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Geology and morphology of the Antakya Graben between the Amik Triple Junction and the Cyprus Arc

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The Antakya Graben, in southeastern Turkey, is a NE-trending asymmetric depression delimited by normal faults in its southeastern part. Pliocene regressive marine siliciclastics, Pleistocene to Recent fluvial terraces and alluvium filled the graben. Along the Mediterranean coast, marine terraces flank both side of the graben at elevations ranging from 2 m to 180 m above present sea level, dating from MIS 2 to MIS 11. Normal faults bounding the southeastern margin caused the graben to tilt southeastward, while an older sinistral fault system that parallels the graben and these faults caused differential uplift of marine terraces on either side of the graben.

In this presentation, we present a) the Pliocene to Recent stratigraphy in the graben based on palaeontology, ESR, AAR, and 230Th/234U methods, b) the kinematics and palaeoseismology for the faults, d) the seismic reflection and GPR profiles measured on the faults, and d) morphotectonics in the region.

Based on these data, we interpret that westward escape of the continental Amanos Block along the sinistral faults within the graben caused the Antakya Graben to open since Pliocene. In the later stages of this opening, the graben tilted southeastward due to normal faults along its southeastern margin. These faults are still active and produce small to medium earthquakes. In addition to these tectonic movements, eustatic sea level changes in the Mediterranean have controlled the morphological evolution of the region.