



## **Records of anthropogenic pollution in sediment of Gemlik Bay (Marmara Sea, Turkey) during the last 15 years**

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The organic carbon contents, polycyclic aromatic hydrocarbon concentrations and textural composition of a total of 72 surficial sediment samples (from 6 to 320 m water depths) have been studied to assess the relative importance of productivity, organic carbon accumulation/preservation and main controls on the distribution of anthropogenic pollution buried within the modern sediments across the Gemlik Bay, which is the second most polluted hot spot in the Marmara Sea; a semi-enclosed sea connecting the Black Sea to the Aegean Sea via the Bosphorus and Dardanelles straits. Contrary to low values in the outer basin, the organic carbon content is relatively high within the bay. Its highest values are distributed in the middle of the basin, inner Gemlik Port, Karasu River which is the most important fresh water discharge in the west, and a resort area Trilye. Highly-populated eastern and southern coasts are mainly influenced by rapid ecotourism development, direct discharges from rivers, surface run-off and drainage from port areas, domestic and industrial effluent discharges through outfalls and various contaminants from ships. Bathymetric features and the associated hydrodynamic processes seem to play an important role in the enrichment of organic carbon. Organic carbon contents show consistency with the sediment textural characteristics and the oxygen deficiency observed in Gemlik Bay. The results were also compared with two sets of historical data covering the periods of 1990 and 1997. On the basis of the percent of area distribution, organic carbon contents indicate an increment through the years. It is both striking in the sediment recovered from deeper waters where the currents are weaker and in coastal areas where the anthropogenic dense nutrient and organic matter inputs are high. Production, accumulation and preservation of organic

matter in the bay is believed to have been mostly affected by the inflow of relatively organic-rich Black Sea waters, by the rivers, and by inflow of organic-poor lower layer.