

# Mediterranean Oceanography Network for the Global Ocean Observing System MONGOOS

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Co-chair

# Operational oceanography paradigms

Cooperation

Innovation

Scientific challenges

Technology

Environmental threats

Blue growth

climate change

Sustainability

User oriented services

# Why? For whom?



**Safety of navigation**



**Coastal protection and erosion**



**Search and Rescue**



**Pollution emergencies**



**Climate Change**



**Protection & management of marine ecosystems**



**Off-shore activities**



**Military actions**



**Renewable energies**



**Fishery and aquaculture**



**Tourism**

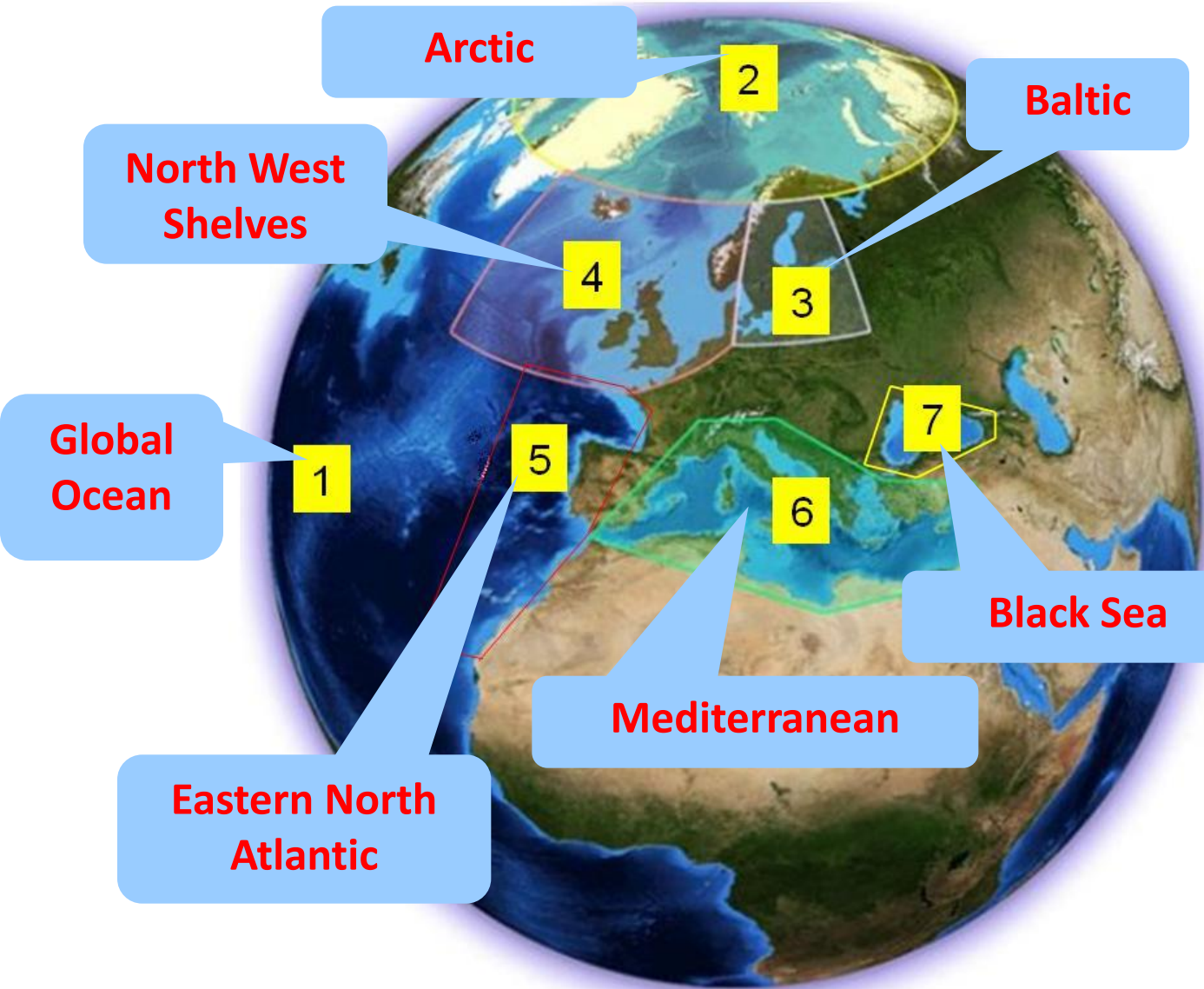


# Target Users and needs

<b>USERS</b>	<b>DEMANDS</b>	<b>Ship routing</b>	<b>Early warning for extreme sea conditions</b>	<b>Offshore operations safety</b>	<b>Search and rescue</b>	<b>Safety entry into port</b>	<b>Pollutant dispersion warning</b>	<b>Marine health assessment</b>	<b>Sea conditions forecasting in coastal areas</b>	<b>Support to army and police operations in sea</b>
<b>Maritime transport operators</b>		○	○	○		○			○	
<b>Yachters</b>		○	○					○	○	
<b>Seaside tourists</b>		○	○					○		
<b>Offshore industries</b>			○	○			○	○	○	
<b>Coast Guards</b>		○	○	○	○	○	○	○	○	○
<b>Port Authorities</b>			○		○	○				
<b>Environmental Protection Agencies</b>			○				○	○	○	
<b>Environmental consulting companies</b>			○	○					○	
<b>Authorities for defence and safety</b>			○		○	○	○			○
<b>Ministries</b>		○	○	○	○	○	○	○	○	○
<b>EU and international agencies</b>			○		○		○	○	○	○

# MyOcean

[www.myocean.eu](http://www.myocean.eu)



*A Pan-European network of existing infrastructures, value-added by the Copernicus initiative, coordinated and with common quality standards*

