

**MY OCEAN BLACK SEA
MONITORING AND FORECASTING
CENTER: CIRCULATION AND
ECOSYSTEM PREDICTION**

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MHI NASU

Sevastopol

Gathering skills in Europe to implement an *integrated* **Marine Core Service**



Gathering skills in Europe

to implement one single « core service »
ocean monitoring and forecasting

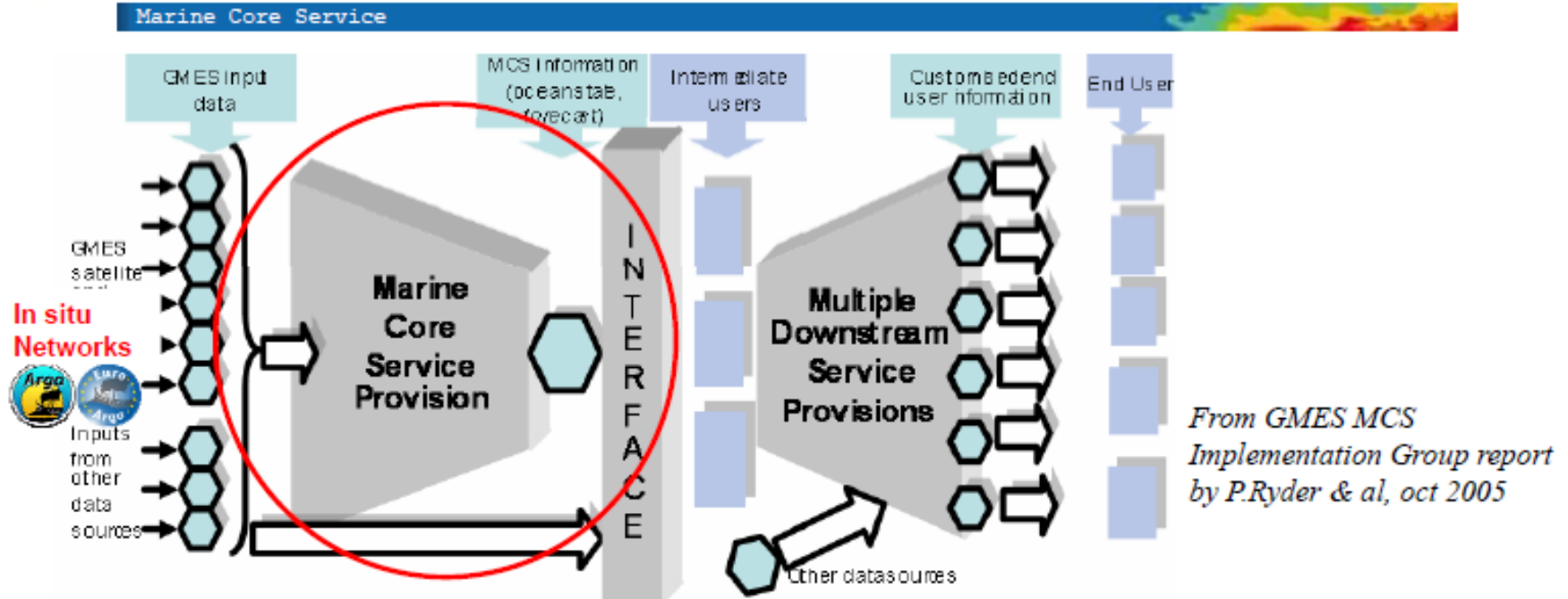
« MyOcean » is a GMES EC/FP7 project committed to implement the European Marine Core Service

-  Belgium
-  Bulgaria
-  Canada
-  Cyprus
-  Denmark
-  Estonia
-  Finland
-  France
-  Germany
-  Greece
-  Ireland
-  Israel
-  Italy
-  Latvia
-  Lithuania
-  Malta
-  Morocco
-  Netherlands
-  Norway
-  Poland
-  Portugal
-  Romania
-  Russian
-  Slovenia
-  Spain
-  Sweden
-  Turkey
-  Ukraine
-  United Kingdom

61 PARTNERS
FROM 29 COUNTRIES
are involved in the project

A European Marine “core” service

seeking for the “european added value”



- Goal is** to create the maximum “core” value for the users by providing on a reliable basis *“the common denominator data for all users in the marine sector, in other words the information for existing & new downstream services.”*

Market Segmentation

Marine Core Service

- The users, their requirements, their assessment

Area 1

« MARINE SAFETY »

(marine operations,
oil spill combat, ship routing,
defense, search & rescue, ...)

Area 3

« MARINE AND COASTAL ENVIRONMENT »

(water quality, pollution,
coastal activities, ...)

Area 2

« MARINE RESSOURCES »

