

**IMDIS 2016**  
***International Conference on Marine Data and Information  
Systems - Gdansk (Poland) - October 11-13, 2016***

**IODE Ocean Data Portal – platform to build  
national distributed data systems**



Sergey Belov, RIHMI-WDC (Russia), [belov@meteo.ru](mailto:belov@meteo.ru)  
Nikolai Mikhailov, RIHMI-WDC (Russia), [nodc@meteo.ru](mailto:nodc@meteo.ru)  
Tobias Spears, DFO-MPO (Canada), [tobias.spears@dfo-mpo.gc.ca](mailto:tobias.spears@dfo-mpo.gc.ca)

*International Oceanographic Data and Information Exchange (IODE) of the  
Intergovernmental Oceanographic Commission (IOC) of UNESCO*

# Introduction

- Science is becoming increasingly collaborative
- Increasing demands for data
- Increasing ability to collect and generate data
- Increasing expectations of researchers (e.g. must think globally, providing access to data an emerging requirement for publication)
- Citing research accomplishments is an increasingly on-line activity



# The challenges

- Where to look for data (portals)
- How to find data (metadata)
- How to access data (infrastructure)
- How to integrate data (interoperability)
- How to contribute when resources are limited



# Objectives



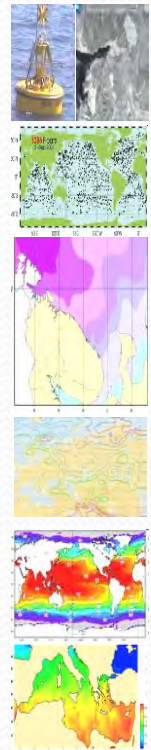
## International Oceanographic Data and Information Exchange (IODE)

IODE facilitates the exchange of oceanographic data and information between participating Member States, and serves the needs of users for data and information products.



## IODE Ocean Data Portal (ODP)

- Facilitate and promote the exchange and dissemination of marine data and services;
- Provide the seamless access to marine data to NODCs across the IODE network through the discovery, evaluation and access to data via web based services;
- Identify and recommend standards to provide interoperability with IODE data centres to allow shared use of metadata, data and products.





# Benefits of the IODE ODP



The ODP provides benefits to both data providers and data users:

## Benefits for data providers

- Scalable environment to support the capacity of the data provider's environment
- Supported technology for data discovery, evaluation, and access
- Standards (discovery metadata, vocabularies, code lists)
- Improved interoperability with other major marine data systems
- Access to advice and support from a team engaged with relevant technical and data management expertise within the global community

## Benefits for data users

- One-stop shop for data and web services (*discover, access, download*)
- Increased visibility for one's research data
- Increased visibility of the researcher within the marine domain (Ocean Experts)

5



Standards



# ODP components



TECHNICAL AND TRAINING SUPPORT



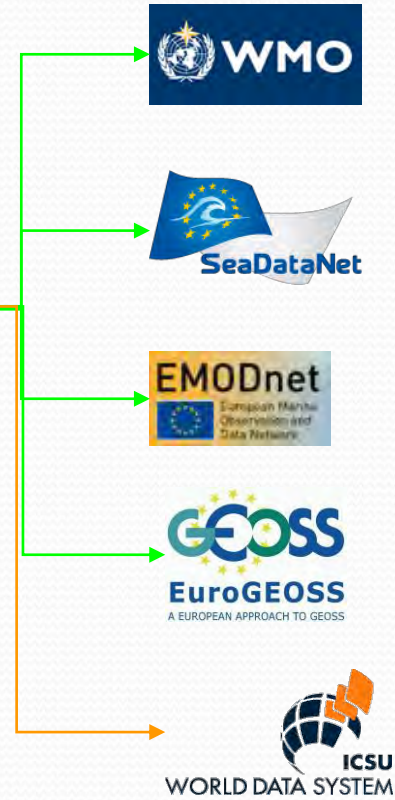
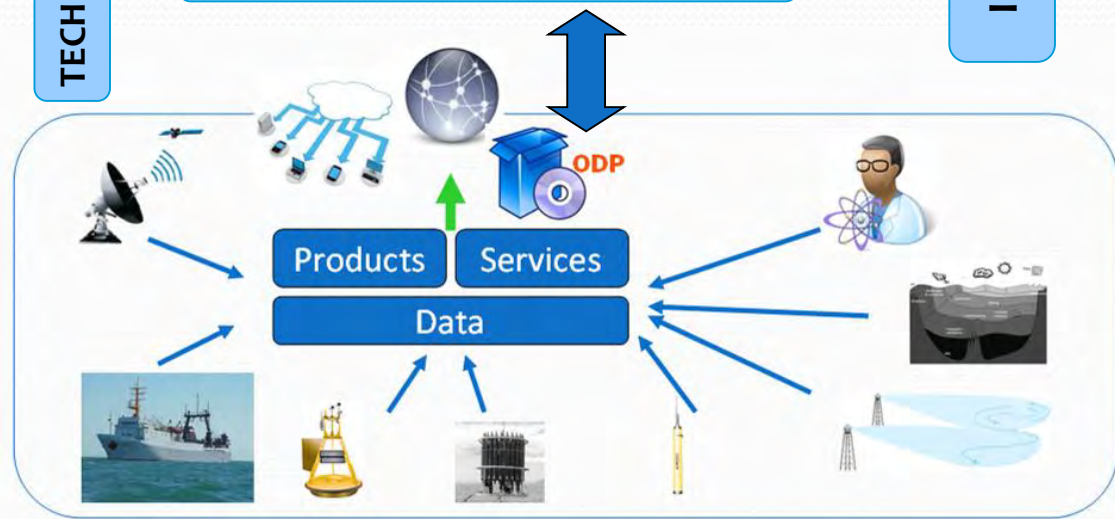
ODP PORTAL