# Who we are

<u>Index</u>	<u>Acronim</u>	<u>Complete name</u>	<u>Country</u>
1	AMGI	Andrija Mohorovičić Geophysical Institute, University of Zagreb	Croatia
2	IOF	Institute of Oceanography and Fisheries	Croatia
3	RBI	Rudjer Boskovic Institute	Croatia
4	OC-UCY	Oceanography Cente University of Cyprus	Cyprus
5	Ifremer	Institut Français de Recherche pour l'Exploitation de la Mer	Francia
6	Mercator Ocean	Mercator Océan	Francia
7	Météo-France	Météo-France	Francia
8	HCMR	Hellenic Centre for Marine Research	Greece
9	UoA/IASA	University of Athens/ Institute of Accelerating Systems and Applications	Greece
10	UoA/IASA	University of Athens/ Institute of Accelerating Systems and Applications	Greece
11	Thessloniki	Aristotle University of Thessaloniki	Greece
12	IOLR	Israel Oceanographic & Limnological Research	Israel
13	CMCC	Centro Euro-Mediterraneo sui Cambiamenti Climatici	Italy
14	CNR-IAMC	Istituto per l'Ambiente Marino Costiero	Italy
15	CNR-ISAC	Istituto di Scienze dell'Atmosfera e del Clima	Italy
16	CNR-ISMAR	Istituto di Scienze Marine	Italy

# Who we are

17	CNR-ISSIA	Instituto di Studi sui Sistemi Intelligenti per l'Automazione Italian National Agency for new Technologies, Energy and Sustainable Economic Development	Italy
18	ENEA		Italy
19	INGV	Istituto Nazionale di Geofisica e Vulcanologia Istituto Nazionale di Oceanografia e di Geofisica Sperimentale	Italy
20	OGS		Italy
21	UNIBO	Alma Mater Studiorum Università di Bologna University of Malta - The International Ocean Institute, Malta Operational Centre - Physical Oceanography Unit	Italy
22	UMT-IOI-POU		Malta
23	IMB	Institute of Marine Biology, University of Montenegro	Montenegro
24	INRH	Institut National de Recherche Halieutique	Morocco
25	University Mohamed V	University Mohamed V-Agdal	Morocco
26	ARSO	Slovenian Environment Agency	Slovenia
27	NIB	National Institute of Biology Marine Biology Station	Slovenia
28	CSIC	Consejo Superior de Investigaciones Cientificas	Spain
29	IEO	Instituto Español de Oceanografía Laboratorio de Ingeniería Marítima/Universidad Politécnica de Cataluña	Spain
30	LIM/UPC		Spain
31	PdE	Puertos del Estado	Spain
32	SOCIB	Balearic Islands Coastal Observing and Forecasting System	Spain
33	IMS/METU	Middle East Technical University Institute of Marine Sciences	Turkey

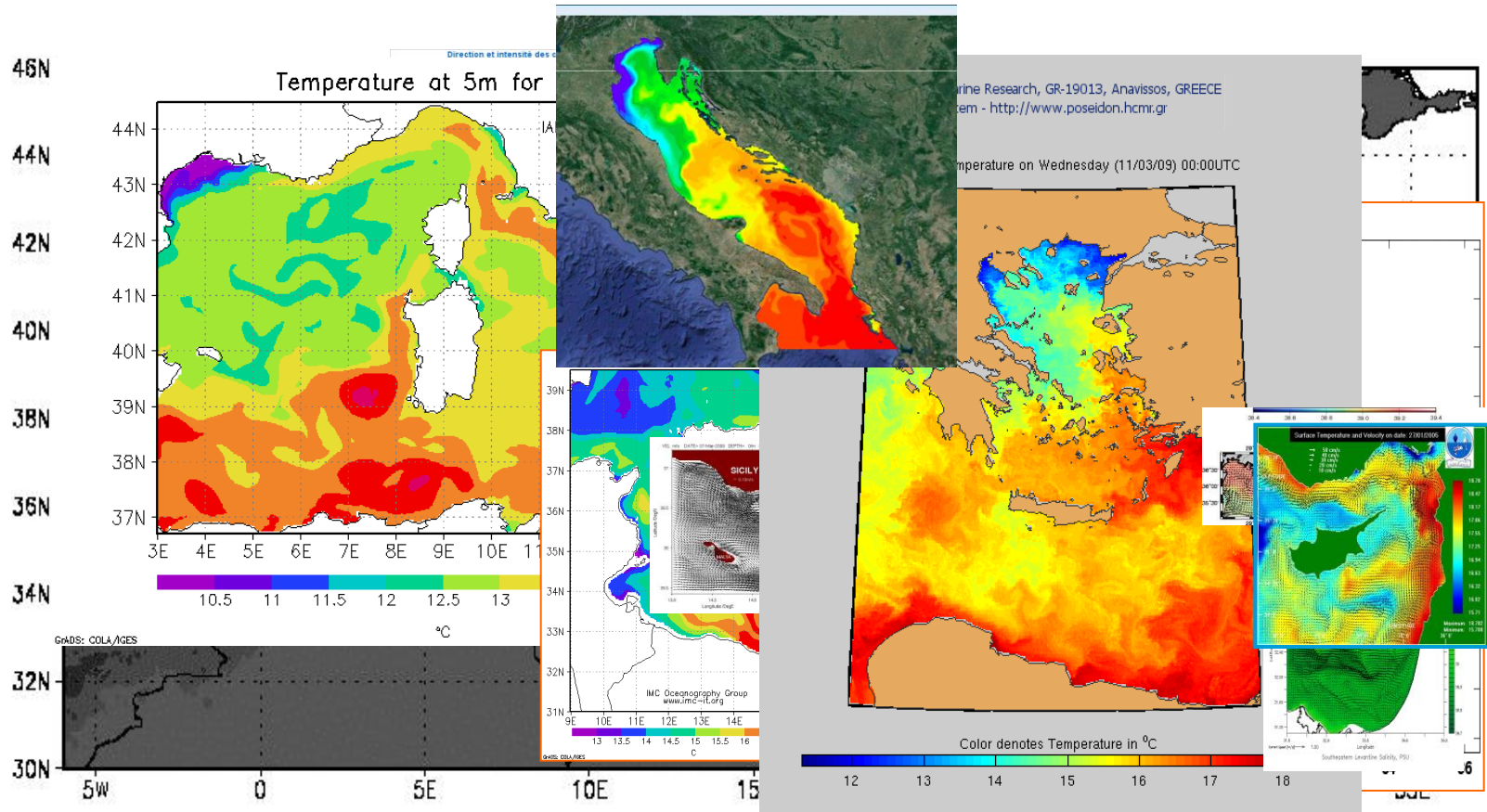
MONGOOS shall engage in activities related to the production and use of operational oceanography services (“Services”), as set forth in Annex II of the MOU (Activities), in furtherance of four principal objectives:

- (a) Improved Fitness for Purpose. **Continuously advance the scientific understanding and technological development** upon which the **Services** are based.
- (b) Greater Awareness. Promote the **visibility** and **recognition** of the Services with **governmental** agencies and **private** companies, encourage their integration at national, regional, European and global levels.
- (c) Increased Downstreaming. Enhance the **usability** of the **Services** and their usefulness for **policy implementation, societal** needs and **science**.
- (d) Improved Capacity. Support the planning and implementation of **international initiatives** involving operational oceanography and promote the **participation of non-EU Mediterranean** countries in producing the Services.



