



Late Pleistocene to Present - normal and strike slip - faulting in the western Gulf of Corinth; data from high resolution seismic reflection SISCOR surveys

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The Gulf of Corinth is one of the fastest-spreading intracontinental rift on Earth, a 120km long E-W structure propagating westward toward the Aegean subduction zone. Present day kinematics (GPS data) indicates an opening direction oriented NNE-SSW and an opening rate increasing westward from 11 mm y⁻¹ in the central part to 16 mm y⁻¹ in the westernmost part. The high extension rate in the western part of the rift would imply a high seismic hazard if faults are not creeping.

Our work concerns this western extremity of the Gulf of Corinth, for which we propose an accurate map of submarine faults. The map is based on two high-resolution seismic reflection surveys (single channel sparker) performed aboard HCMR's R/V ALKYON, within the frame of SISCOR ANR Project. About 600 km of seismic lines were acquired, with a 200 mstwt maximum penetration, down to what we infer to represent the MIS 5 discontinuity. The highlighted faults network can be described as follows. In the eastern part, where the water depth reaches 450m, the sedimentary infill is faulted by the known North Eratini, South Eratini and West Channel faults. At the longitude of the Trizonia Island, the seafloor is mainly horizontal and the only fault is the south dipping Trizonia fault. Between the Trizonia Island and the Mornos Delta, the shallower northern part of the gulf shows a diffuse pattern of deformation with faults striking mainly E-W and ESE-WNW. It shows south and north dipping normal faults, strike-slip faults, as well as an inherited basement relief. To the south of this complex fault network, numerous mass transport deposits coming from the Mornos Delta and from steep slopes at the western end of the Trizonia fault make the identification of active faults difficult. In the southern part of the rift, no fault has been observed between the Psatopyrgos fault bounding the southern side of the Gulf and the Mornos Delta. To the West, between the Mornos Delta and the Rion Straits, three main south dipping faults, 4 to 6 km long, have been identified. These faults strike NE-SW. The northern one shows a clear strike-slip component. This fault system is not part of the Corinth Fault System. It could be part of a local transfer zone linking the Patras and the Corinth Basins, or of the NE-SW right-lateral slip fault system interconnecting the Gulf of Corinth to the Kefalonia transform Fault and the Hellenic subduction.