ODP TOOLKIT



DATA AND INFORMATION

INTEROPERABILITY PACKAGE





# ODP components



The ODP is comprised of 3 major classes:



**ODP Toolkit**

**Interoperability  
package**

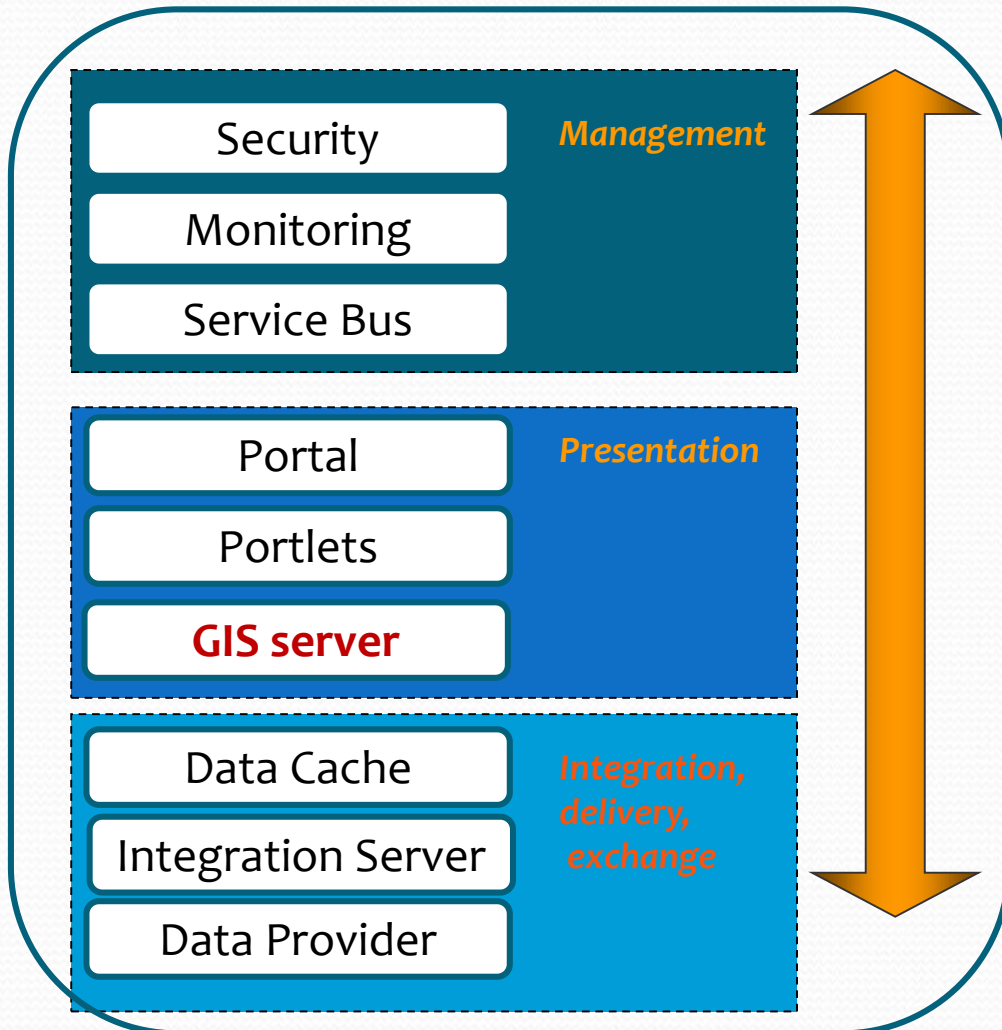
**Technical and  
Educational  
Support**

Integration  
Discovery  
Access  
Download  
Dissemination  
Control  
Standardization  
Scalability  
.....