# The MONGOOS distribution network

The GMES-Marine Service and the Italian national system deliver every day analyses and forecasts to 10 national systems



# MyOcean Cal/Val activities





# REMPEC-MONGOOS collaboration agreement

REMPEC-MOON Collaboration Agreement  
Dated 02.10.2008

## Emergency Response Collaboration Agreement for the Mediterranean Region

### Exercises

Mediterranean Oceanography Network for Global Ocean Observing System



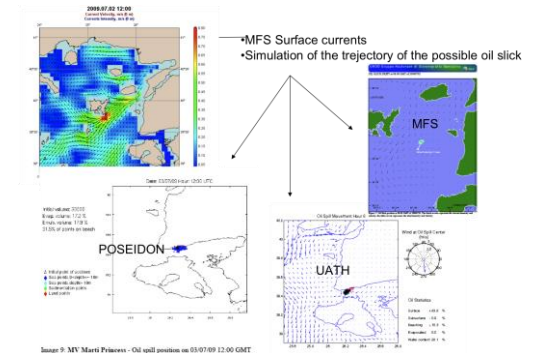
Mediterranean Oceanography Network for GOOS  
Emergency Response Office - ERO

Date 17 September 2013

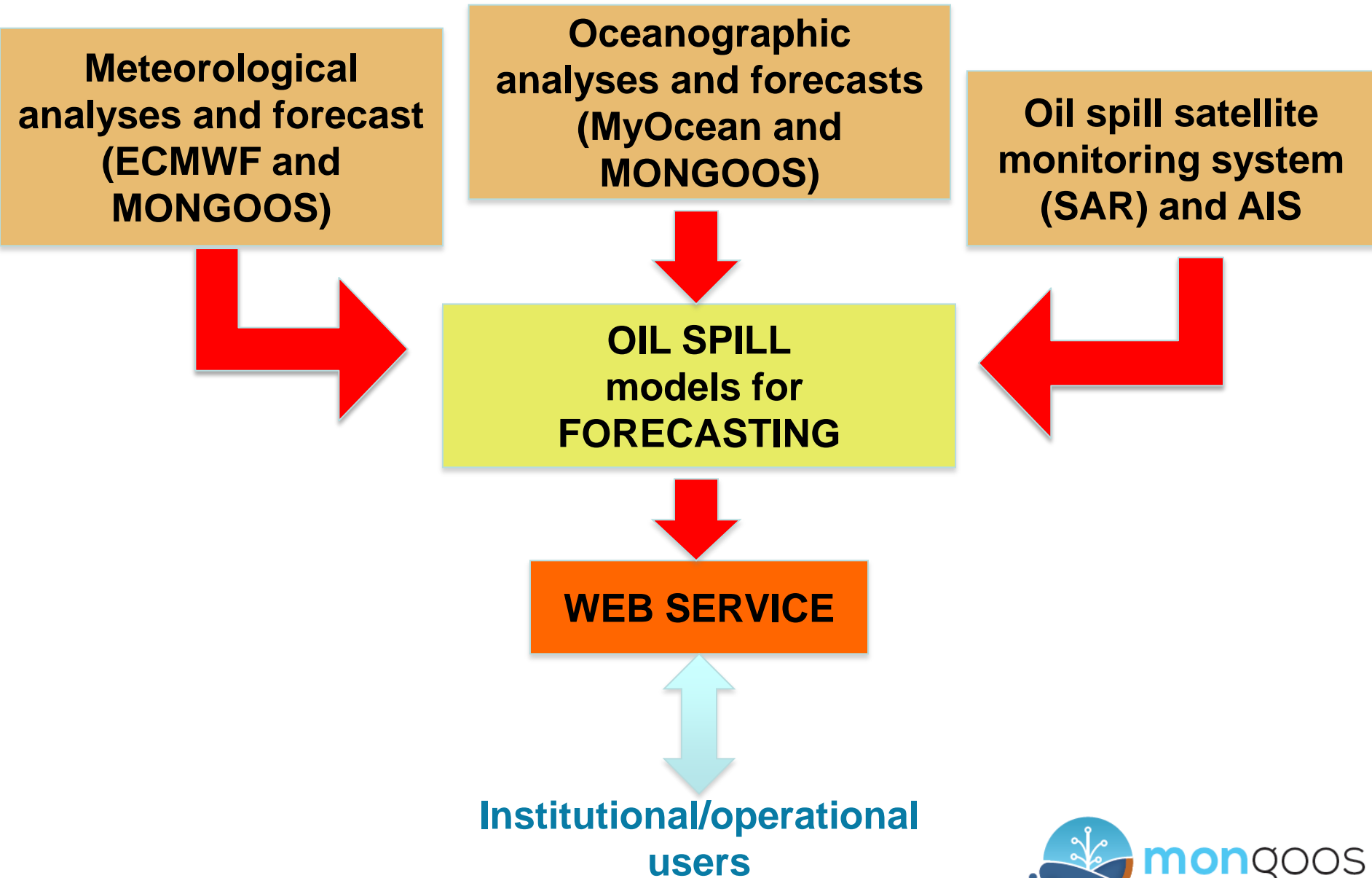
ERO Bulletin n° 1 for: "MATEX2013 "  
The bulletin is built upon MONGOOS-ERO products.  
The bulletin contains oil Spill forecast of the accident area.  
ANNEX I presents the description of MALTEX2013 accident