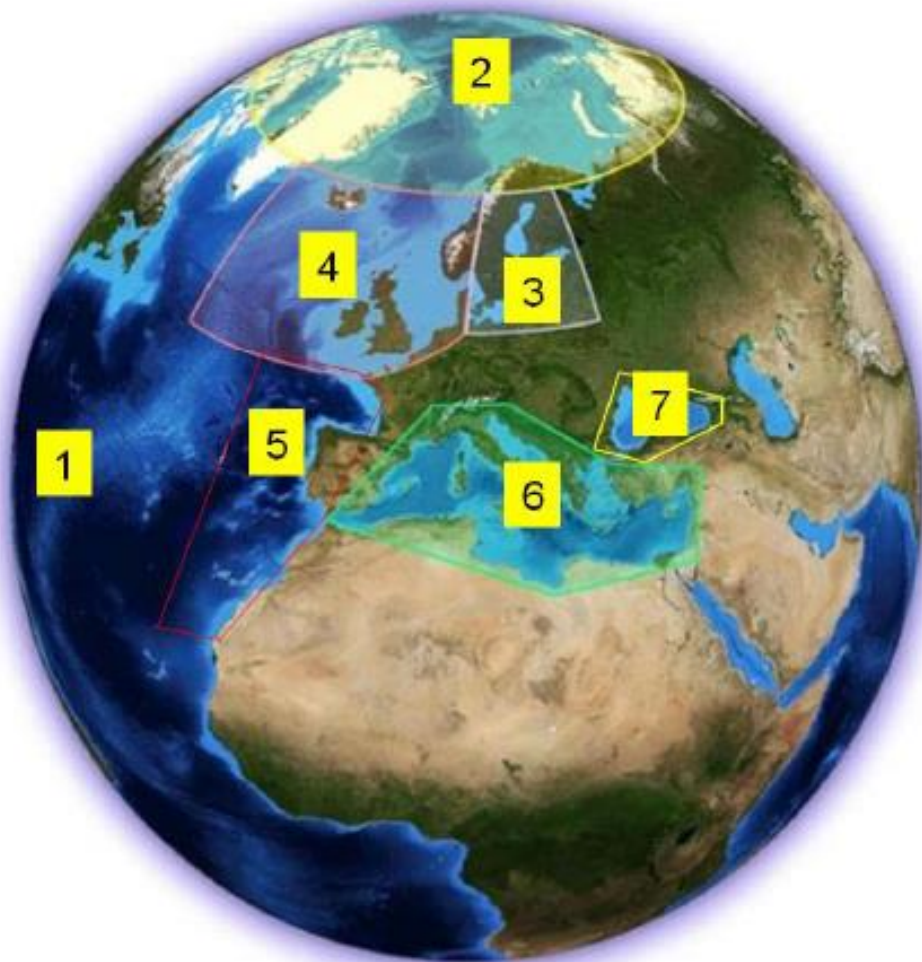
(fish stock management,
ICES, FAO, ...)

Area 4

« CLIMATE & SEASONAL FORECASTING »

(climate monitoring, ice,
seasonal forecasting, ..)

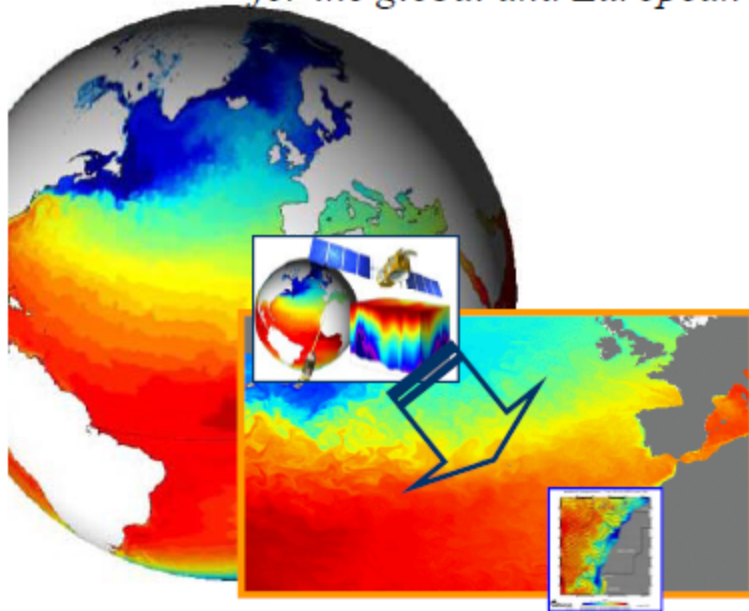
The MyOcean value **The Global Ocean + 6 European Seas**



- 1. Global
- 2. Arctic
- 3. Baltic
- 4. NWS
- 5. IBI
- 6. Med Sea
- 7. Black Sea

The MyOcean offer

- **MyOcean** will
 - “*deliver regular and systematic reference information (processed data, elaborated products) on the state of the oceans and regional seas:*
 - *at the resolution required by intermediate users & downstream service providers, of known quality and accuracy,*
 - *for the global and European regional seas.*”



- Physical state of the ocean, and primary ecosystem
- For global ocean, and main European basins and seas
- Large and basin scale ; mesoscale physics
- Hindcast, Nowcast, Forecast
- Data, Assimilation and Models



myOcean

- Project
- Products & Services
- User's Feedback

MyOcean Products & Services

SERVICE ONLINE CATALOGUE SERVICE DESK DATA POLICY

MYOCEAN INTERACTIVE CATALOGUE

Search mode: multi-criteria or full catalogue

Full Catalog [GO >>](#)

