“See The Sea” — new opportunities for distributed collaboration aimed at solution of oceanographic problems using remote sensing

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ABSTRACT

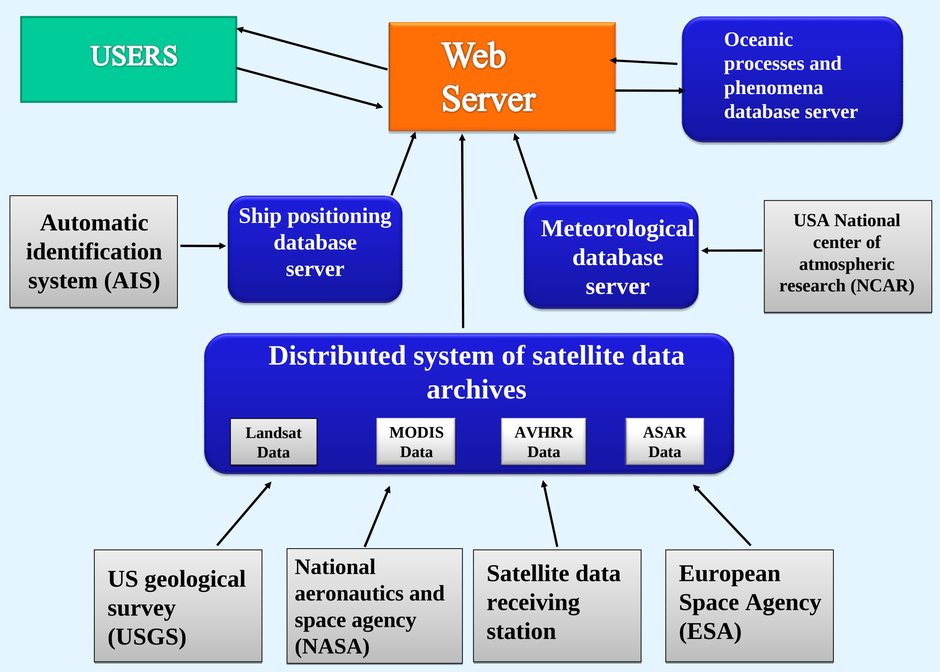
The immensity and high variability of the World Ocean make the task of information accumulation on processes and phenomena in it and in the atmosphere above it to be rather difficult. Therefore, the importance of ocean observations from space can hardly be overestimated. Currently the application of satellite information is constantly broadening and large archives of ocean remote sensing data and related information products are being accumulated in various data centers. The obvious trend is an avalanche-like volume growth of isolated archives of observation data and data products.

There is a dramatic gap between a large number of satellite observation instruments available today and systems providing means of efficient processing and analysis of such data for sophisticated interdisciplinary scientific purposes.

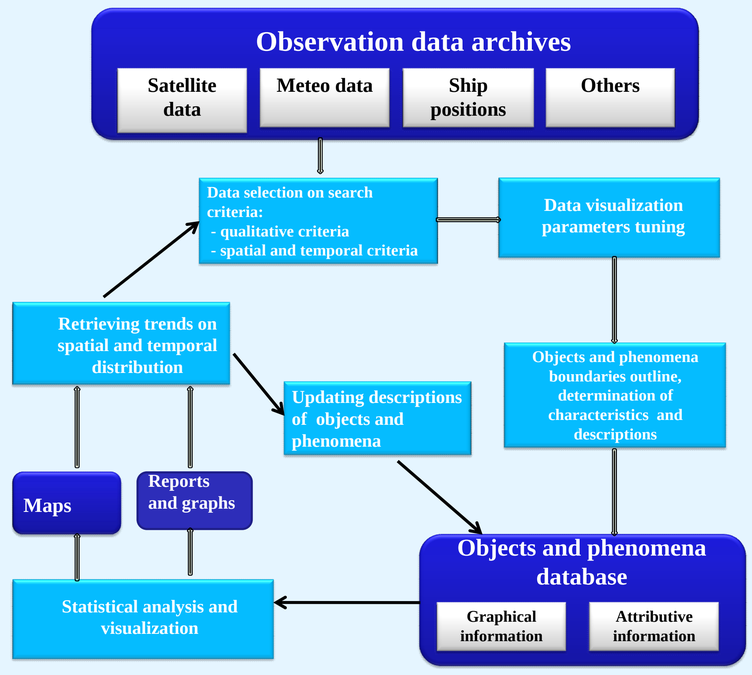
The distributed satellite information system See the Sea (STS) being developed by IKI RAS will not only provide the access to the data archives built in IKI RAS but also offer tools for producing different information products based on satellite data that can aid scientific investigation of processes and phenomena in the World Ocean. STS is aimed at various tasks related to the study of processes in the ocean including interaction of the ocean and atmosphere, currents, internal waves, eddies, surface pollution, etc. STS provides tools for joint analysis of various satellite data (VIS, IR, SAR), as well as metocean and ship positioning data.