Metadata “crosswalk” rules  
  
Discovery metadata  
services  
  
Machine-to-machine  
Interfaces

Partnership Centre for ODP –  
support and maintenance  
  
IODE Ocean Teacher courses  
(online materials,  
video courses, etc.)

# ODP Toolkit

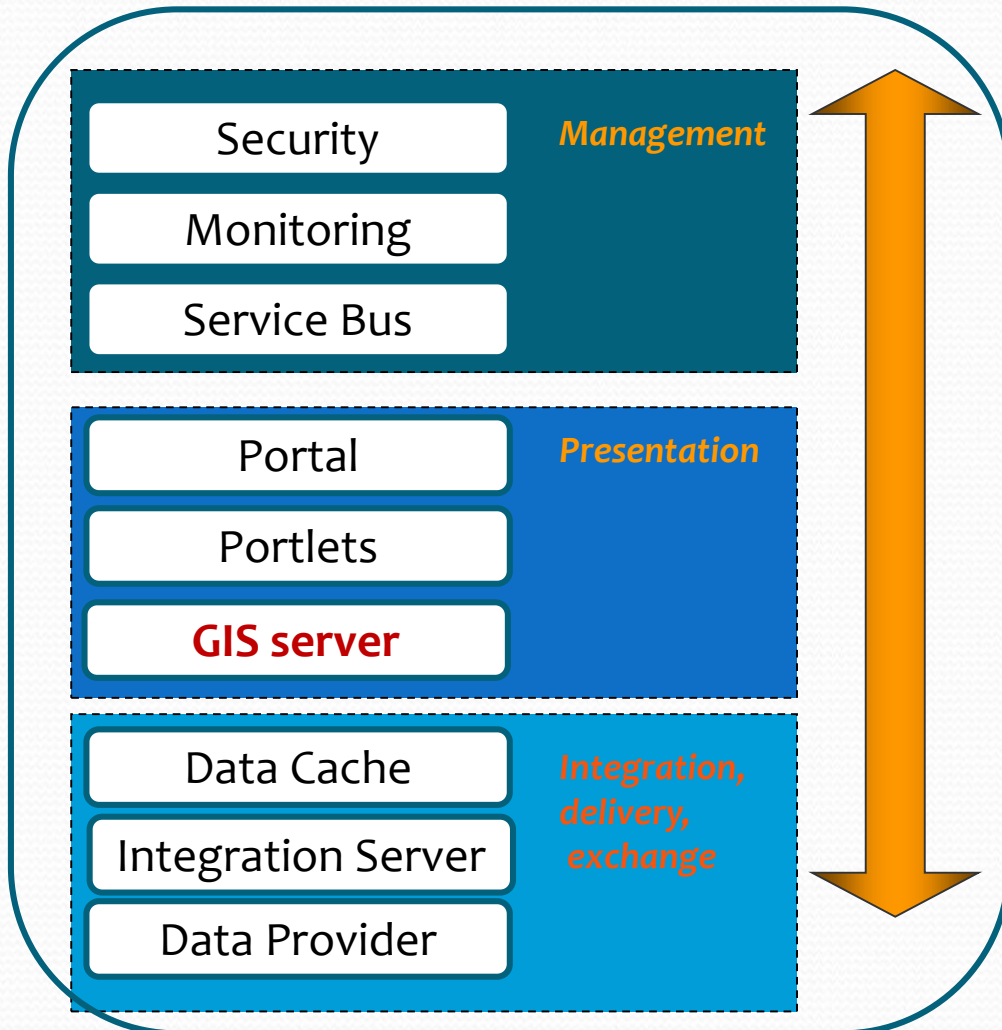


Open-source based components:

- Java
- JBoss
- PostgreSQL + PostGIS
- Geoserver, Grass GIS, Python, Perl
- OpenLayers, Leaflet
- Geonetwork
- JBoss Portal Platform
- JOSSO
- Zabbix



