



Quaternary tectonic and sedimentary history of the shelf area between the Saros and Edremit Troughs, NE Aegean Turkey

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On the basis of new swath bathymetric and high-resolution sparker reflection data, Quaternary tectonic and sedimentary history of the Aegean continental shelf area between the gulfs of Saros and Edremit was investigated. These gulfs accommodate two complex neotectonic structures which control the major geodynamic processes in the region; these are the northern and middle strands of the North Anatolian fault (NAF), respectively.

A mature erosion surface, partially intersected by some vertical faults, can indeed be interpreted from the clear reflections over the Miocene basement, which is represented by various folded layers. This acoustical surface forms the base level of deposition for the studied shelf area and overlain by various depositional basins elongated between the gulfs of Saros and Edremit. Depending on the global sea level changes, water exchange between the seas of Mediterranean and Marmara, and partly on some terrestrial inputs, these basins have been developed. Sea-level decreased during the glacial stages while the Mediterranean conditions prevailed during the interglacial stages. As evidenced from the formation of the Pleistocene coastal terraces in the Canakkale (Dardanelles) Strait region and under the control of compressional forces along the NAF zone a regional uplift of 0.2-0.9 mm per year is another major component in the tectonic history.

The depositional units over the mature Pliocene erosion surface were mainly controlled by the fluvial discharges of the Karamenderes paleo-river and some others during the postglacial times, by sea-level oscillations which determined the proximity of basins to river mouths, and by oceanographic conditions. A rise in basement has been traced at 60-65 m below the modern sea level which has been played an important role in the sediment transportation occurred at the exit of the Canakkale Strait. The folded layers above the acoustical basement coincide with the development of the transpressional Anafartalar thrust fault on the Gelibolu Peninsula (upper Pliocene – lower Pleistocene). The faults cutting through these folded layers are strike-slip in character and in nature most faulting occurs on pre-existing normal faults. Folded layers observed in recent deltaic sequences indicate deformational forces are still active in the region, under the control of regional block rotations.