

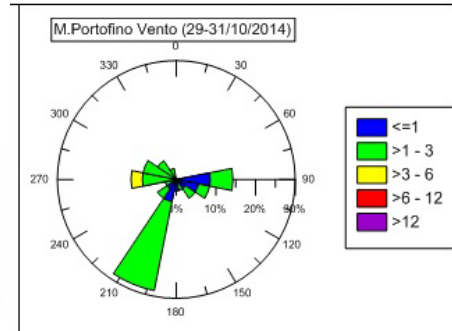
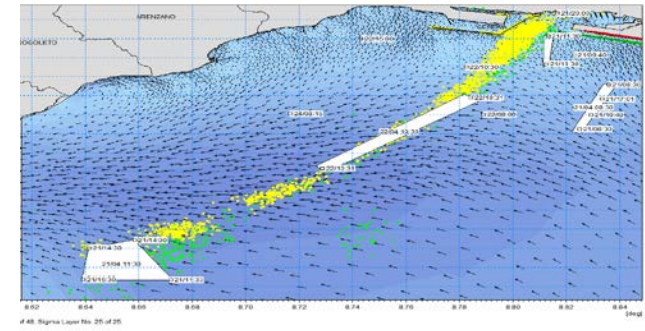
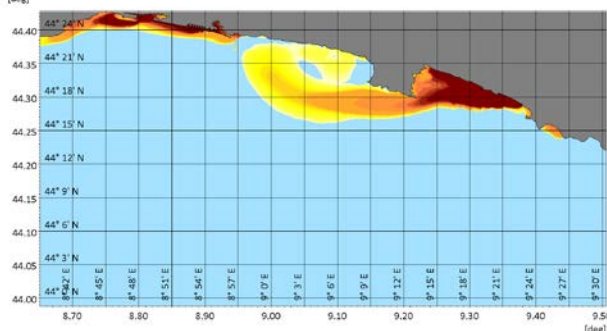
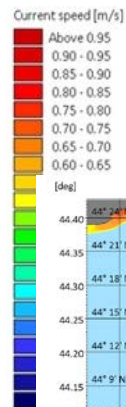
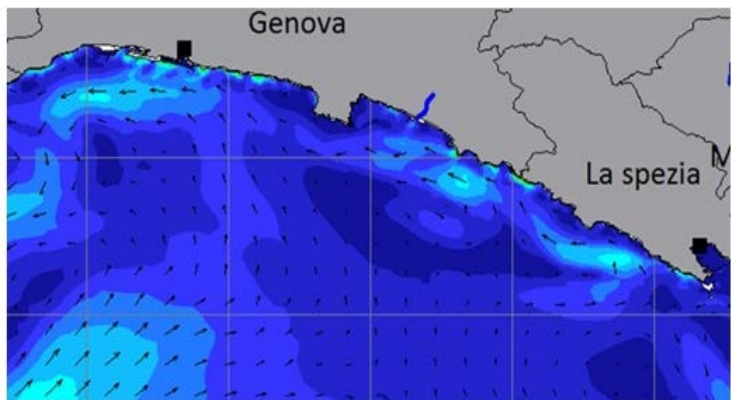
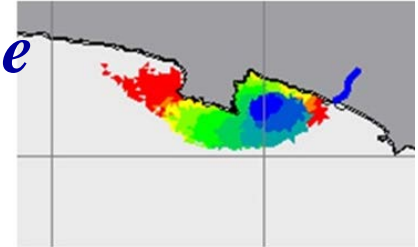
Utilizzo dei servizi Copernicus nell'ambito della modellistica marina

*Rosella Bertolotto ,Stefania Magrì, Patrizia De Gaetano,
Mauro Quagliati*

ARPAL – UTCR Genova, Italy

La modellistica marina in ARPAL

- *Supporto alle attività istituzionali di ARPAL*
- *Supporto a enti per la pianificazione costiera e la gestione delle emergenze*
- *Partecipazione a progetti europei*