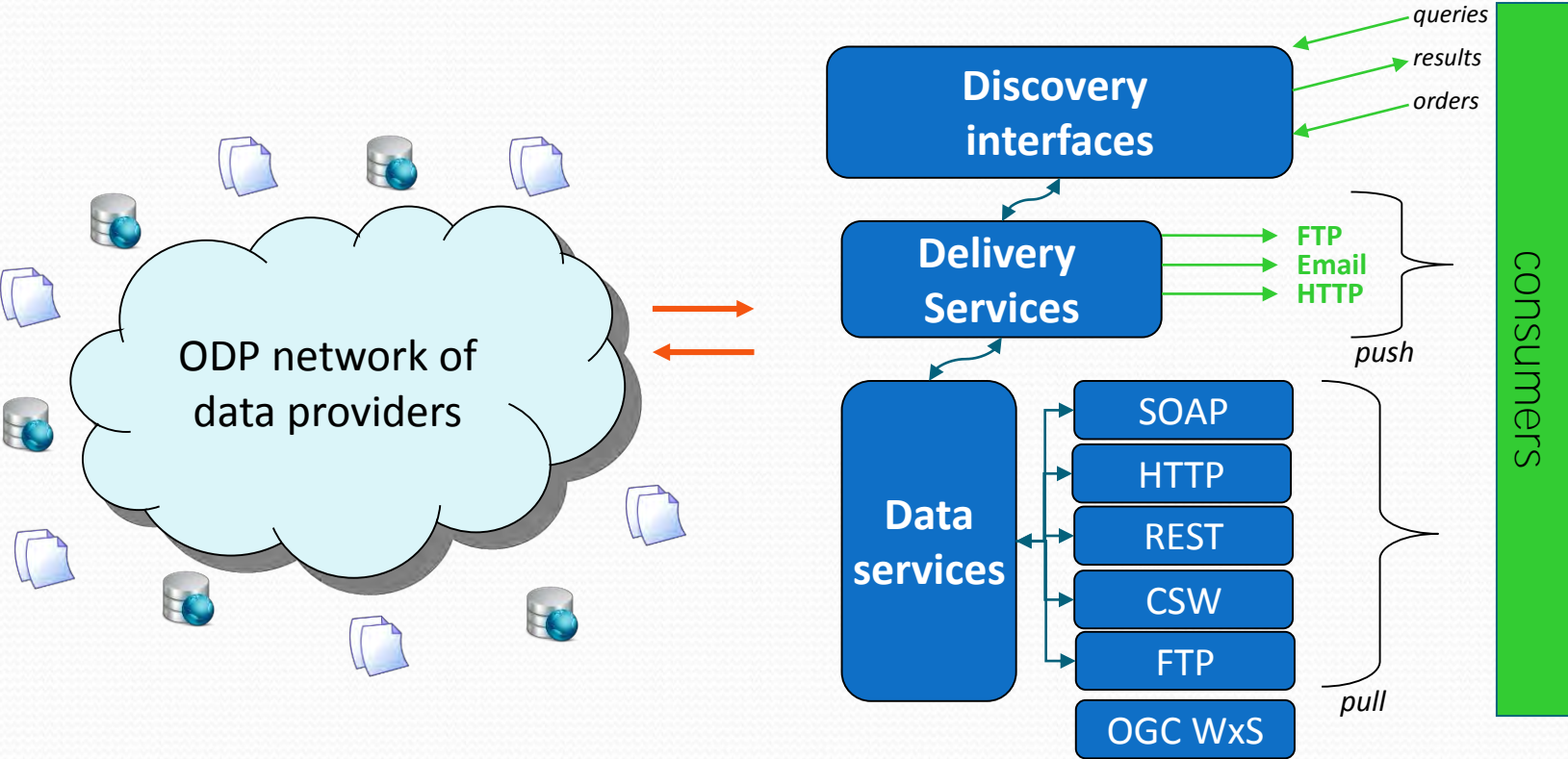
# ODP Toolkit



## Standards used:

- ISO 19115/19139
- NetCDF
- OGC WMS, WFS
- OGC CSW
- RESTful services
- SOAP web-services

# ODP Toolkit – Service model





# Use Case: SNDM Argentina



- Sistema Nacional de Datos del Mar (SNDM)  
[www.datosdelmar.mincyt.gov.ar](http://www.datosdelmar.mincyt.gov.ar)
- SNDM is an initiative of the [Ministry of Science, Technology and Innovation](#) in conjunction with the Interagency Council on Science and Technology ( [CICyT](#) ) framed within the Program Large Instruments and Databases
- SNDM is responsible for ensuring accessibility to data and marine information and Southwestern Atlantic Ocean Antarctica.

