

Preparation of oceanographic data for international projects

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RIHMI-WDC participates in international Pan-European projects Sea Search, Black Sea Scene, SeaDataNet, EMODNet Chemistry, EMODNet Ingestion. These projects are part of the EU infrastructure and EMODnet thematic portals. The European system integration of oceanographic data, including the chemistry of the ocean, brings together data from National Oceanographic Data Centres and leading marine research organizations in Europe (<http://www.seadatanet.org>). The raw oceanographic data in RIHMI - WDC are presented in the national data storage format (Ocean PVM). Each cruise is stored in a separate file, consisting of a set of records of the following types:

- 0 record – general information about the cruise.
- 1 record – station information.
- 2 record – meteorological data.
- 3 record – hydrophysical and hydrochemical data.
- 4 record – pollution data.

To transfer data to the SeaDataNet portal, it is necessary to first convert the data from the Ocean PVM format to the SeaDataNet ODV transport format and prepare XML files for the common data index (CDI) metadata. For these purposes, the NIS_OPVM program developed by RIHMI-WDC is used (Figure 1). To checking the received data, used the tool developed by the portal SeaDataNet - program Octopus.

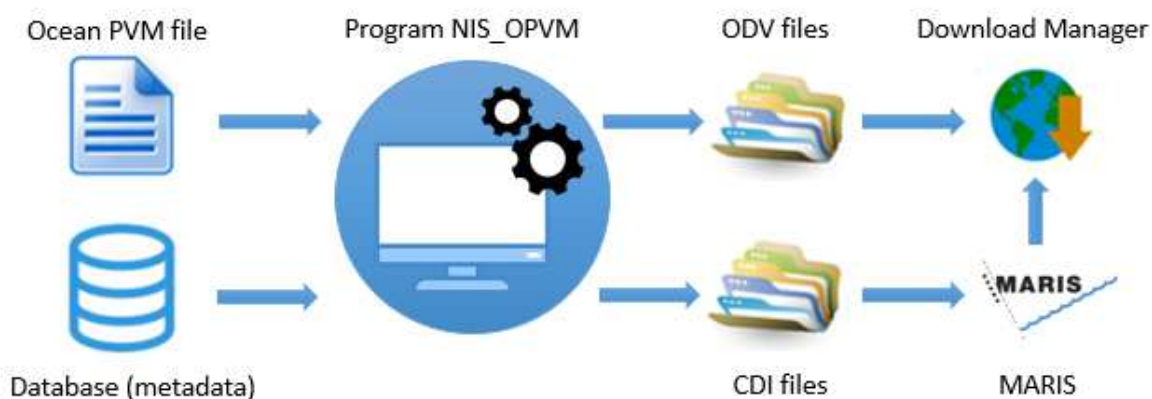


Figure 1: The scheme for transferring data to the SeaDataNet portal

Based on the approaches proposed by the SeaDataNet project, a number of thematic portals EMODNET on biology, chemistry, ocean Geology, bathymetry were created. Their overall concept - creating a common data index (metadata) and supporting data providers in ODV or NetCDF formats. For all time participation in projects RIHMI - WDC has transferred more than 135 thousand stations for the Black sea, the Baltic sea, the Mediterranean sea and the North-Eastern part of the Atlantic Ocean.

The EMODnet Data Ingestion portal (<https://www.emodnet-ingestion.eu/about>) is a component of the present marine data management infrastructure , designed to download data to the EMODNet data portals. One of the important tasks of the EMODNet Ingestion project is the organization of automatic interaction of information systems. This is a new step in the development of international data

exchange and data integration, which also means reaching a new level of inform to potential consumer. Within the framework of this project, RIHMI-WDC provides 11 open data sets with initial and climatic data. Most of the data sets are information resources of the Unified state system of information on the world ocean (ESIMO), which RNODC represents in international cooperation within the framework of the IOC UNESCO (Oceanographic data portal - ODP), World data center – B (WDC - B) "Oceanography". Several of the proposed data sets, regularly updated, which requires extra work. These are the TESAK operational data, obtained via the Global Telecommunication Network, the forecast data of the Russian Hydrometeorological Center, the trajectories of tropical cyclones for each month. If put this data through the portal EMODNet Ingestion, it will require a great deal of routine work. There are three options for automatically presenting these data sets on the EMODNet Physics Portal (Figure 2):

