

EGU2020-873

<https://doi.org/10.5194/egusphere-egu2020-873>

EGU General Assembly 2020

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



The new online Black Sea Oceanographic Database

Elena Zhuk, Maxim Vecalo, and Andrey Ingerov

Marine Hydrophysical Institute of RAS, Oceanography, Sevastopol, Russian Federation (alenixx@gmail.com)

The new online Black Sea Oceanographic Database

Elena.V. Zhuk

Marine Hydrophysical Institute, Russian Academy of Science, Russia

alenixx@gmail.com

The new improvements of the Black Sea Oceanographic Database (BSOD) dedicated to the online access of the hydrological and hydro-chemical data, taking into account users priorities, data types, methods and time of data access are presented.

According to the results of the free DBMS analysis, the PostgreSQL object-relational DBMS was selected for archiving the data in the BSOD. PostgreSQL provides high performance and reliability and the ability to work with a big data. Moreover, the PostgreSQL has the functions allowing to work with GIS objects, using the PostGIS extension and has built-in support for poorly structured data in JSON format. For the development provided the capability to select large data set in accordance with the criteria specified by metadata selection. Taking these two features into account, the part of the database responsible for accessing the metadata, was designed for interactive transaction processing (OLTP access template), while the other part, responsible for the in-situ data archiving was developed in accordance with the "star" architecture, which is typical for the OLAP access template.

After analyzing the oceanographic in-situ observations, the following main entities were identified: Cruise, Ship, Station, Measurements, as well as Measured parameters and the relationships between them. A set of attributes was compiled for each of the entities and the tables were designed. The BSOD includes the following:

- **Metadata tables** : Cruises, ships, stations, stations_parameters.

- **Data tables**: measurements.

-**Vocabularies**: vocabularies were constructed using the SeaDataCloud BODC vocabularies parameters.

-Referencedata tables: GEBCO, EDMO, p01_vocabulary, p02_vocabulary, p06_vocabulary, l05_vocabulary.

To provide the online data access to the Black Sea Oceanographic Database, a User Interface-UI was implemented. It was developed using jQuery and mapBox GL javascript libraries and provides visual data selection for date period, cruises, parameters such as temperature, salinity, oxygen, nitrates, nitrites, phosphates and other metadata.

Acknowledgements: the work was carried out in the framework of the Marine Hydrophysical Institute of the Russian Academy of Science task No. 0827-2018-0002.

Keywords: Black Sea, oceanographic database, PostgreSQL, online data access, Geo-information system.