Utilizzo dei servizi Copernicus

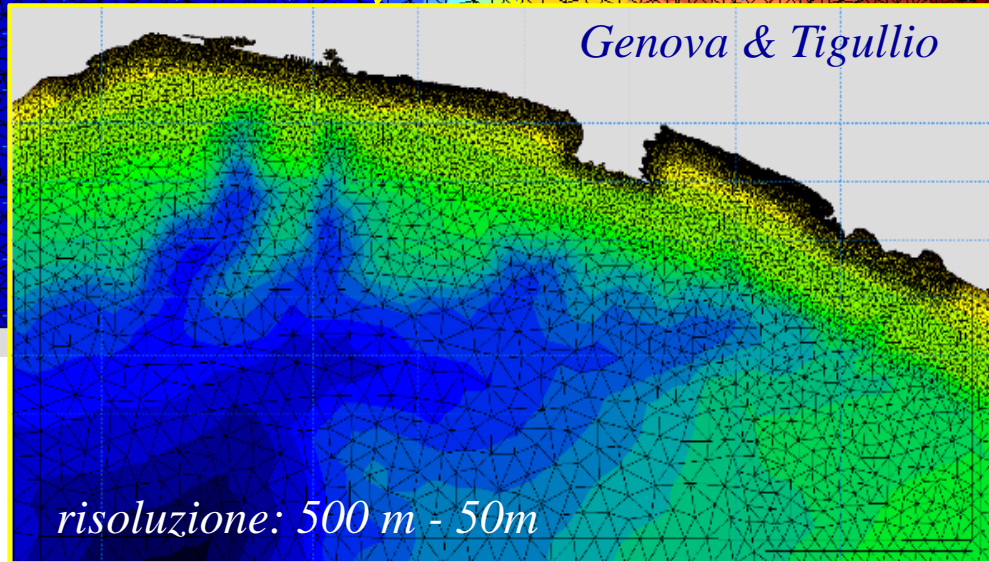
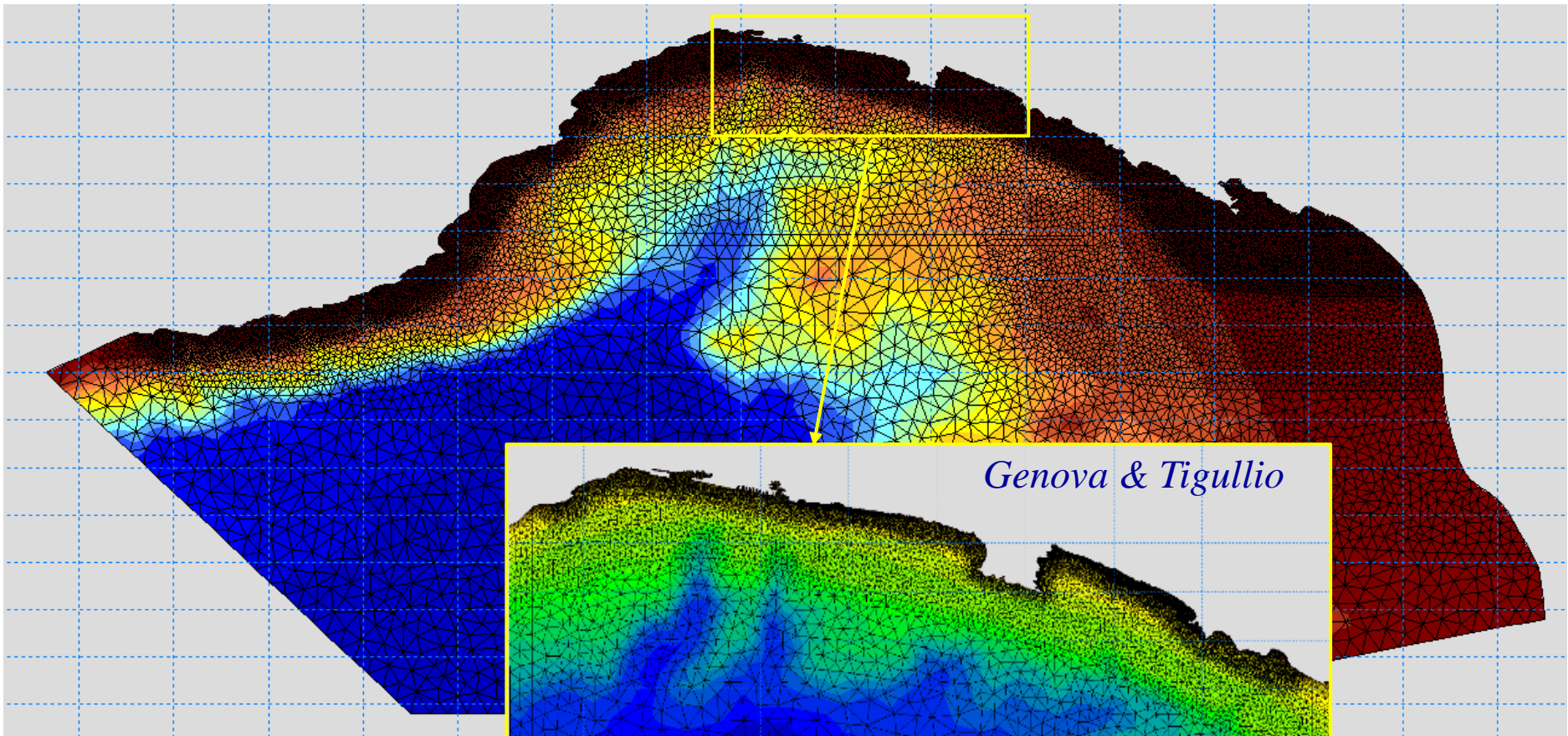
- 1. Condizioni ai bordi orarie dal modello di previsione del Mediterraneo per la catena operativa;*
- 2. Condizioni ai bordi giornaliere di rianalisi per modelli di circolazione applicati a casi studio;*
- 3. Immagini satellitari per la gestione delle emergenze, simulazioni in tempo reale di Oil Spill;*