- Include EMODNet links to visualization results prepared by resource authors.
- Development of web services or APIs for automatic acquisition of data for visualization on the EMODNet portal.
- Creating a map services in the WMS standard (OGC).

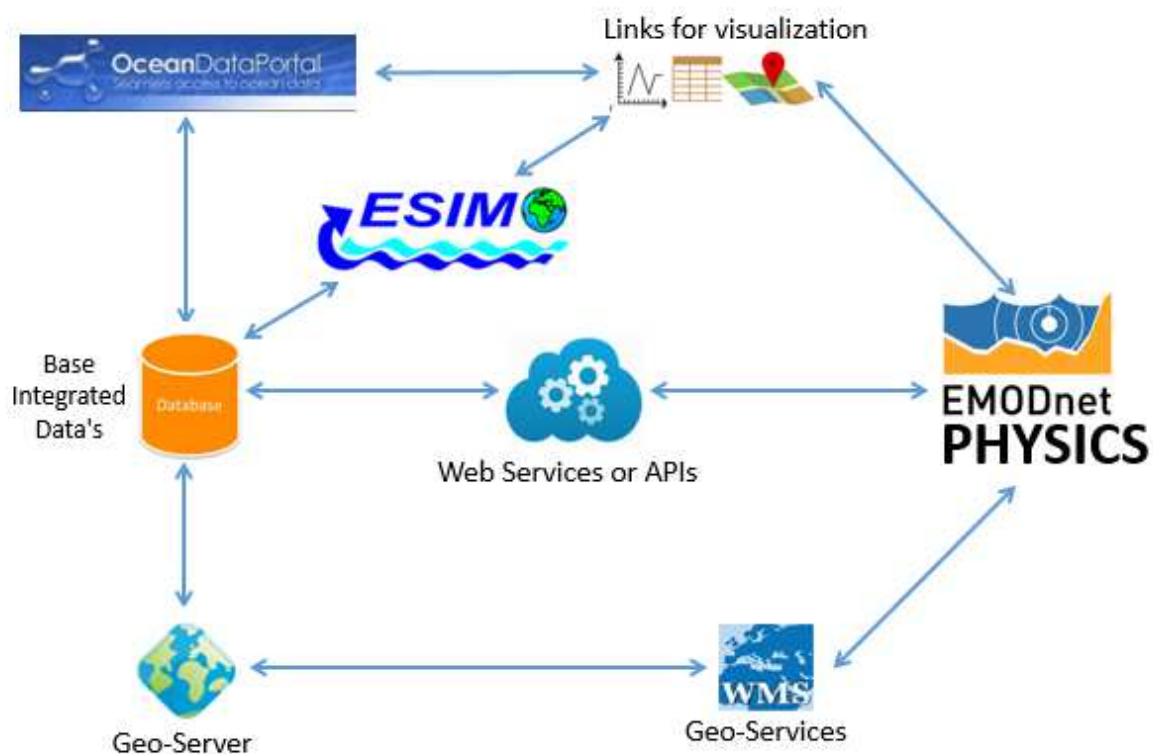


Figure 2: Options for presenting data in the EMODNet Physics portal

RIHMI-WDC presented seven data sets to the EMODNet Ingestion project at the moment.

Automation of preparation CDI and ODV files has allowed to reduce essentially labor input of work on data integration. Increasing the level of automation in the provision of quickly updated data sets on the EMODNet Physics portal simplifies the process of data assimilation and interaction of European and Russian information systems.