



Hydrological processes and sediment pollution in the semi-enclosed bays of the Marmara Sea, Turkey

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The Marmara Sea, an inland deep basin located NW Turkey with its two-layer water regime, experiences anthropic impacts of varying extent and nature. The contaminants are introduced through water ways by deep and surface currents coming from the Mediterranean and Black seas, respectively. Meanwhile rapid urbanization on the coastal zone of the Marmara Sea has attracted congested population influx since the 1970's. Industrial activities, municipal wastewater, agricultural chemicals, oil pollution and airborne particles have been the main reasons for the pollution that has affected primarily the estuaries and bays of the Marmara Sea and has ultimately spread along the shoreline and continental shelf that constitutes 50% of its total area. Anthropic pollution trapped in bays, in particular, has created significant ecological damage resulting in the decrease or extinction of marine species. To the east of the Marmara Sea, the decrement of the dissolved oxygen in the lower layer shows more anthropic input at the eastern part of the Izmit Bay. There is no or very little sediment transportation between the shallow basins. To the south, Gemlik Bay is a marine export gate and subjected to increasing urbanization and industrial activities. Higher anthropic pressure is via rivers with variable loads seasonally whilst the water circulation in the bay is not so energetic. There is not any new data published in literature about trace metal levels especially for Gemlik Bay sediments. New data on heavy metal concentrations in sediment samples at their fractions and their correlations will be presented, and compared with those in other bays in the Marmara Sea, Aegean Sea, Bosphorus and Black Sea.