The screenshot shows the website for the Sistema Nacional de Datos del Mar (SNDM). The header includes logos for UNESCO, IODE, and the Argentine government (Ministerio de Ciencia, Tecnología e Innovación Productiva). The main content area is titled 'Sistema Nacional de Datos del Mar' and contains the following text:

El Sistema Nacional de Datos del Mar (SNDM) es una iniciativa del Ministerio de Ciencia, Tecnología e Innovación Productiva conjuntamente con el Consejo Interinstitucional de Ciencia y Tecnología (CICyT) enmarcada dentro del Programa de Grandes Instrumentos y Bases de Datos.

El SNDM tiene como misión garantizar la accesibilidad a los datos y la información marina del Océano Atlántico Sur Occidental y Antártida.

**Objetivos**

- Facilitar el intercambio de datos e información marina para la mejora del conocimiento científico y de la toma de decisiones.
- Analizar y consensuar políticas sobre acceso, calidad y transferencia de los datos y la información marina.
- Dotar de proyección internacional a los Datos del Mar producidos en el país a través de su difusión en redes virtuales.
- Contribuir a la formación de recursos humanos capacitados a través de programas comunes.
- Garantizar la permanente actualización de los datos y la información marina de uso compartido.
- Consolidar condiciones adecuadas para el registro o captura de los datos y de la información marina.
- Consolidar condiciones adecuadas para el mantenimiento de las bases de datos.
- Ofrecer información básica sobre el ambiente marino, bajo normas y procedimientos definidos.

**El SNDM hoy**

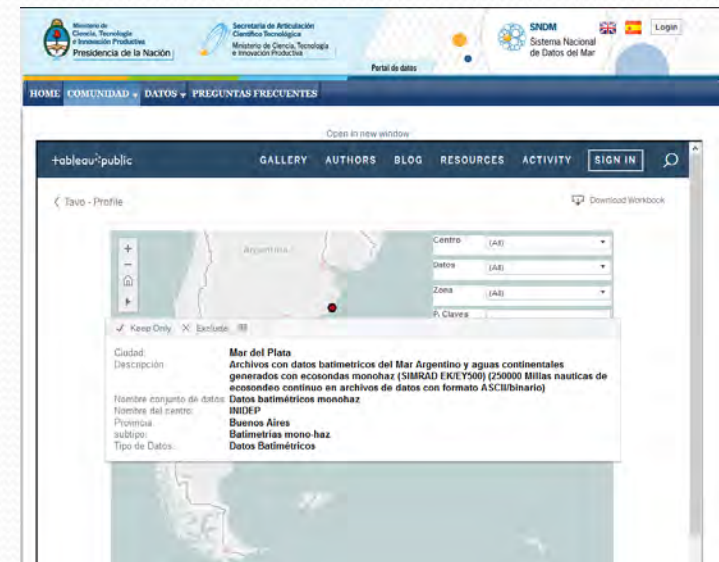
La Secretaría Ejecutiva del SNDM presenta un informe de la acción realizada. Los resultados manifiestos dan cuenta

# Use Case: SNDM Argentina



ODP technology is used to build national marine data system for Argentina - Sistema Nacional de Datos del Mar (SNDM) <http://portal.mincyt.gob.ar>

The system was officially launched in 2013 and the ODP team continues to work with the client team in order to improve SNDM metadata model and other facilities.