Projects: MEDESS4MS

### Real case scenarios



# MEDESS-4MS integrated service



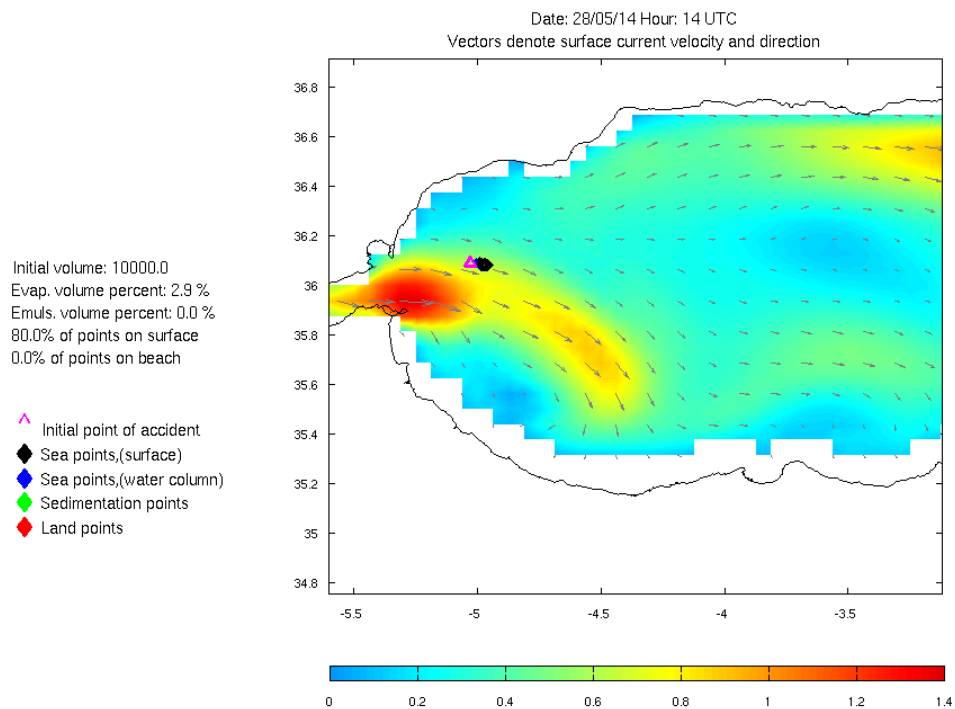
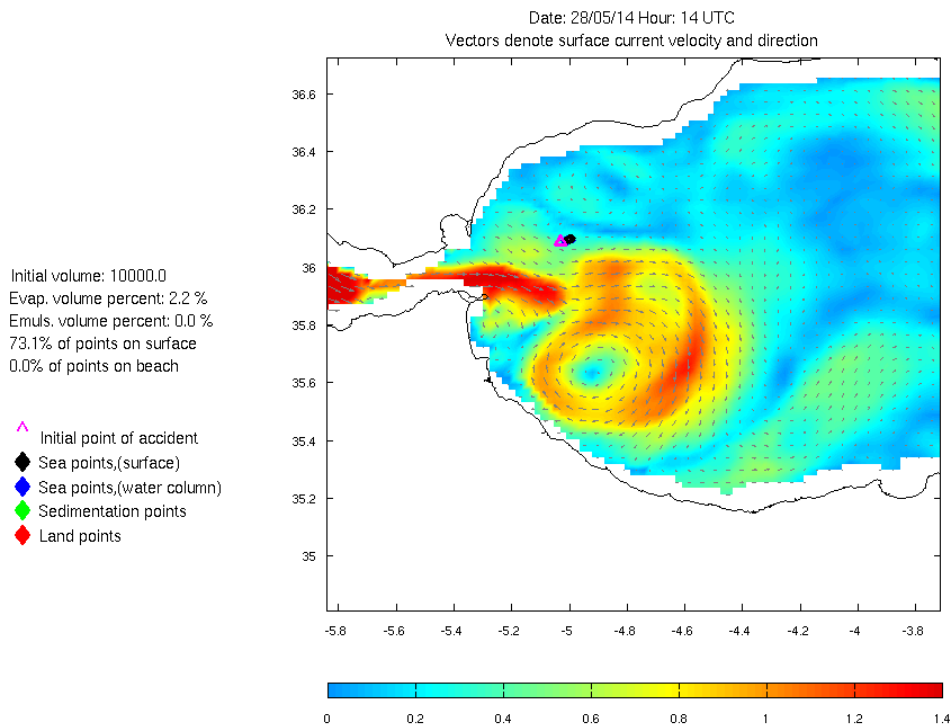


# Experiment 1 – Oil spill in the Alboran Sea

Oil spill model : POSEIDON OSM

Date of event : 28/5/2014

Simulation length (hours): 96



OCEAN data	METEO data	WAVES data
SAMPA (2 × 2 km)	AEMET (12 × 12 km)	PdE-WAM (8 × 8km)

OCEAN data	METEO data	WAVES data
MFS (6.5 × 6.5 km)	ECMWF (25 × 25 km)	POSEIDON WAM Med (10 × 10 km)

Higher resolution forcing data

Lower resolution forcing data

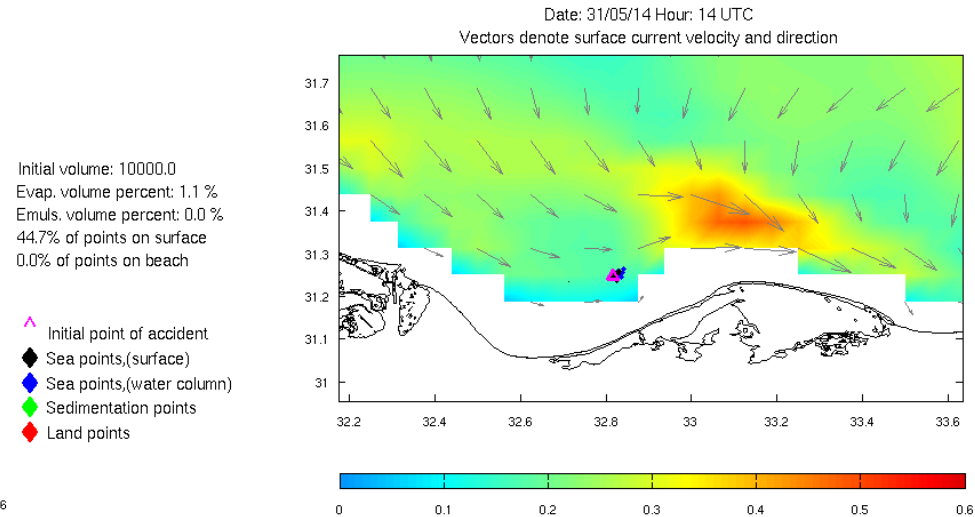
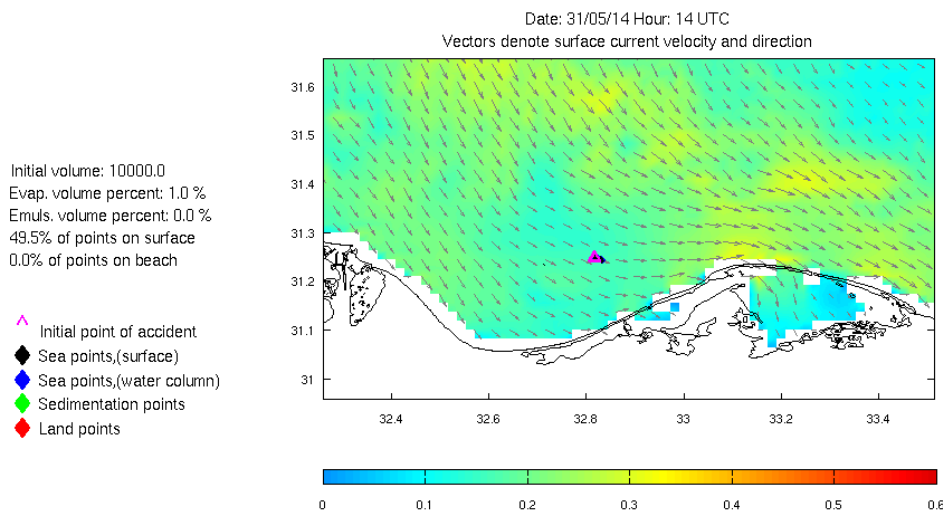