1. La catena operativa previsionale

Modello idrodinamico MIKE 3 HD - DHI

Mar Ligure con risoluzione variabile: 6.5 km - 500 m

1 run giornaliero, previsione di correnti, temperatura, salinità su 48 h



1. La catena operativa previsionale



COPERNICUS MARINE ENVIRONMENT MONITORING SERVICE

Providing PRODUCTS and SERVICES for all marine applications

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PRODUCT WITH DEPTH LEVEL

Found 29 ocean products matching your criteria.

Export results

MEDSEA_ANALYSIS_FORECAST_PHY_006_013

MEDITERRANEAN SEA PHYSICS ANALYSIS AND FORECAST

MODEL



MED

T bottom T S SSH UV MLD



0.042 degree x 0.042 degree (141 depth levels)

From 2016-01-01 to Present

monthly-mean, daily-mean, hourly-mean

MORE
INFO



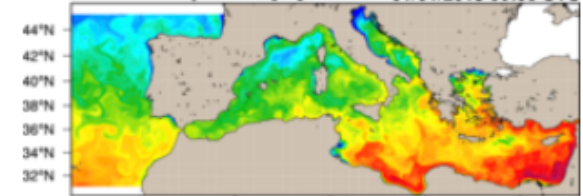
ADD TO
CART



WMS

Sub-
setting

Potential Temperature [°C] 01/01/2015 00:00 UTC



10°W 0° 10°E 20°E 30°E
12 13 14 15 16 17 18 19 20 21 22

1. La catena operativa previsionale

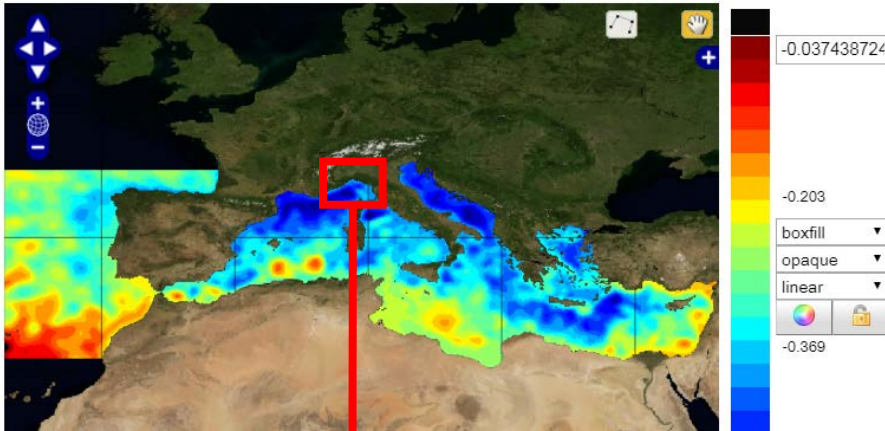
Mediterranean Sea Physics Analysis and Forecast

