MARMOD Database: Marmara Sea Marine Data

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Marmara Sea

The Çanakkale Strait (Dardanelles), the Marmara Sea and the İstanbul Strait (Bosphorus) are the components of the Turkish Strait System (TSS). TSS is the only path for the water exchange between the Mediterranean and the Black Sea. Because of the density difference there is a two layer system in the TSS: the low salinity Black Sea waters flow on top, while the high salinity Mediterranean waters flow at bottom.

MARMOD Project: "An integrated modelling system for the Marmara Sea"

Ministry of Environment and Urbanization of Turkey, General Directorate of Environmental Impact Assessment Permits and Control, Laboratory, Measurement and Monitoring Department is officially responsible to coordinate the marine pollution monitoring projects in Turkish seas including the Marmara Sea.

In 2017 the Ministry of Environment and Urbanization has initiated the MARMOD project in order to perform assessment of the environmental and biogeochemical properties of the Marmara Sea. The project is coordinated by the Ministry of Environment and Urbanization and Institute of Marine Sciences of Middle East Technical University (IMS-METU). The main objective of the project is to apply a coupled hydrodynamic biogeochemical model to identify and predict effects of the Black Sea, urbanisation and industry on the environmental health of Marmara Sea ecosystem.

MARMOD Database

Setting up the hydrodynamic biogeochemical model requires comprehensive environmental data for model initialization, verification and parameterisation. For these purposes the MARMOD project compiled integrated database that includes data from all available sources. The main data supplier to the database is IMS-METU that has been doing investigation in the Marmara Sea and the straits since 1980s. Tens of cruises were performed, the physical, chemical and biological data were collected from about 7000 stations. The IMS-METU data were complemented with the data of environmental monitoring that is been implemented in the sea by the Ministry since 2000 with involvement of several subcontractors. The database contains data from more than 9000 stations for period 1985 – 2017 on the following parameters: temperature, salinity, dissolved oxygen, fluorescense, turbidity, PAR, nutrients (NO2, NO3+NO2, NH4, PO4, Si, TN, TP), pH, Chl-a, and Secchi Disk Depth. The quality control of the data has been performed with the help of ODV (R. Schlitzer, Ocean Data View, 2017, available at http://odv.awi.de) following the SEADATANET procedures.

The station map is presented in Figure 1.

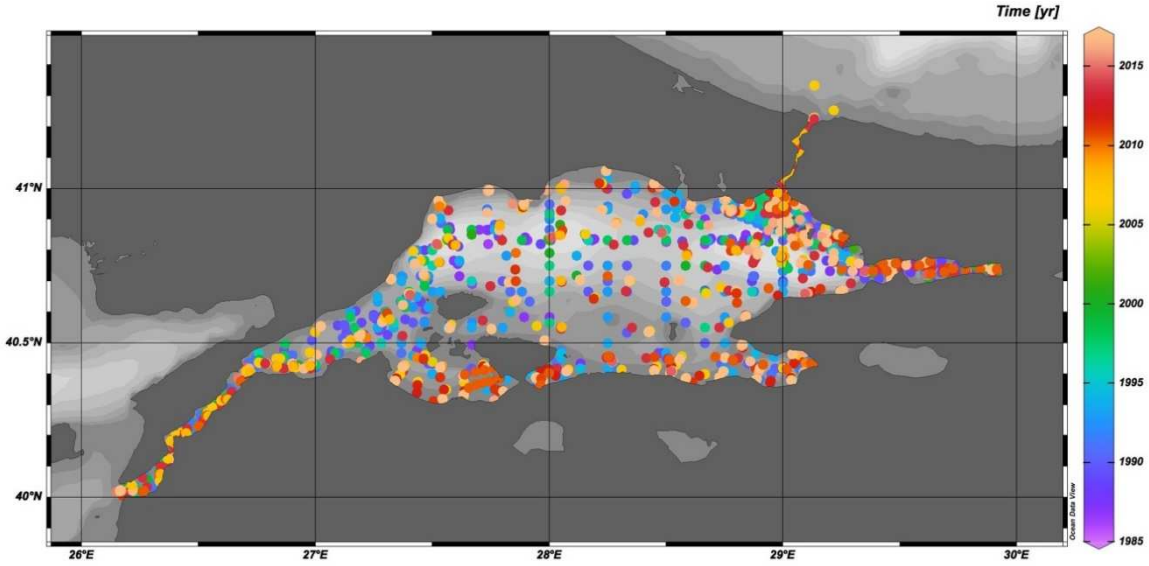

Figure 1: Station location map of MARMOD Database

The most intensive observations were performed in the area of İstanbul strait, while other parts of the sea are less covered with data, moreover, the data are irregularly scattered over time. Although the database includes a huge amount of marine data, the more dense dataset on a regular grid is needed for biogeochemical models. For this reason four seasonal cruises are planned to be performed in the second phase of the MARMOD project (2018-2019). The data from the cruises will be included in the MARMOD Database as well as the coastal data that are collected periodically at the discharge point of the cities around the Marmara Sea.