

## **Late Holocene uplift of the Hersek Ridge on the restraining bend of NAFS**

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### **Abstract:**

The Hersek promontory separates Karamursel and Darica submarine basins in the Gulf of Izmit. The peninsula consists of Hersek ridge characterized by Pleistocene and Late Holocene marine deposits in the north and recent deltaic sediments in the south. Hersek ridge formed in a restraining bend of Yalova and Gölcük segments in the North Anatolian Fault System (NAFS). The southern flank of the ridge is bounded by thrust faults. Therefore, it has an asymmetric topography in NS direction. We identified four uplifted Holocene coastal terraces and paleo-shorelines on the northern flank of the ridge. The oldest terrace surface (MT1) is about +7-8 m above the current sea level while the youngest one (MT4) is at an elevation of +2,04 m. The six trenches were excavated on the coastal terraces. The oldest unit in the trenches consists of bluish-gray mud with turbiditic sand intercalations. The soft sedimentation related deformational structures are commonly seen within this unit. It is overlain by the fossiliferous, gently seaward dipping, shoreface and fossiliferous beach sand deposits respectively.

Each coastal terrace formed due to large earthquakes and elevated up to 8 m. The C<sup>14</sup> dating results of the terraces correspond with the some historical events occurred in eastern Marmara region. We suggest that the youngest terrace (MT4) uplifted by the great 1509 event. Possible tsunami deposits related to distant earthquakes were also identified in the trenches.