Product id: MEDSEA_ANALYSIS_FORECAST_PHY_006_013

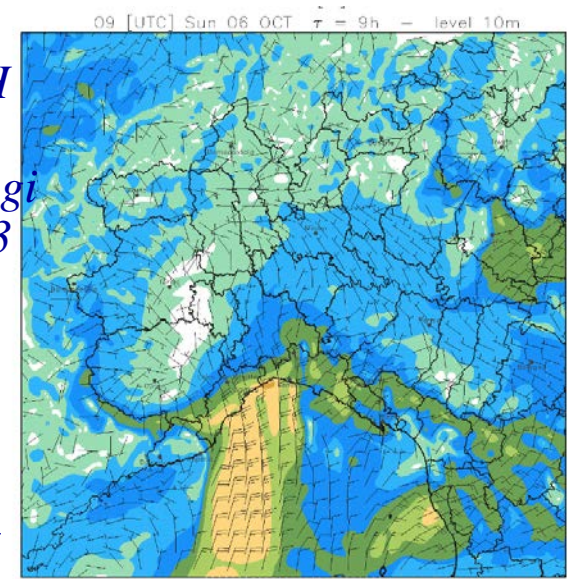
Dataset: Sea Surface Height (2D) - Monthly Mean

Variable: sea_surface_height_above_geoid

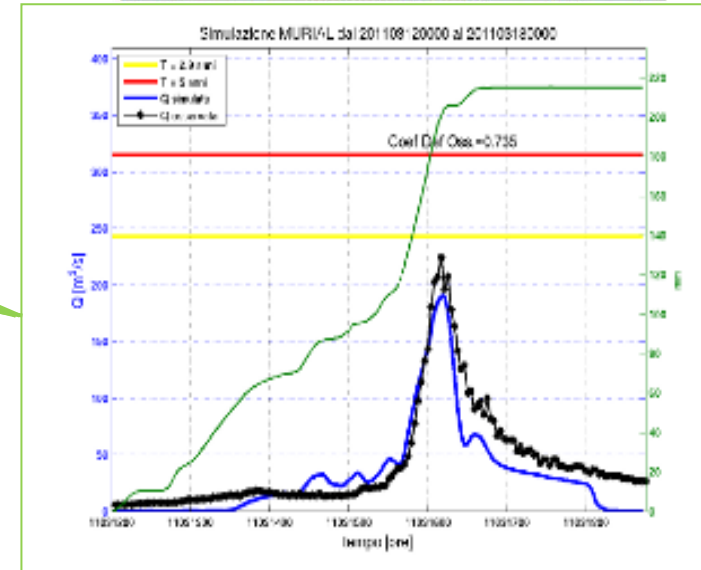
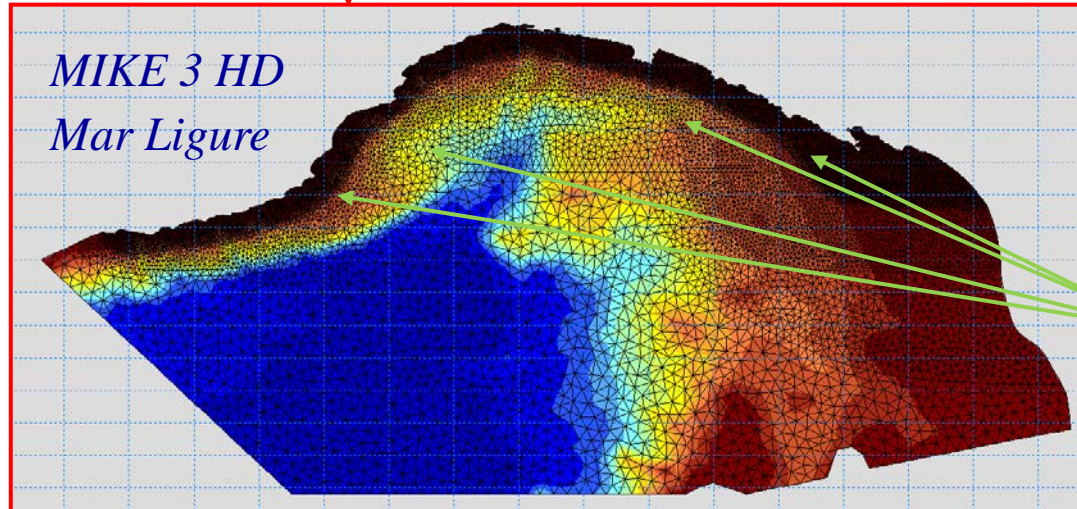
Units: m Time: 2018-09-15 12:00:00.000Z Elevation:



