



Impact of the dynamics of the flow on the modifications of the biogeochemical structures of the water masses from Black Sea to the Aegean through the Turkish Strait Systems

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The Sea of Marmara, the central feature of the Turkish Straits System (TSS) linking the Black Sea through the Bosphorus and Dardanelles Straits to the Aegean Sea, is a relatively small, intercontinental basin with a surface area of 11500 km² and a volume of 3378 km³. The Marmara Sea is occupied by two water masses of distinctive physical and biochemical properties, separated by a permanent halocline. An upper layer, 15-20m deep, of brackish water flows in from the Black Sea and a lower layer of the saline water of Mediterranean origin.

As the upper layer of the Marmara Sea is occupied by the brackish water of the Black Sea coming through the Bosphorus and the renewal time of the upper layer is short (≈ 4 months), biogeochemical structure of Marmara Sea surface waters are expected to reflect Black Sea coastal water characteristics. However, five years bi-weekly time series measurements of the physical, chemical and biological properties of the Black Sea and the Marmara Sea waters during 2001 and 2005 and recent basin-wide oceanographic cruises suggest that there are significant differences in characteristics of the biogeochemical structures of the Black Sea and the Marmara Sea waters and which can be attributable to the dynamics of the flow fields. The biotic community appears to response to the flow dynamics and mixing in the Bosphorus and results in formation of the biogeochemically distinctive Marmara Sea waters. Temporal and spatial evolution of the water mass properties are investigated.