The key features of STS will be the possibility to work simultaneously with satellite information of different types and perform their complex analysis. This will facilitate large scale investigations in the framework of scientific and educational programs

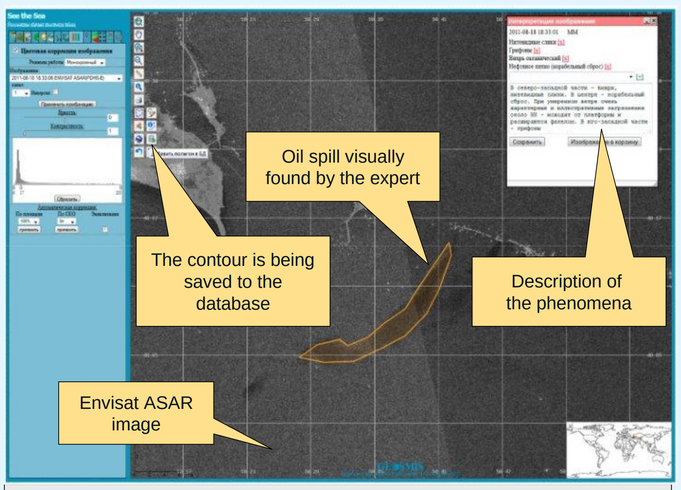
General System Architecture



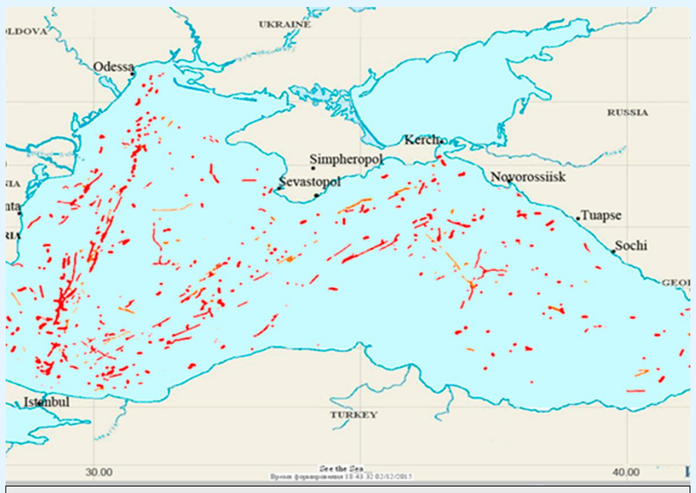
Researcher’s Workflow



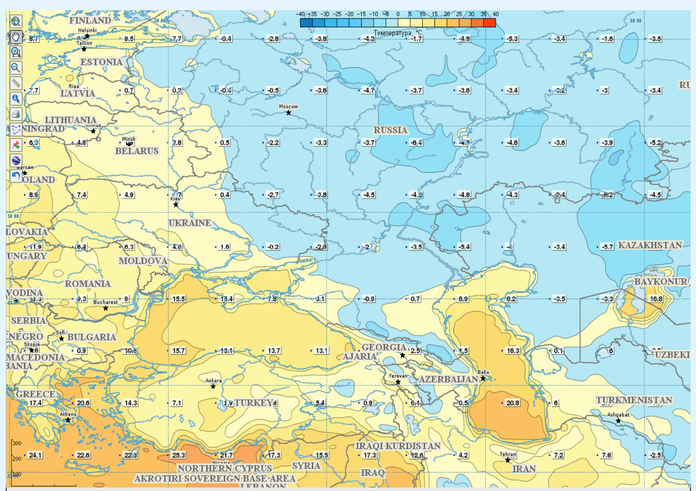
The Principal Features of the “See the Sea” Multi-User Information System



