

SEA LEVEL VARIATIONS IN RESPONSE TO WATER BUDGETS AND BAROMETRIC PRESSURE EFFECTS IN THE BLACK SEA

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Long-term sea-level records from various stations in the Black sea (47 stations along the northern coast, 4 along the western coast, 1 on the southern coast), 2 in the Bosphorus, 1 in the Marmara sea and 3 along the Aegean / Mediterranean coast are studied to determine the seasonal and interannual dependence of sea-level variations in the Black sea, and its relationship with the neighboring seas. The relationship between sea-level and barometric pressure effects are investigated. Similarly, freshwater influx from rivers, evaporation and precipitation data are used to assess the variability in water budgets, and these are linked to the Bosphorus exchange flows and sea-level variations.

Spectral analyses show the time-scales in the sea-level, barometric pressure and the elements of the water budget are linked from seasonal to interannual periods. Shorter period variability in sea-level is related to storm surges and dynamical processes.

The hydraulically controlled flow in the Bosphorus plays a determining role in the sea-level variations. Barometric pressure differences between the Black sea and the adjoining seas are also very important in driving the exchange flows and the sea-level response.