# Experiment 2 – Oil spill off the Egyptian coast

Oil spill model : POSEIDON OSM

Date of event : 31/5/2014

Simulation length (hours): 148



OCEAN data	METEO data	WAVES data
CYCOFOS CYPOM AEG LEV (2 × 2 km)	Skiron Non- Hydrostatic (5 × 5 km)	CYCOFOS WAM4 (5 × 5 km)

OCEAN data	METEO data	WAVES data
MFS (6.5 × 6.5 km)	ECMWF (25 × 25 km)	INGV WWIII (6.5 × 6.5 km)

**Higher resolution  
forcing data**

**Lower resolution  
forcing data**

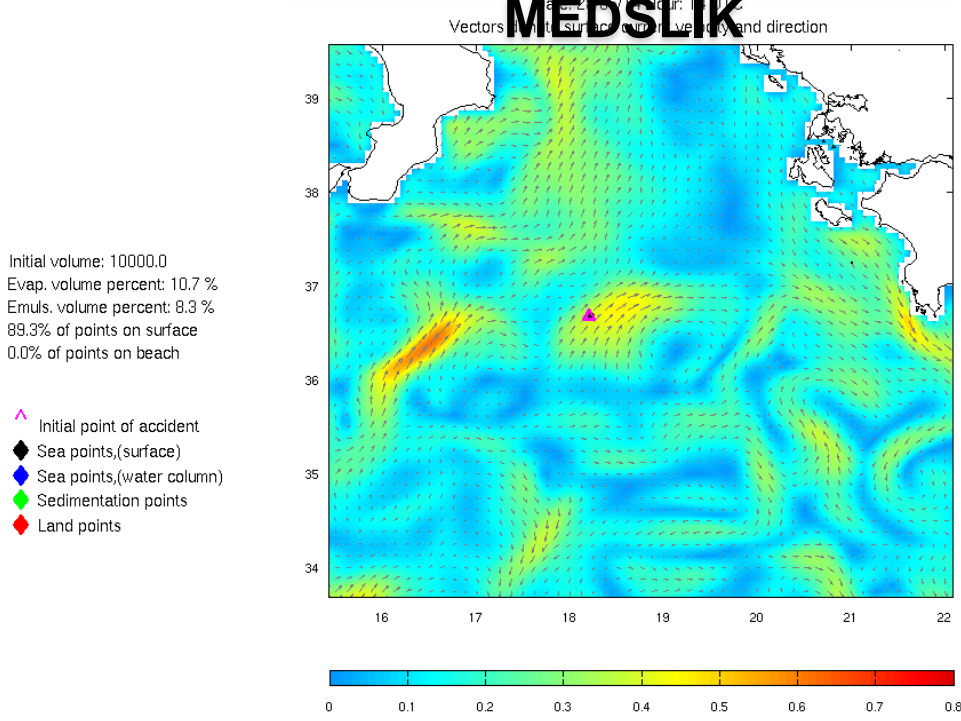
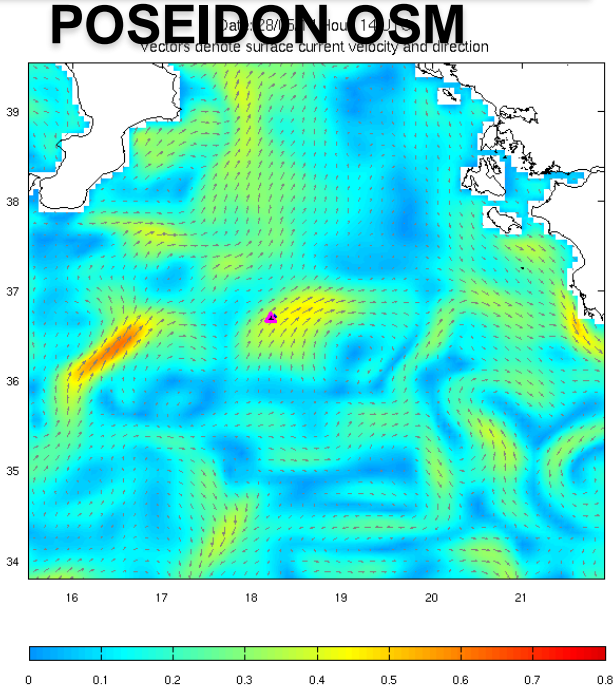


# Experiment 4 – Oil spill in the Ionian Sea

Date of event : 28/5/2014

Continuous release of oil for 48 hours after the initial incident.