1 SELECT AN AREA

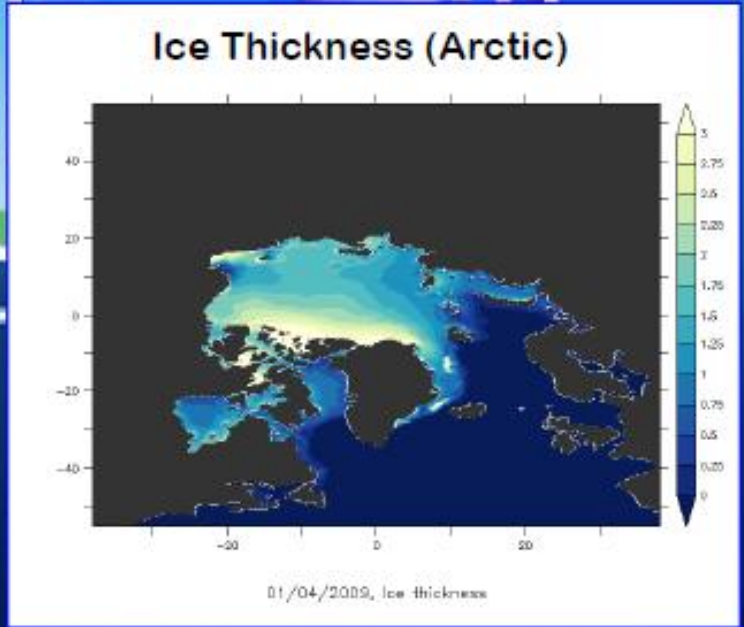


2 SELECT A PHYSICAL PARAMETER

- Temperature
- Wind
- Sea ice
- Salinity

3 SELECT A PRODUCT

- Observation





- Project
- Products & Services
- User's Feedback

MyOcean Products & Services

SERVICE ONLINE CATALOGUE SERVICE DESK DATA POLICY

MYOCEAN INTERACTIVE CATALOGUE

Search mode: multi-criteria or full catalogue

Full Catalog 00 >>

SELECT AN AREA SELECT A PHYSICAL PARAMETER SELECT A PRODUCT

1

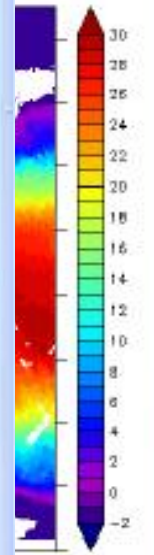
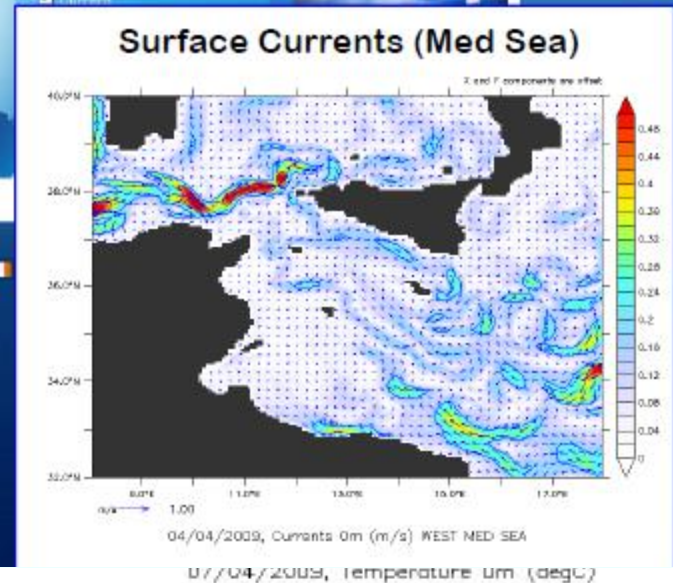
2

- Temperature
- Wind
- Sea Ice
- Salinity
- Current

3

- Observation

CONTACT CREDITS LEGAL NOTICE



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http://e.mail.ru/cgi-bin/mnglist?folder=0&776706947&jsv=3



OCEAN MONITORING AND FORECASTING

Providing PRODUCTS and SERVICES for all marine applications.

▶ ABOUT US

» MARITIME SAFETY

» MARINE RESOURCES

» COASTAL & MARINE ENVIRONMENT

» WEATHER, CLIMATE & SF

USER CORNER

- » ASK THE SERVICE DESK
- » NEWS FLASH!



- » PRODUCT IMPROVEMENTS
- » TECHNICAL FAQ
- » USER NEWSLETTER

FIRST VISIT?

- » DISCOVER MYOCEAN PRODUCTS & SERVICES
- » REGISTER NOW!

NEWS & EVENTS

Major Conference in Ireland : "The Atlantic - A Shared Resource"



GALWAY Ireland, May 23rd and 24th : The objective of this event is to provide a vision for enhanced cooperation on both sides of the Atlantic and a set of jointly agreed priority actions. MyOcean consortium is part of this unique debate organised by the Marine Institute and the EC Directorate-General Research and Innovation.

» more

MYOCEAN TRAINING SESSION

Have your date for the MyOcean training session in Odessa
21-23 October 2013
Session Thematic = the Mediterranean and the Black Seas



Agenda and registration on <http://www.oceanography.ucy.ac.cy/myocean2-3rd-training-workshop-registration-form/>

EDUCATION

Come and discover how MyOcean monitors and forecasts oceans.

- » Observation
- » Modelling

FOCUS ON

2nd MyOCEAN USER WORKSHOP : A FULL-TIME and INTENSE LEARNING EXPERIENCE

PRODUCT SHOWCASE

Rim Current variations in the Black Sea



Discover the seasonal variability of the Black Sea circulation.

» Learn more

SERVICES

- » Catalogue of services
- » Register now!
- » Ask the service desk

PRODUCTS

- » Access to catalogue
- » News Flash!
- » Product improvements
- » Technical FAQ

NEWS & EVENTS

FOCUS ON

PRODUCT SHOWCASE

USER NEWSLETTER

EDUCATION

- » Observation
- » Modelling
- » Ocean parameters

PRESS/EDITION CORNER

- » all corners

SCIENTIFIC PUBLICATIONS

- » all corners

Home > Products and services > Products > Access to catalogue

MYOCEAN INTERACTIVE CATALOGUE

Search mode: multi-criteria or full catalogue

Please note **you have to register first** before downloading MyOcean products.