*MOLOCH
modello
meteorologico
LAM (3
km)*



DRiFt



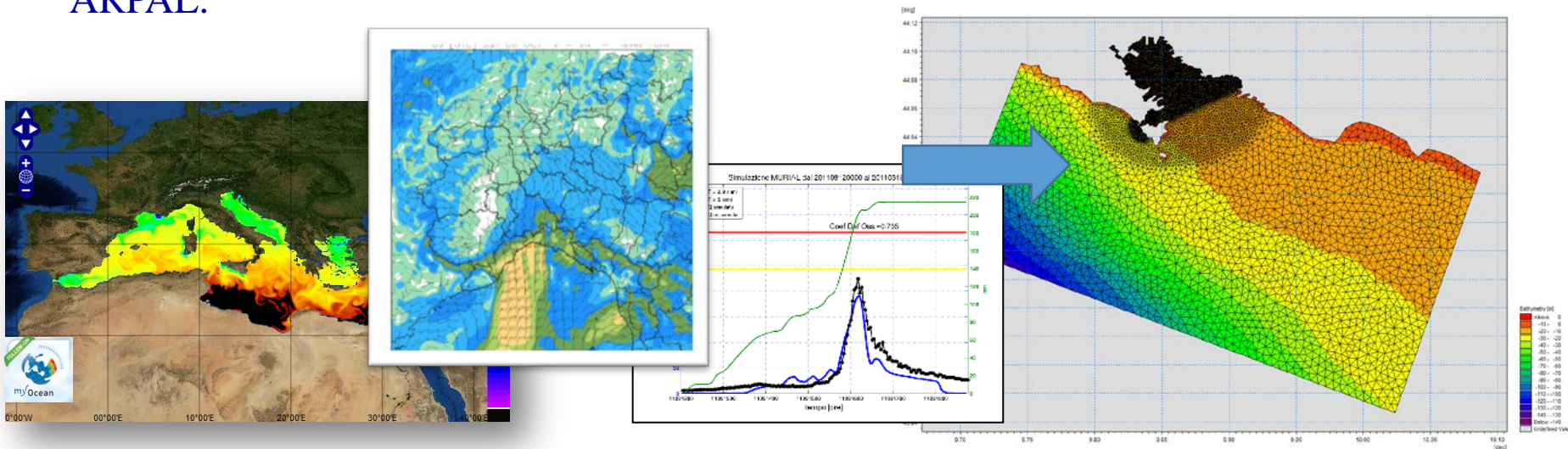
2. Rianalisi: il progetto europeo SEDRIPORT

Simulazione degli impatti di attività di dragaggio


Modello idrodinamico del sito pilota




Realizzazione del modello di circolazione 3D alla scala della rada della Spezia (modulo MIKE 3 HD FM di DHI), innestando a cascata:

- modello oceanografico MFS, reanalisi dei campi giornalieri di corrente, livelli superficiali, temperatura e salinità, disponibile dal programma europeo Copernicus;
- modello atmosferico ad area limitata MOLOCH, gestito dal CFMI-PC di ARPAL;
- modello idrologico afflussi-deflussi DRiFt, basato su piogge osservate - CFMI-PC di ARPAL.




2. Rianalisi: il progetto europeo SEDRIPORT

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INFO  CART  WMS  setting

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

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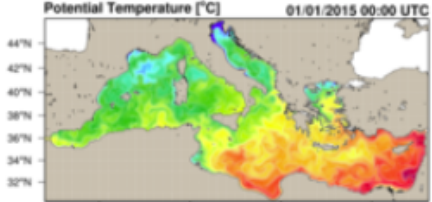
PARAMETERS ▶
TEMPORAL COVERAGE




From 1992-01-01 To 2018-10-25

If checked, the search results will only show products containing the whole selected time range.