Oil spill model: **POSEIDON OSM** Simulation length (hours): **48** Oil spill model: **MEDSLIK**



OCEAN data	METEO data	WAVES data
MFS (6.5 × 6.5 km)	ECMWF (25 × 25 km)	INGV WWIII (6.5 × 6.5 km)

Same data set – Two different oil spill models





# Join bulletin, INGV, CNR, ENEA, CMCC and Italian Coast Guard for Costa Concordia oil spill scenarios



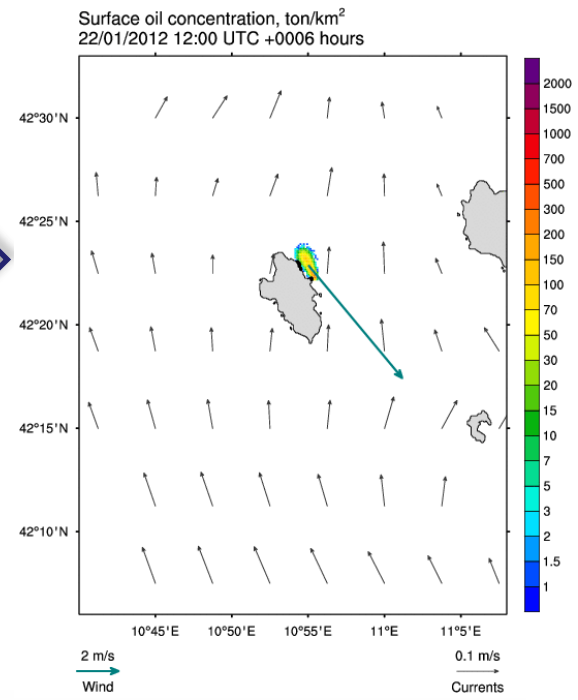
INGV, CMCC, CNR, ENEA



**Currents forecasted in the area**

**Oil spill scenario derived locally**

**Decision support for operations**



13th Jan 2012

16th of September 2013



**ITALIAN COAST GUARD HEADQUARTERS**



Comando Generale del  
Corpo delle  
Capitanerie di Porto

S



## Challenge3 Oil Platform Leak

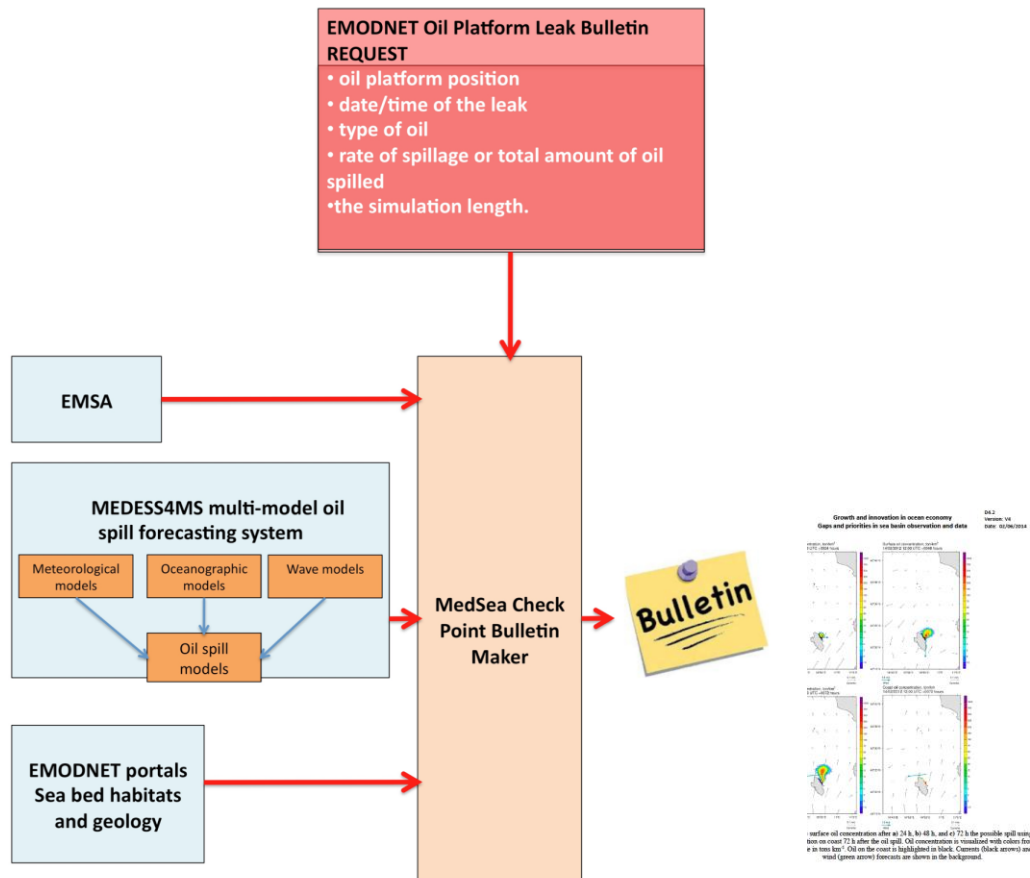
The EMODNET Oil Platform Leak Bulletin (EMODNET-OPL Bulletin) is based on the MEDESS4MS infrastructure: it will contain the simulation of the fate and transport of oil leaks from platforms on request.

Requests will be issued by an allowed customer through:

•1) e-mail :

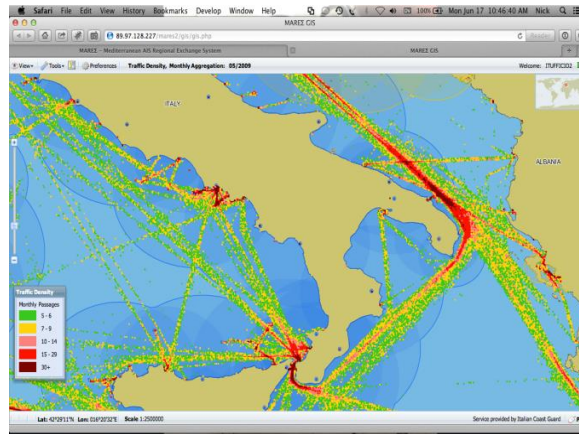
[emodnet-opl-Bull@bo.ingv.it](mailto:emodnet-opl-Bull@bo.ingv.it),

•2) access to the MEDESS4MS service (later)