» [Service commitments & licence](#)

» [Access "Product Quality Accuracy Numbers"](#)

1 > AN AREA

- All areas
- Global Ocean
- Arctic Ocean
- Baltic Sea
- Atlantic-European North West Shelf-Ocean
- Atlantic-Iberian Biscay Irish-Ocean
- Mediterranean Sea
- Black Sea

2 > A PARAMETER

- All parameters
- Ocean Temperature
- Ocean Salinity
- Ocean Currents
- Sea Ice
- Sea Level
- Winds
- Ocean Optics
- Ocean Chemistry
- Ocean Biology
- Ocean Chlorophyll

3 > A PRODUCT TYPE

- All product types
- Forecast Products
- Near Real Time Products
- Multi Year Products
- Time Invariant Products

SEARCH ▶

KEYWORD SEARCH ▶

 **Download the latest MyOcean catalogue**

» download PDF

 **Access full catalogue online**

» consult



OCEAN MONITORING and FORECASTING

Providing PRODUCTS and SERVICES for all marine applications.

Search... » OK

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» COASTAL & MARINE ENVIRONMENT

» WEATHER, CLIMATE & SF

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PRESS/EDITION CORNER

» all corners

SCIENTIFIC PUBLICATIONS

» all corners

Home > Products and services > Products > Access to catalogue > MyOcean interactive catalogue

MYOCEAN INTERACTIVE CATALOGUE

Found 24 products matching your criteria

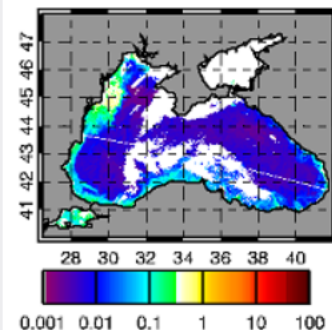
Free text:

REFINE RESULTS

Show : results per pages

1 2 3 4 5

OCEANCOLOUR-BS-CHL-L3-REP-OBSERVATIONS-009-055



BLACK SEA SURFACE CHLOROPHYLL CONCENTRATION FROM SATELLITE OBSERVATIONS REPROCESSED (1997-2010)

SATELLITE-OBSERVATION, OCEAN-CHLOROPHYLL, MULTI-YEAR, BLACK-SEA

For the Black Sea- SeaWiFS surface Chlorophyll (mg m⁻³, 1 km resolution) is operationally produced using the regional ocean color algorithm (MedOC4, Volpe et al., 2007). This algorithm was developed and used for near real time, delayed time and re-analysis of SeaWiFS data by the Group for Satellite Oceanography (GOS-ISAC) of the Italian National Research Council (CNR), in Rome.

- INFO
- DATA ACCESS
- VIEW



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Search... » OK

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NEWS & EVENTS

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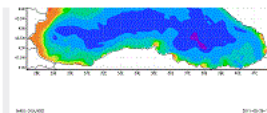
PRESS/EDITION CORNER

- » all corners

SCIENTIFIC PUBLICATIONS

- » all corners

Home > Products and services > Products > Access to catalogue > MyOcean interactive catalogue

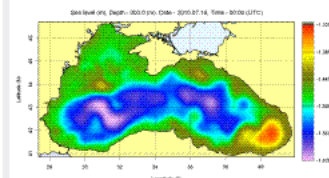


The Black Sea v1 biogeochemical model product provides five day model forecast for the phytoplankton and nitrate distribution in the Black Sea. The product covers the whole Black Sea, and is delivered on a horizontal grid with a resolution of 4.8 km, and with 18 vertical depth levels (upper 200m layer). The forecast dataset consists of the latest 5 day forecast produced daily.

DATA ACCESS

» VIEW

BLACKSEA-ANALYSIS-FORECAST-PHYS-007-001



BLACK SEA PHYSICS ANALYSIS AND FORECAST

NUMERICAL-MODEL, CURRENTS, SEA-LEVEL, SALINITY, TEMPERATURE, FORECAST, NEAR-REAL-TIME, BLACK-SEA

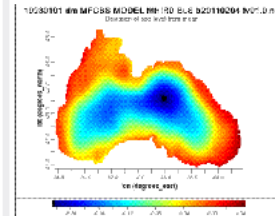
The basin-scale model is used for continuous analysis and forecast of the Black Sea circulation and stratification. The model output includes dynamical sea level, three-dimensional fields of current velocity, temperature and salinity. The basin-scale model assimilates satellite altimetry data provided by SL TAC, and sea surface temperature provided by OSI TAC. The data of atmosphere forcing come from SKIRON MFSTEP Atmospheric Modeling and Weather Forecasting Group, University of Athens, Greece.

» INFO

» DATA ACCESS

» VIEW

BLACKSEA-REANALYSIS-PHYS-007-002



BLACK SEA PHYSICS REANALYSIS (1971-2001)

