EXAMINATION OF THE POLLUTION IN THE WEST BLACK SEA
BY REMOTE SENSING TECHNOLOGIES

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Black Sea has been subjected to various investigations from 19th century to present, due to its unique oceanographic features and geological evolution. It has a surface area of 423,000 km² (excluding Azov Sea) and a volume of 547,000 km³. Black Sea is an intercontinental and almost a miniature ocean with its geological structure.

There are six countries along the cost of the Black Sea, however the catchment area consists of seventeen countries and a population of 165 million and is five times larger than the sea surface area. The Black Sea catchment basin with an area of 2.5 million km² extends to Central Europe through Danube River in the West; to Baltic Sea in the North; to Caspian Sea in the East and Central Anatolia in the South. In spite of this large basinal area, its connection to the ocean is rather limited. It is connected to the Agean Sea (Mediterranean Sea) by way of the Turkish Strait System (TSS) including Strait of Istanbul (Bosphorus), the Marmara Sea and Strait of Canakkale (Dardanelles).
The growing pressure of population and industrial activities in such a large catchment basin increase the anthropogenic influences and pollution in the Black Sea. The most intensive effects of pollution can be observed in the West Black Sea which is located between Sivastopol in the North and Inebohi in the South. The West Black Sea is surrounded with the Eastern side of Crimea Peninsula and lower plain plateau of South Ukraine to the North; Balkan Peninsula (Romania and Bulgaria) and Thrace to the West and Kocaeli Peninsula (Turkiye) and West Black Sea Region (Turkiye) to the South.

The major water input to the Black Sea is provided by the large rivers in its catchment area and high precipitation in the region. The major rivers draining to the Black Sea are Dyneper, Danube, Bug, Dynester, Sakarya and Filyos. The Danube river contributes approximately 60% of the water input and 20% of suspended material (24.1 million ton/year) to the Black Sea. This sediment load carried by the Danube River is accumulated at the shallow continental shelf. Therefore, Danube delta moves about 40 metres to the sea every year. Domestic, industrial wastes and nitrogen, phosphor and pesticides derived from agricultural activities are carried to the Black Sea by aforementioned rivers. Previous studies concerning the pollution in the Black Sea are mostly in local scale.

Regional oceanographic investigations were carried out by remote sensing technologies. The satellite imagery provides graphic information on the water quality and thermal in seas at the times of the satellite overpass. Remote Sensing technology is an effective monitoring tool in water studies in such large area (West Black Sea), by using near simultaneous sampling measurement. The distribution of Chlorophyll-a, Total Suspended Sediment and Turbidity concentrations were determined in the West Black Sea by using data provided by Landsat Thematic Mapper (TM) during May 1992 in order to investigate the sources and pathways of the pollution in the West Black Sea. Water quality studies were carried out along coasts of Romania, Bulgaria, Thrace and Turkish Strait System (from the mouth of Danube River to the Strait of Canakkale) by using Landsat TM data NOAA satellite data, and available surface current pattern of the Black Sea.