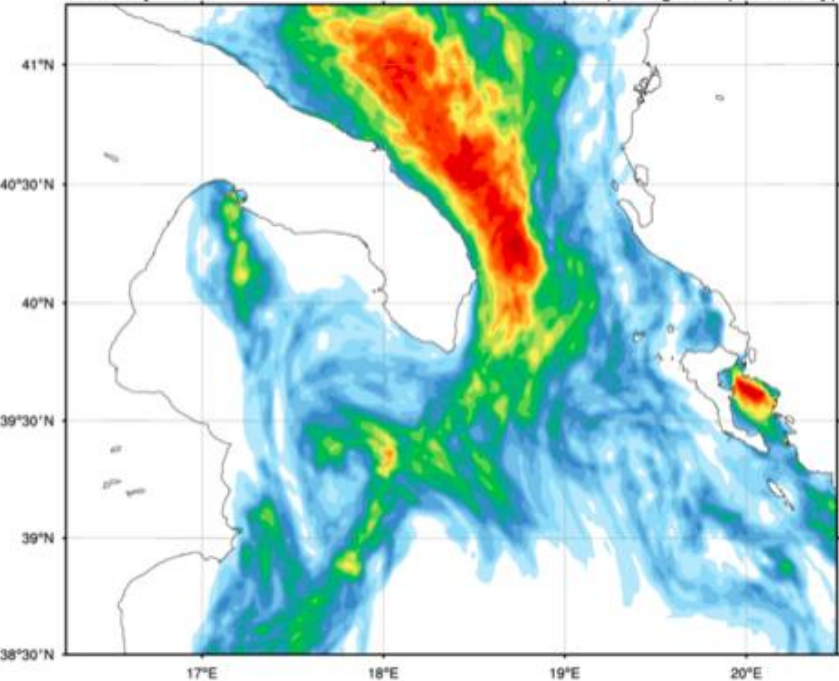


*general design of the infrastructure supporting the EMODNET Bulletin delivery*

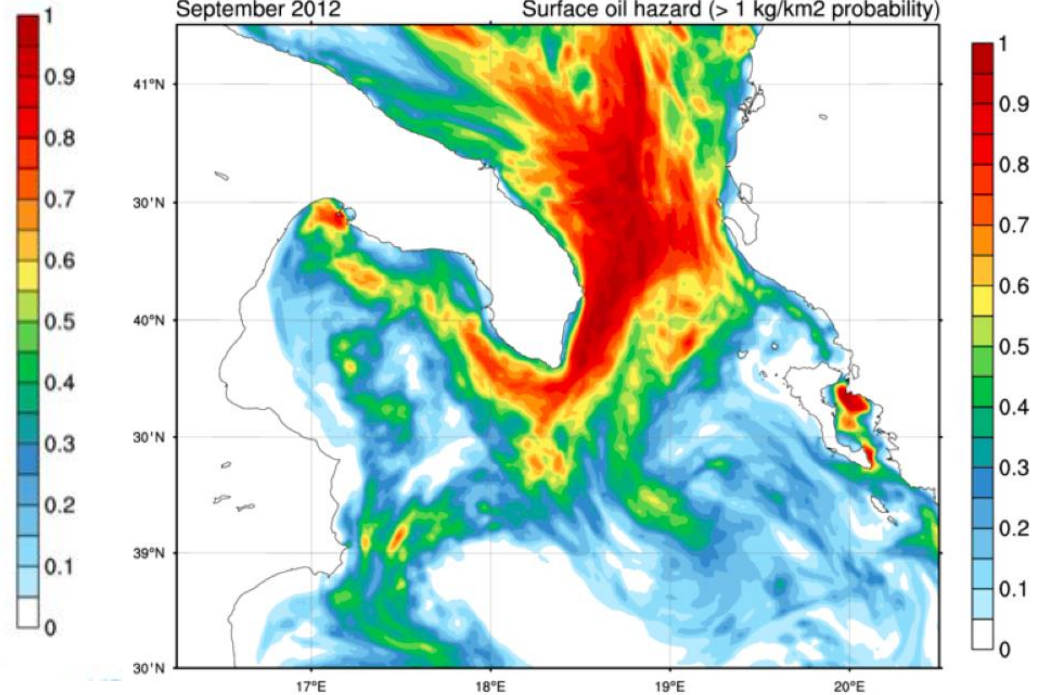
# Traffic Oil Spill Hazard Mapping Sea surface



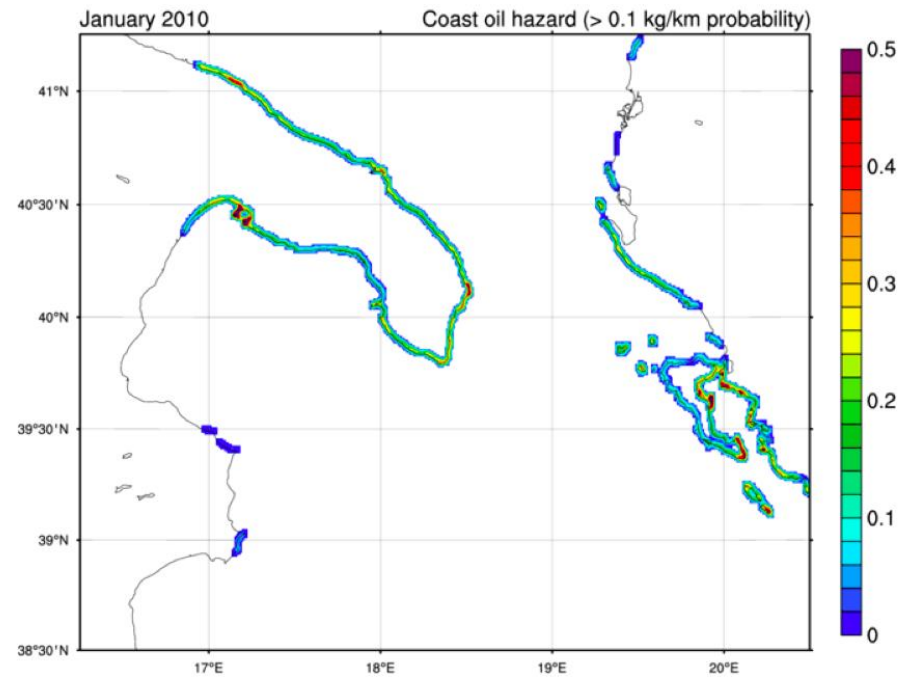
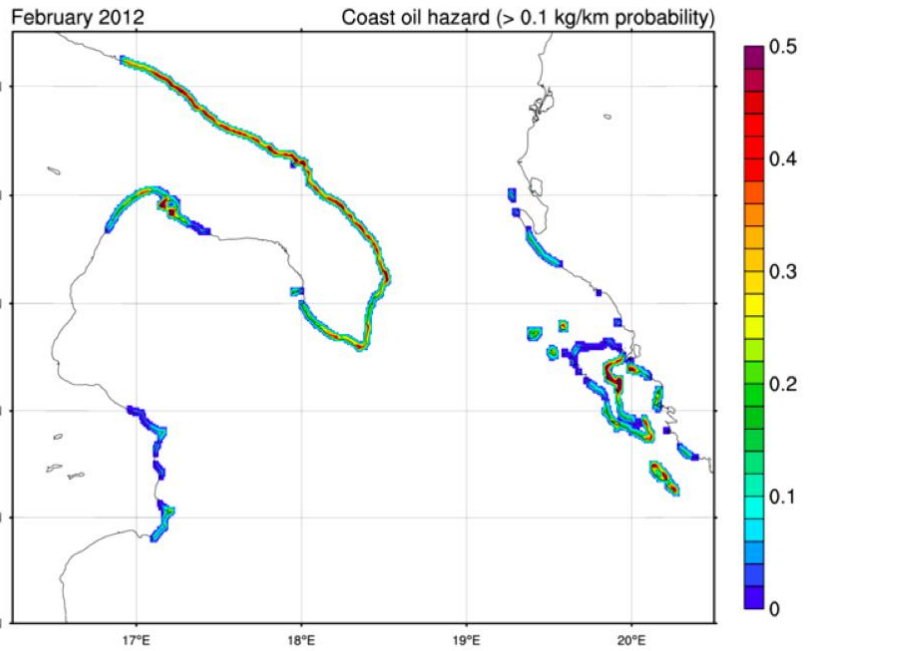
February 2009 Surface oil hazard (> 1 kg/km<sup>2</sup> probability)