NUMERICAL-MODEL, CURRENTS, SEA-LEVEL, SALINITY, TEMPERATURE, MULTI-YEAR, BLACK-SEA

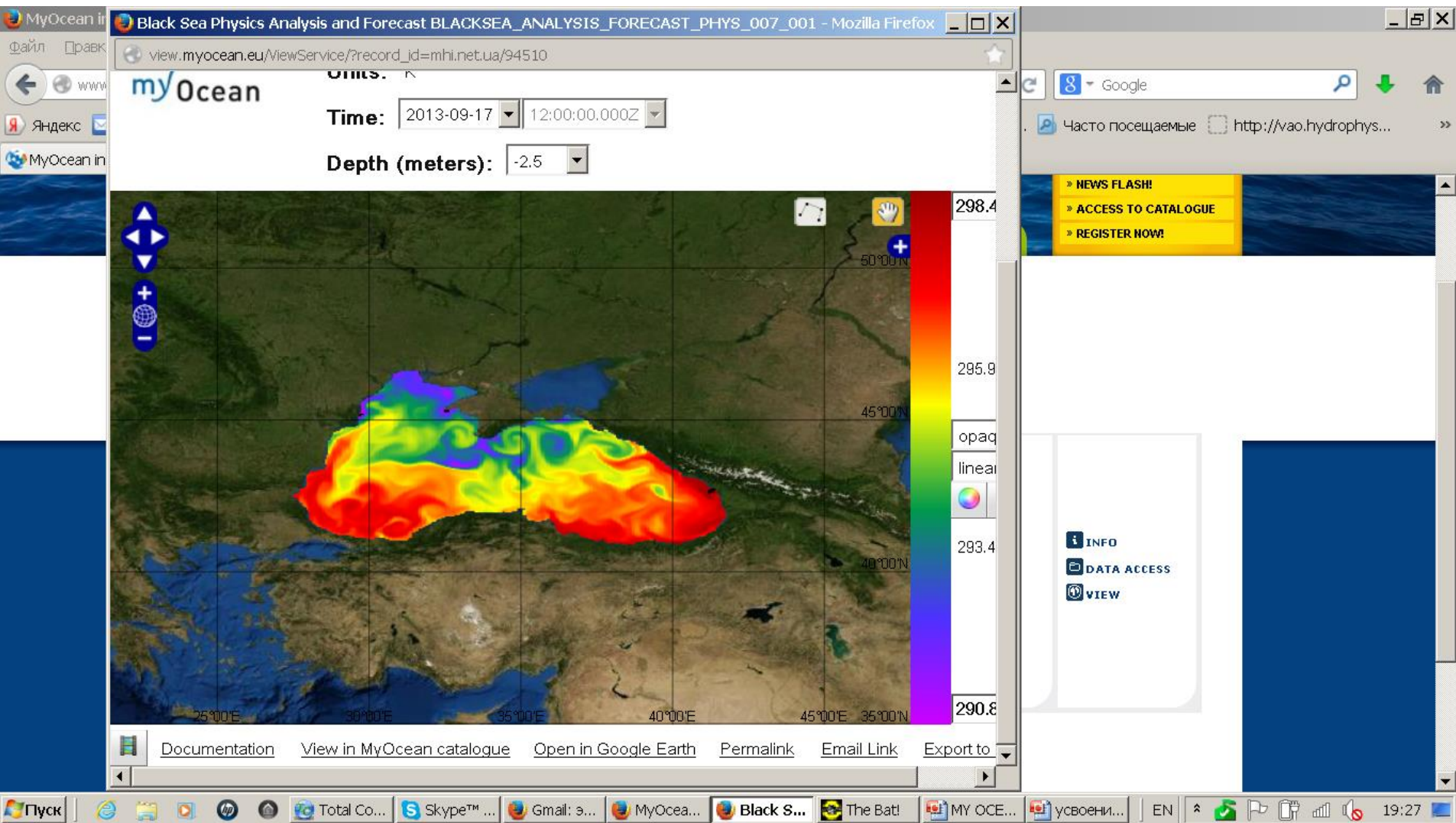
The reanalysis for the 1971-2001 time period was performed with the regional version of the POM (Princeton Ocean Model). The model output includes dynamical sea level, three-dimensional fields of current velocity, temperature and salinity. Mean monthly data of temperature and salinity of cruises observations were used when performing reanalysis for the 1971-1993 time period. We

