

Geoinformation System of the Russian Black Sea Coastal Zone

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Introduction.

Successful research and analysis of the current state of seas and oceans coastal areas require reliable information support. The most convenient instrument to solve this problem is GIS. At present, a GIS of the Russian Black Sea coastal zone is being developed in FSBSI “Marine Hydrophysical Institute of RAS” (MHI). While designing the GIS, particular attention was paid both to the software and to the databases used.

Coastal zone data access software.

The Black Sea GIS software developed in MHI [1,2] was taken as a basis to provide data access via Internet. It was developed using the client server architecture, MapServer was used as a map service, and MySQL was applied as a database management system. This software enables selecting and visualizing tabular data kept in relational databases, as well as textual and graphical information. The Black Sea GIS module structure gives an opportunity of further extending the specialized database.

Databases.

The specialized database for information support of the coastal research consists of two main blocks. One of them includes data of the oceanographic research in the coastal area; the other one contains data obtained during the coastal research and remote observation for the coastal zone (Figure 1).

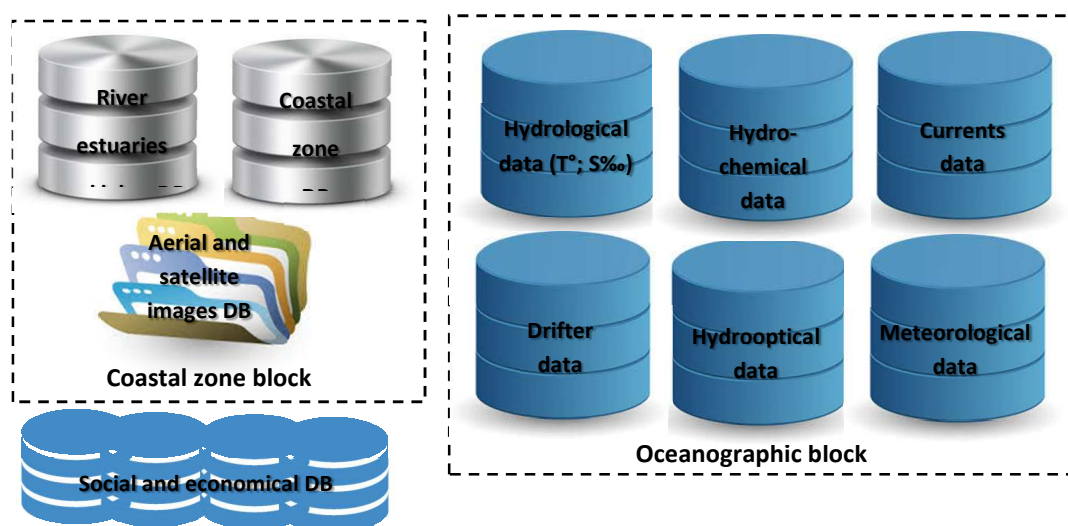


Figure 1: The structure of the specialized database for information support of coastal research

The oceanographic block is constructed using the Black Sea specialized database of Oceanographic data bank of Marine Hydrophysical Institute RAS [3]. It includes oceanographic and meteorological data. The Specialized database includes observations along the Crimean and Caucasian coasts of the Black sea. The database contains over 55,000 oceanographic and over 10,500 hydrochemical stations. The Coastal zone block consists of three databases:

- the Database for the coastal zone study (the DB includes granulometric and mineral composition of sediments; morphological characteristics of the submerge slope, etc.);

- the Database for the river estuaries and coastal lakes;
- the Database of aerial and satellite images (the DB includes materials of aerial photography, satellite images, and photos and video from an intelligent camera installed on a drone [4]).

Data access examples.

The developed software provides data access and visualisation of different kinds of coastal data which are stored in several databases. The results of queries to the Database for the coastal zone study (photo of landscape for the selected profile) and the Database of aerial and satellite images (photo of Bakalskaya spit from the drone) are shown as an example in Figure 2.

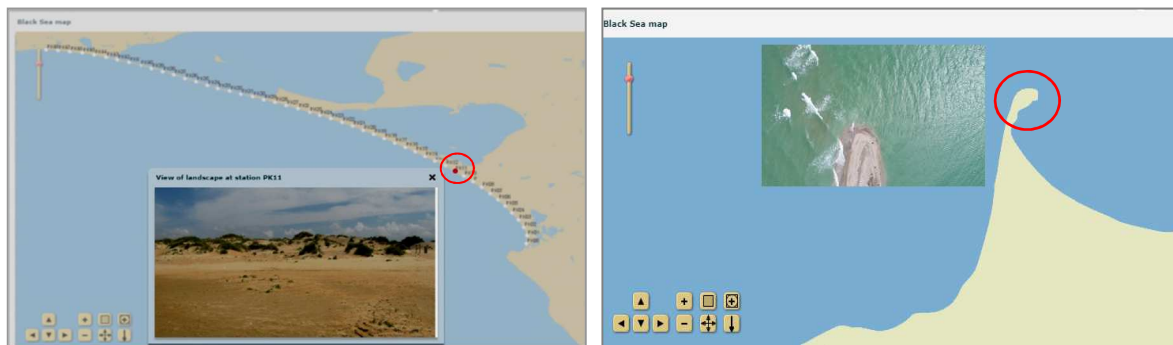


Figure 2: a –Photo of landscape for the profile; b – Photo of Bakalskaya spit from drone

Conclusions.

The current version provides a convenient access and presentation of the data obtained while studying the Russian Black Sea coastal zone. At present, the activities aimed at the further GIS development, related both to improving the software and connecting new databases, are ongoing.

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References.

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