September 2012 Surface oil hazard (> 1 kg/km<sup>2</sup> probability)

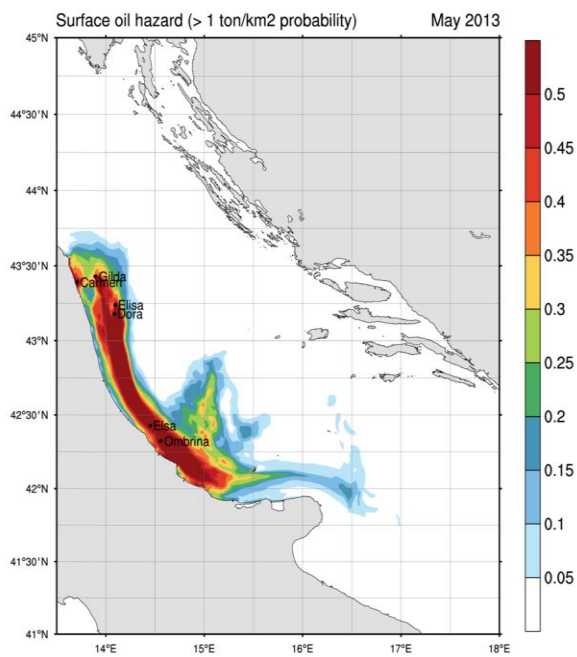


# Oil Spill Hazard Mapping Coastline

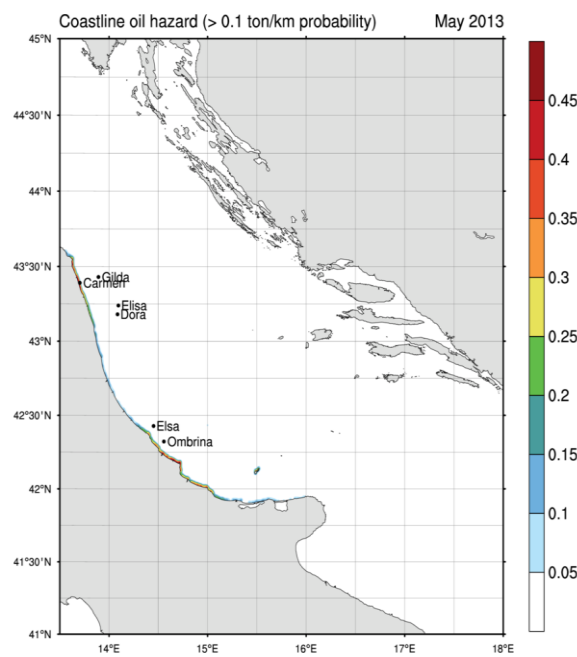


# Hazard mapping

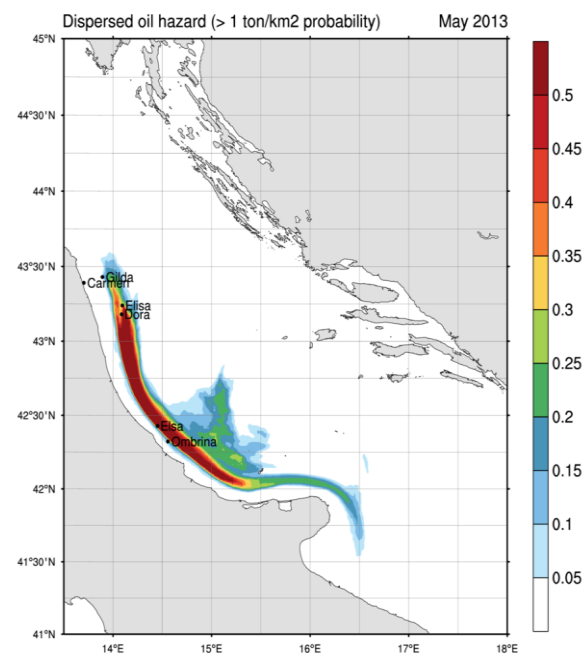
## for 6 Platforms located on the Adriatic shelf



**At the Surface**



**At the Coastline**



**Dispersed in the Water Column**

**2 500 MEDSLIK-II simulations over the period 2007-2013**



# Present R&D products and future activities

- Present available activities:
  - Oil spill emergency forecasting system and bulletins
  - Hazard mapping
- Future activities:
  - Increase awareness and dissemination
  - Co-develop and test the oil spill forecasting products
  - Co-develop and test the hazard mapping products
  - Improve the oil spill forecasting capability for off-shore applications
  - Further develop the hazard mapping methodology

**Thanks for your attention**

**Contact us @**

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**[Giovanni.coppini@cmcc.it](mailto:Giovanni.coppini@cmcc.it)**