» INFO

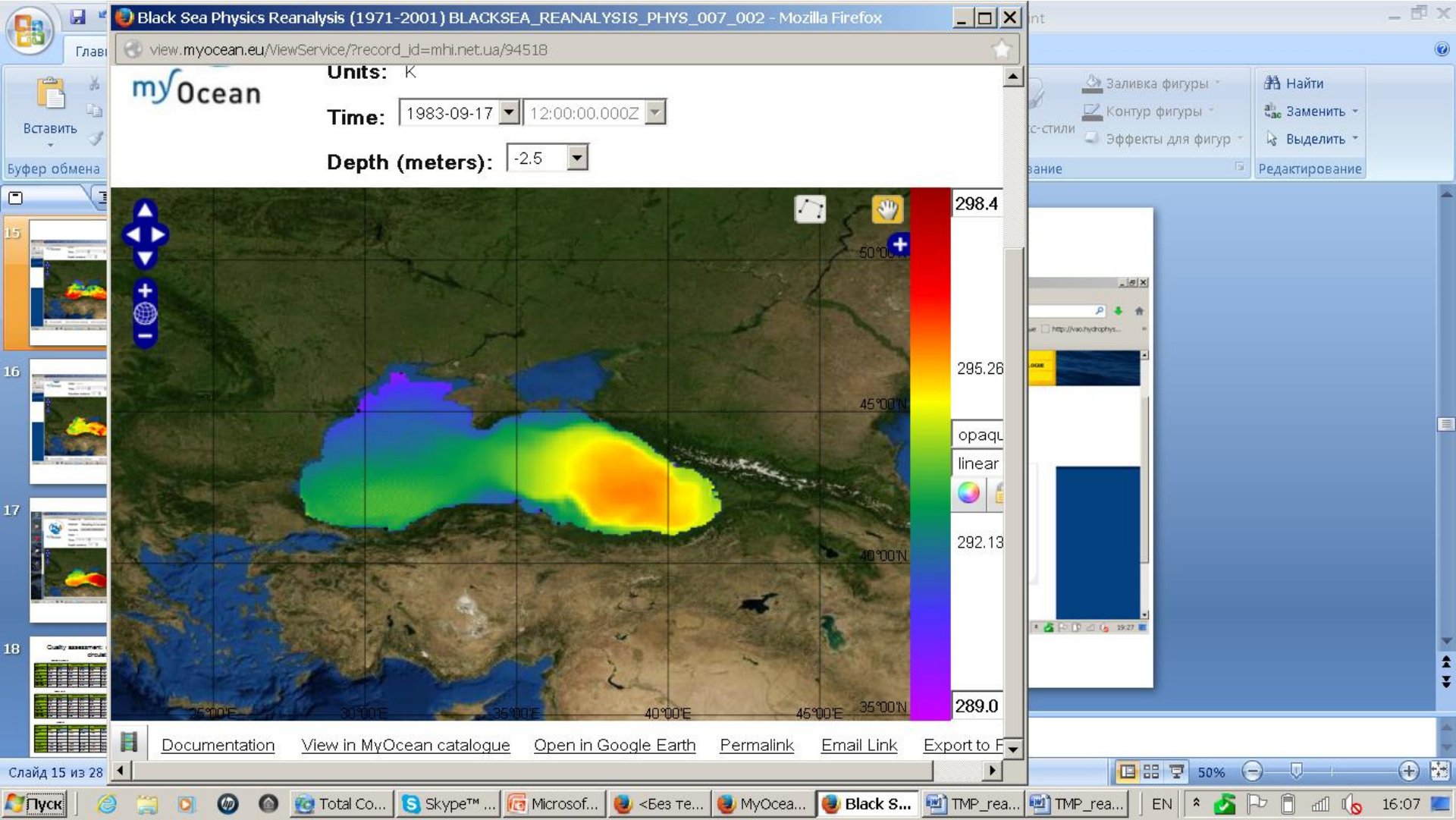
» DATA ACCESS

» VIEW

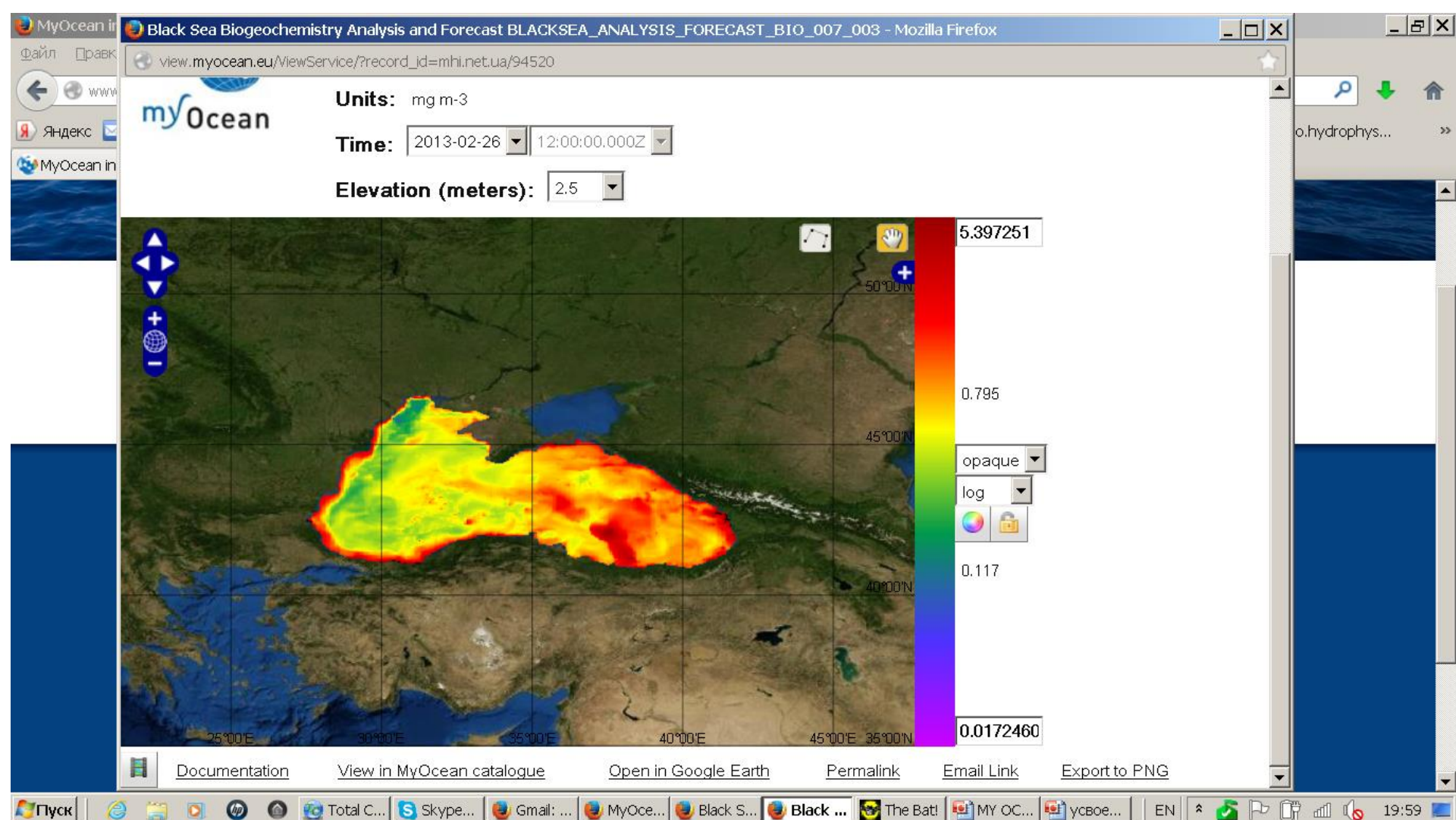
SST 17 September 2013



SST 17 September 1983



Surface chlorophyll concentration 26 February 2013



Quality assessment: comparing V3.0 and V3.1 circulation models

Temperature V3.0

Title	Forecast day 1		Forecast day 3		Forecast day 5	
	Mean	RMS	Mean	RMS	Mean	RMS
Depth (m)						
0-5	-0.13	0.58	-0.01	0.65	0.07	0.83
5-30	0.68	2.90	0.68	2.89	0.72	2.98
30-100	0.09	0.84	0.09	0.84	0.11	0.80
100-300	-0.13	0.30	-0.13	0.30	-0.13	0.30
300-800	-0.01	0.01	-0.01	0.01	-0.01	0.01
800-2000	0.01	0.05	0.01	0.05	0.01	0.05