MEDSEA_REANALYSIS_PHYS_006_004

MEDITERRANEAN SEA PHYSICS REANALYSIS

MODEL	   	MED
T S SSH UV		
0.063 degree x 0.063 degree (72 depth levels)		
From 1987-01-01 to 2016-12-31		
monthly-mean, daily-mean		

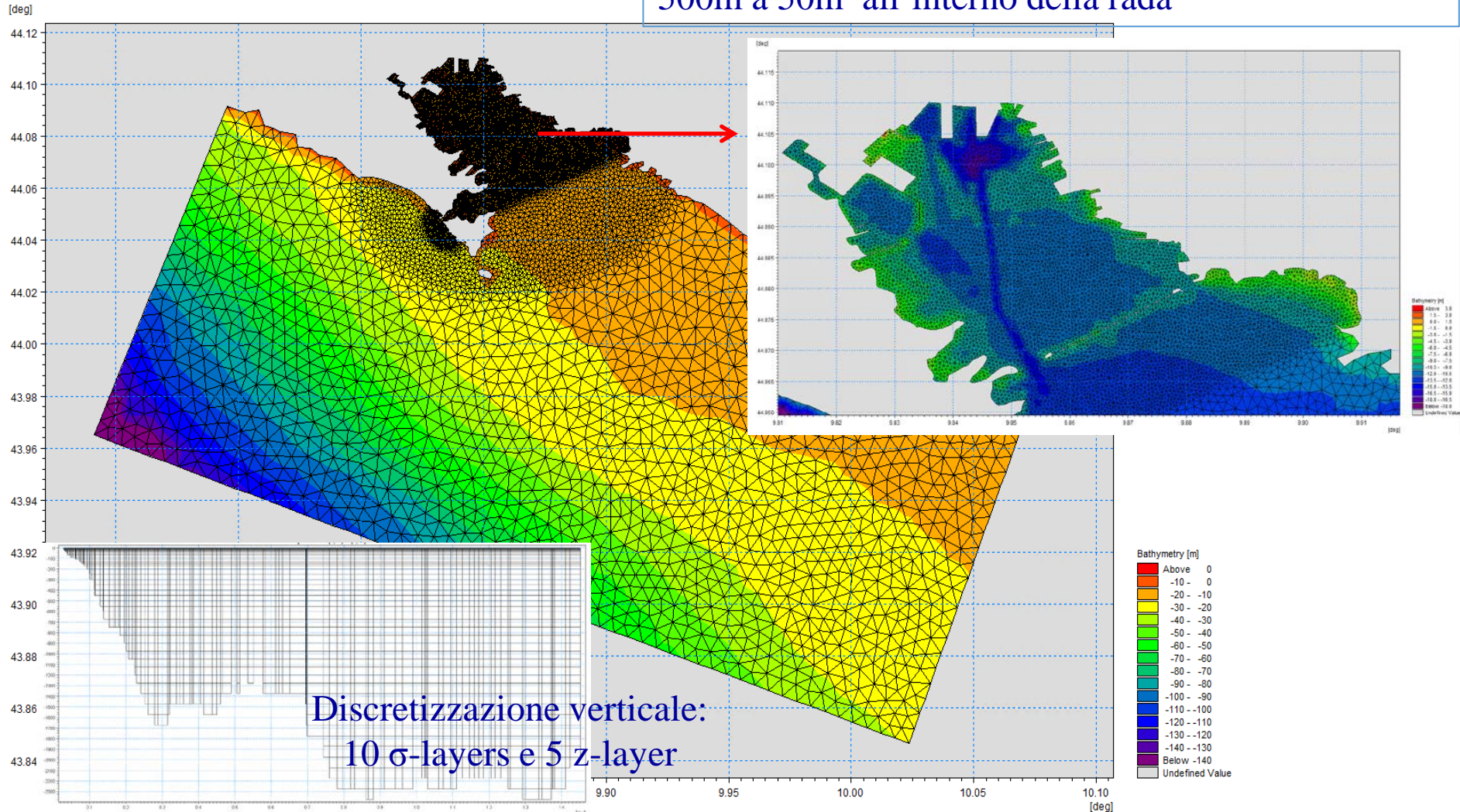
MORE INFO  ADD TO CART  WMS  Sub-setting

12 13 14 15 16 17 18 19 20 21 22

2. Rianalisi: il progetto europeo SEDRIPORT

Modello idrodinamico

Maglia triangolare con risoluzione variabile da 500m a 50m all'interno della rada

