

SEDIMENTATION RATES IN THE INNER PART OF İZMİR BAY

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Abstract

Sedimentation rates were determined for the inner part of İzmir Bay, close to a heavily industrialized Turkish coast of Aegean Sea. The highest sedimentation rates were found at 0.278 cm y⁻¹ in station 8 and the lowest at 0.104 cm y⁻¹ in station 9 in the shallower area of the bay.

Keywords : *Aegean Sea, Sedimentation.*

İzmir bay (Fig.1) is located on the western coast of Turkey and surrounded by a densely populated community. The bay has been divided into three sections (outer, middle and inner) according to physical characteristic of the different water masses.

The inner bay is small (57 km²) and shallow (max. depth 15 m). A 13 m deep sill (Yenikale Strait) separates the middle bay from the inner bay. Aegean Sea waters enter the inner bay through the narrow Mordogan strait. The water depth in the outer bay is about 70 m and decreases towards the inner bay, the coast of which is intensely industrialized compared to the middle and outer parts of the bay.

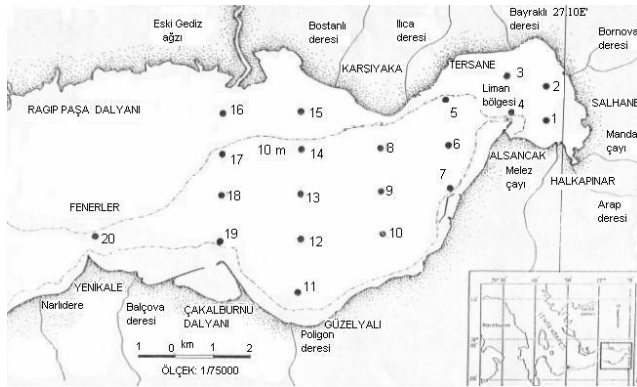


Fig. 1. Sampling locations in İzmir Bay.

Core samples were collected from different stations in the inner bay using core sampler during January-June 2004. Sediment cores were subsampled at 4 cm intervals using plastic tools and each layer was oven-dried to constant weight at 80°C, disaggregated and passed through a 250 µm sieve. The water content of samples was determined by weight loss after oven drying: water content (W in %)=(water weight/wet sediment weight x 100). The analyses of ²¹⁰Pb were determined by alpha spectroscopy of its daughter ²¹⁰Po according to the methodology described by Flynn (1968).

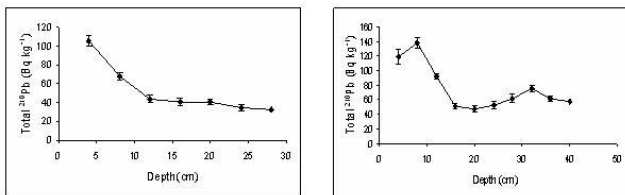


Fig. 2. Profiles of ²¹⁰Pb vs. depth in sediment cores.

For 3 stations (station numbers 8, 9 and 10 in Fig.1) the ²¹⁰Pb profile distributions were obtained in exponential form as expected so that it was possible to determine sedimentation rates (Fig.2). Various numbers of cores taken from each station at different times were analyzed and sedimentation rates were found to vary in the range of 0.104 cm y⁻¹-0.278 cm y⁻¹. Relatively high average sedimentation rates as 0.210 cm y⁻¹ and 0.184 cm y⁻¹ were observed at the stations number 8 and 10 respectively that are closer to the coast.

References

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