Temperature V3.1

Title	Forecast day 1		Forecast day 3		Forecast day 5	
	Mean	RMS	Mean	RMS	Mean	RMS
Depth (m)						
0-5	-0.24	0.65	-0.13	0.71	-0.09	0.69
5-30	0.89	3.14	0.96	3.15	1.06	3.2
30-100	0.08	0.86	0.08	0.85	0.1	0.82
100-300	-0.05	0.29	-0.05	0.28	-0.04	0.27
300-800	-0.02	0.02	-0.02	0.02	-0.02	0.02
800-2000	0.02	0.07	0.02	0.07	0.02	0.07

Salinity V3.0

Title	Forecast day 1		Forecast day 3		Forecast day 5	
	Mean	RMS	Mean	RMS	Mean	RMS
Depth (m)						
0-5	0.09	0.30	0.08	0.31	0.07	0.28
5-30	0.01	0.25	0.01	0.25	0.01	0.26
30-100	-0.13	0.48	-0.13	0.48	-0.14	0.49
100-300	-0.21	0.32	-0.21	0.32	-0.21	0.33
300-800	-0.01	0.02	-0.01	0.03	-0.01	0.03
800-2000	0.00	0.01	0.00	0.01	0.00	0.01

Salinity V3.1

Title	Forecast day 1		Forecast day 3		Forecast day 5	
	Mean	RMS	Mean	RMS	Mean	RMS
Depth (m)						
0-5	-0.05	0.23	-0.06	0.24	-0.04	0.2
5-30	-0.06	0.23	-0.06	0.23	-0.05	0.23
30-100	0.05	0.45	0.06	0.45	0.06	0.45
100-300	0.01	0.25	0.01	0.25	0.01	0.25
300-800	0	0.02	0	0.02	0	0.02
800-2000	0	0.01	0	0.01	0	0.01

SSH V3.0

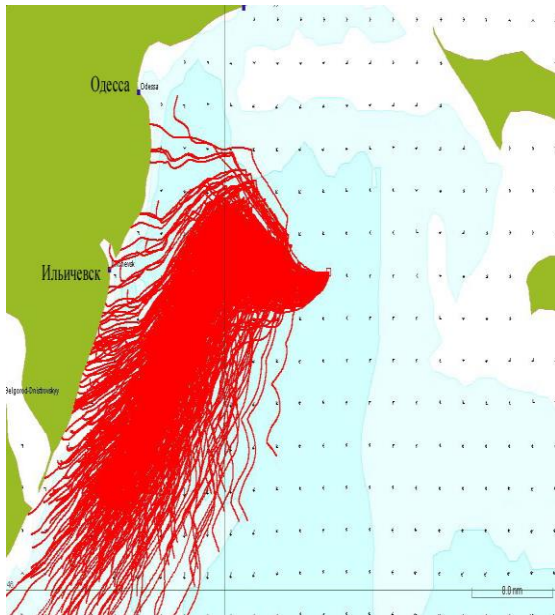
Title	Forecast day 1		Forecast day 3		Forecast day 5	
	Rms	Cor	Rms	Cor	Rms	Cor
Satellite						
AllSat	2.783	0.874	2.877	0.867	3.07	0.851
EnvisatN	2.907	0.923	2.995	0.919	3.35	0.902
Jason1N	2.945	0.88	3.127	0.868	3.394	0.847
Jason2	2.594	0.89	2.676	0.884	2.87	0.87
Jason1G	2.699	0.802	2.813	0.786	2.97	0.766
Criosat2	2.973	0.867	3.054	0.86	3.222	0.846

SSH V3.1

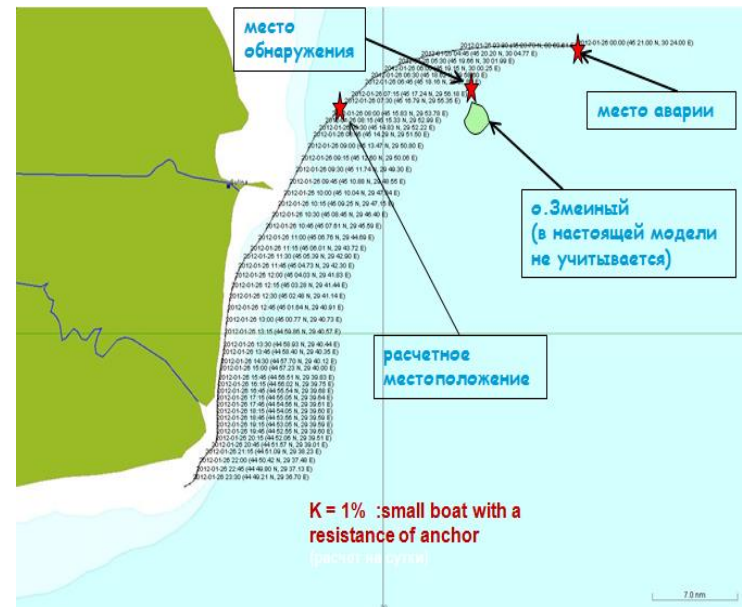
Title	Forecast day 1		Forecast day 3		Forecast day 5	
	Rms	Cor	Rms	Cor	Rms	Cor
Satellite						
AllSat	2.848	0.868	2.941	0.86	3.035	0.851
EnvisatN	2.874	0.926	3.003	0.92	3.156	0.913
Jason1N	2.886	0.88	3.045	0.877	3.105	0.871
Jason2	2.665	0.885	2.727	0.879	2.818	0.872
Jason1G	2.805	0.783	2.922	0.764	3.022	0.747
Criosat2	3.046	0.86	3.133	0.852	3.22	0.843