## Importance of this use case:

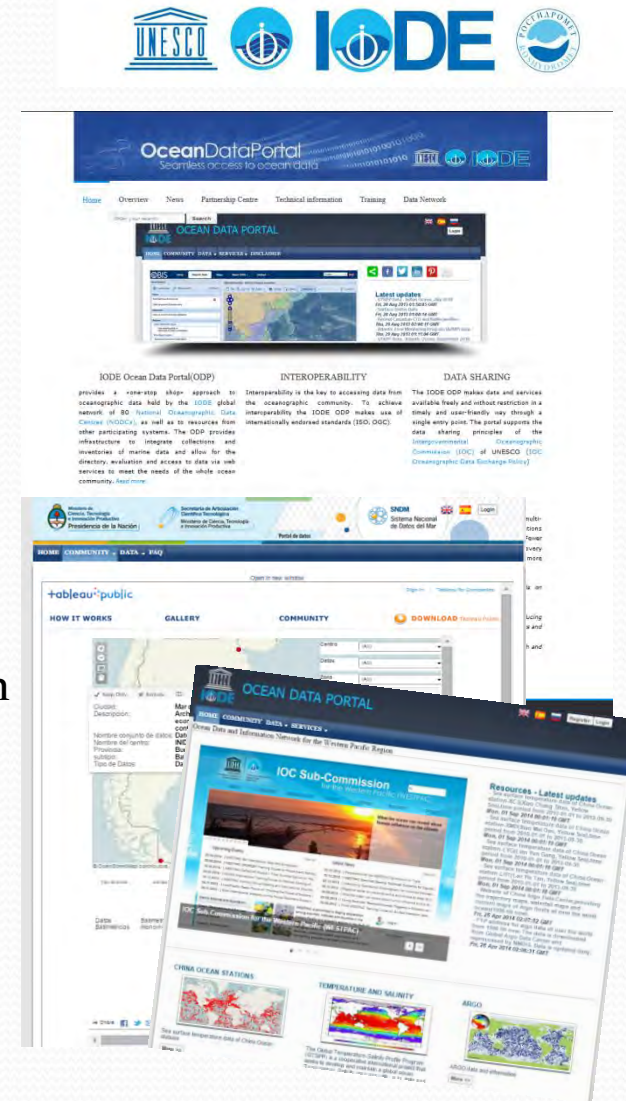
- Example of full implementation of national node and virtual data providers.
- Contributed to the advancement of ODP packaging to simplify implementation and support.
- Demonstrates flexibility of ODP technology to support other themes.
- Contributed to the development of the ODP training offerings.



# IODE ODP Progress

During 2013 – 2016:

- Implementation of a national ODP nodes for the **Sistema Nacional de Datos del Mar (SNDM)** - <http://portal.mincyt.gov.ar/>
- Implementation of a regional node for ODINWESTPAC (NMDIS/SOA, China) - <http://portal-odp.nmdis.gov.cn/>
- Implementation of interoperability with SeaDataNet as a deliverable of the Ocean Data Interoperability Platform (ODIP)
- Ongoing collaboration and access to data and services from WMO WIS, EMODNet
- Delivery of training sessions to groups including ODINWESTPAC, ODINAFRICA (5 training courses)
- Enhancement of the ODP technical environment in order to improve reliability and support (ODP V2 toolkit)
- Ongoing publication of new data sets (*over 2 million of new operational observations added, overall > 10 million of profiles/observations in 185 data sets*)





# IODE ODP Progress

OceanDataPortal  
Seamless access to ocean data

Portal - ODP Admin Dashboard Manage account Logout

HOME DATA MAPS EXTERNAL SYSTEMS

FM-12-IX (SYNOP - Synop) operational real-time meteorological data for Caspian Sea, Russian coastal area (200 km) and islands. Includes air temperature and wind speed parameters. Period: last week. (RU\_RNODC\_41)

Tools Reset all selections

Date from 2015-03-08 to 2015-03-15

Select elements for chart: Air temperature X Wind speed in the atmosphere X

Tools Type Export

11. Mar 12:00 12. Mar 12:00 13. Mar 12:00 14. Mar 12:00

Date and time

Wind: speed in the atmosphere Air temperature

Ocean viewer

Map Layers View

Information

Field Value

RU\_RNODC\_41 RU\_RNODC\_41 1

M4200 01300

SDPLALAZ201 61.200000

SDPLALONZ201 2.2170000

SDPLAY180AA01 2015-03-18T13:00:00

SDPLCOTAZ201 7.50

SDPLCOTWZ201 0.0

M1253 [GEOMETRY (Point with 1 point)]

	imaxflav, m/s	Pz, dBar	BTend, hPa	form, orographic, clouds, code	CH, code	h, high, upper, limit, orographic, clouds, hund, m	Ns, number	CN, code	W, code	W1, code	AlongRad1, kJ/m^2	ShortRad1, kJ/m^2	ShortSunRad, J/cm^2
11	1029.1	0.8			1		3	3					
	1029.7	0.6					0						
	1029.5	0.2					0						
	1029.2	0.3					0						
5	1029.5	0.3			2		4	3	10	*	sunny		

[www.oceandataportal.net](http://www.oceandataportal.net)





THANK YOU FOR YOUR ATTENTION!

Dziękuję za uwagę!