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Bathymetry and uplift rate of the Gulf of Aqaba, Dead Sea Fault.

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Initially described in the late 50's, the Dead Sea Fault system connects at its southern end to the Red Sea extensive system, through a succession of left-stepping faults. In this region, the left-lateral differential displacement of the Arabian plate with respect to the Sinai micro-plate along the Dead Sea fault results in the formation of a depression corresponding to the Gulf Aqaba. We acquired new bathymetric data in the areas of the Gulf of Aqaba and Strait of Tiran during two marine campaigns (June 2018, September 2019) in order to investigate the location of the active faults, which structure and control the morphology of the area. The high-resolution datasets (10-m posting) allow us to present a new fault map of the gulf and to discuss the seismic potential of the main active faults.

We also investigated the eastern margin of the Gulf of Aqaba and Tiran island to assess the vertical uplift rate. To do so, we computed high-resolution topographic data and we processed new series of U-Th analyses on corals from the uplifted marine terraces.

Combining our results with previous studies, we determined the local and the regional uplift in the area of the Gulf of Aqaba and Strait of Tiran.

Eventually, we discussed the tectonic evolution of the gulf since the last major change of the tectonic regime and we propose a revised tectonic evolution model of the area.