BLACK SEA TRACK WEB APPLICATIONS

■ Black Sea Track Web: a new downstream service is MyO customer:

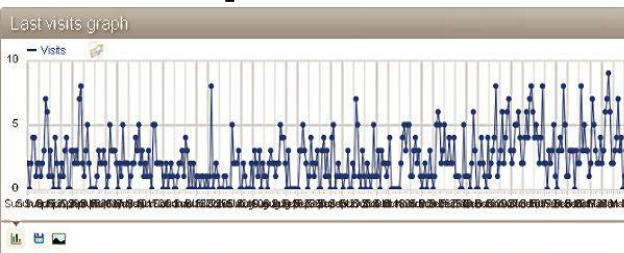


Oil spill accident near Odessa



Search and Rescue application

Black Sea MFC WEB Site: World wide interest. Requests from 01.04.2012 to 01.04.2013



Visitors in Real Time

Date	Visits	Pageviews
Last 24 hours	3	4
Last 30 minutes	0	0

Wed 10 Apr - 16:11:03 (0s) - IP: 212.113.47.165
Direct Entry
Pages: [Icons]

Wed 10 Apr - 14:03:02 (0s) - IP: 212.113.47.165
Direct Entry
Pages: [Icons]

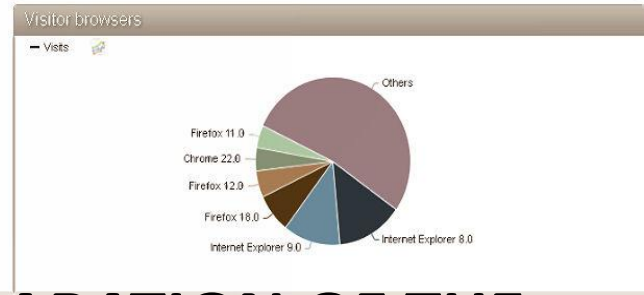
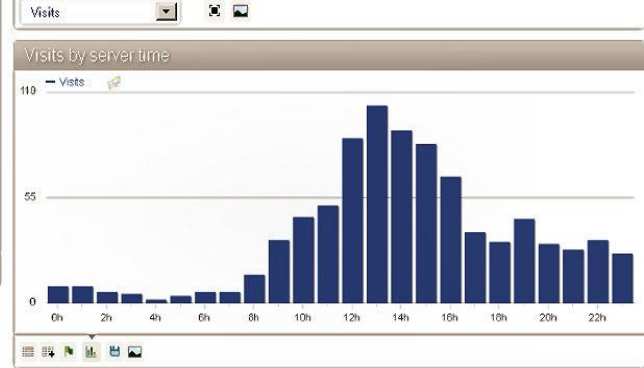
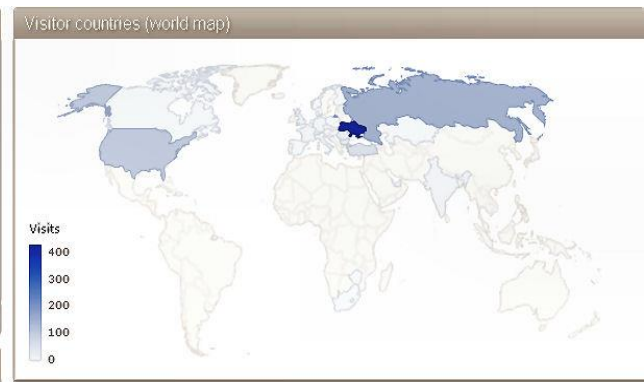
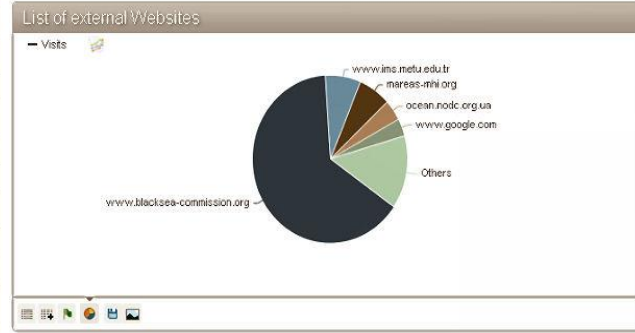
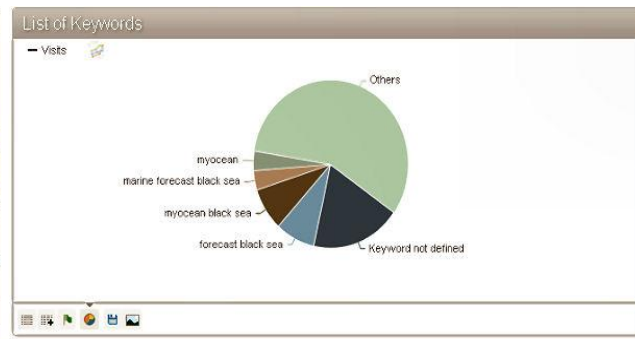
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from Google - "black sea currents" #14
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from Google - "black sea ocean currents" #2
Pages: [Icons]

Tue 9 Apr - 12:26:39 (25 min 7s) - IP: 212.113.47.165
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WE ARE SURE THAT SUSTANABLE OPEARATION OF THE SYSTEM EXTENDS HELPFUL PRACTICAL APPLICATIONS