was the primary motivation of intense studies.

The third area, the Evoikos Gulf and particularly its northern part, remains poorly understood in terms of its geodynamic structure and tectonic significance.