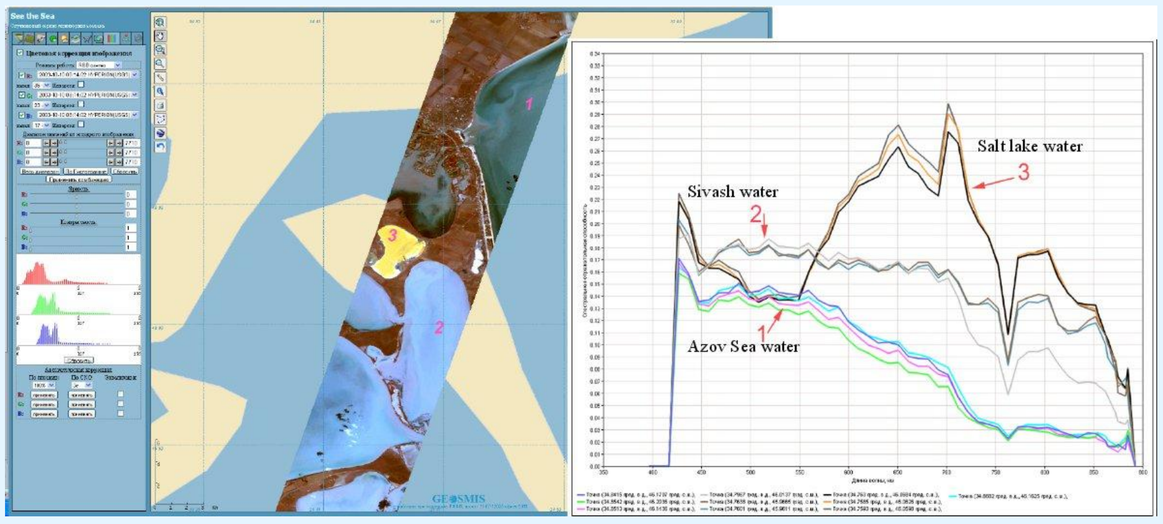
Phenomena contours

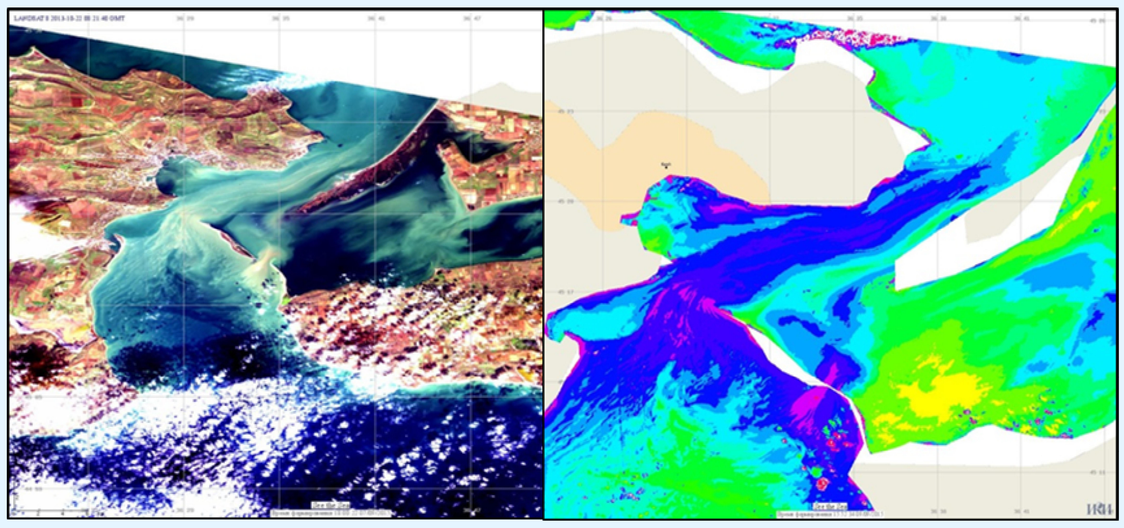


Map of oil spills distribution

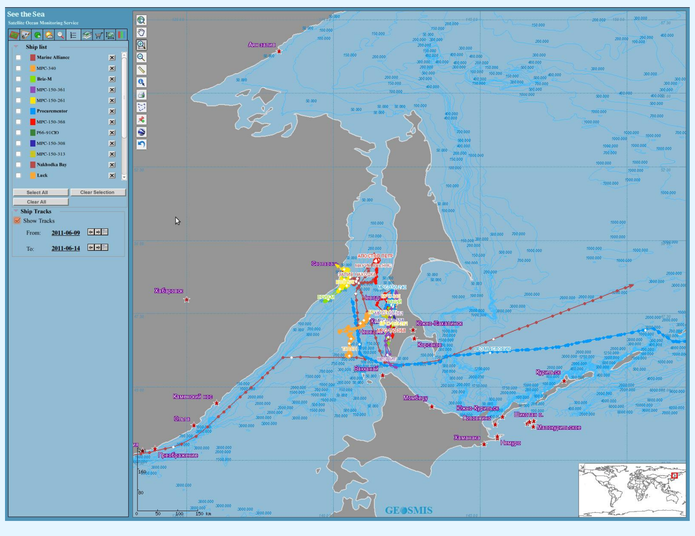


Meteorological data

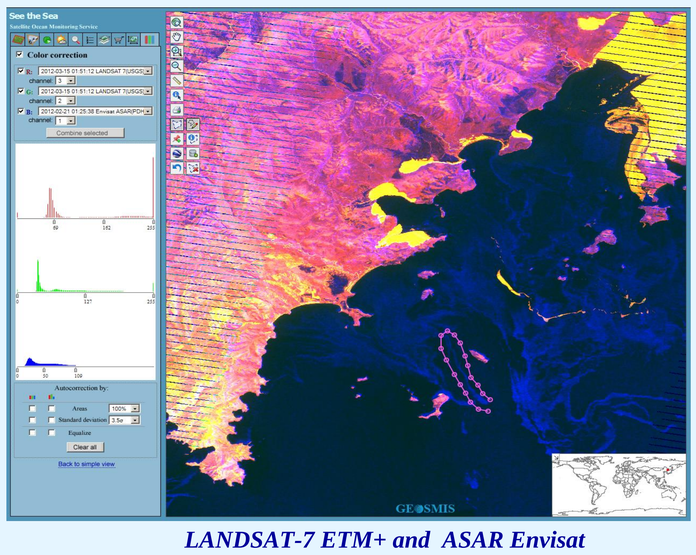




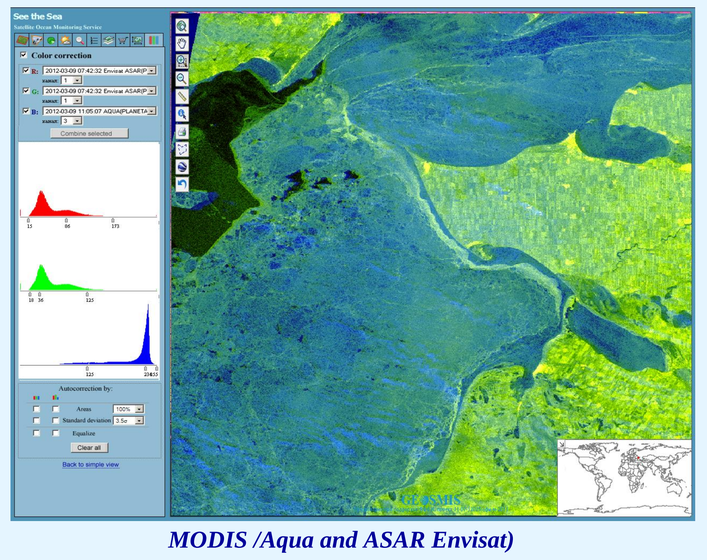
Classification of water types



Displaying vessel tracks



LANDSAT-7 ETM+ and ASAR Envisat



MODIS /Aqua and ASAR Envisat)

Using RGB composition for joint visualization of multiple satellite images

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