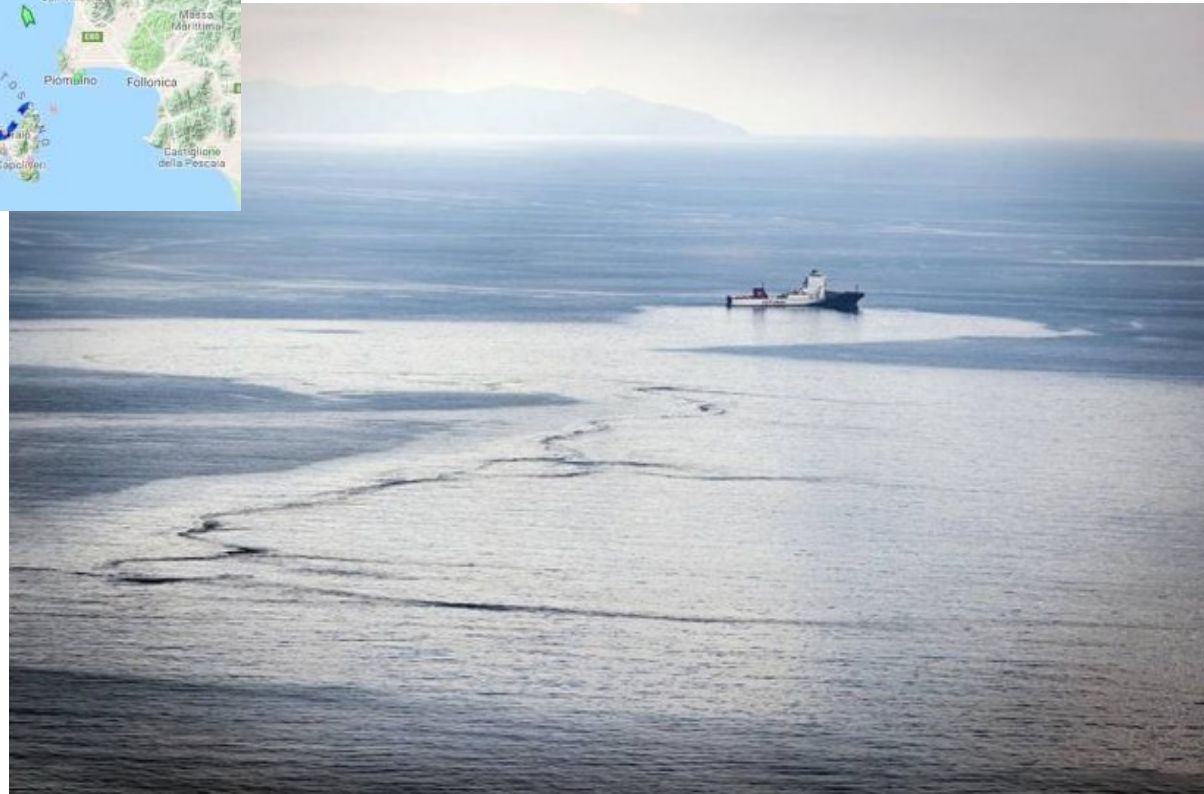


3. Utilizzo di immagini satellitari per la gestione delle emergenze

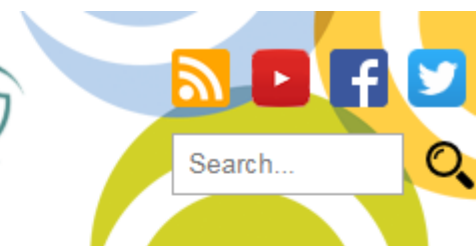


Domenica 7.10.2018 la collisione di due navi a nord della Corsica ha causato la fuoriuscita di circa 4 km (2.4 miglia) di carburante nel Mediterraneo.

Sulla base delle previsioni idrodinamiche giornaliere fornite dalla catena operativa e con il modulo MIKE di Oil Spill, è stata simulata la fuoriuscita del carburante dal punto di collisione e si è seguito l'andamento della macchia



Grazie alle immagini satellitari provenienti dal Satellite Sentinel 1 è stato possibile validare le previsioni modellistiche e impostare le parametrizzazioni per la simulazione successiva



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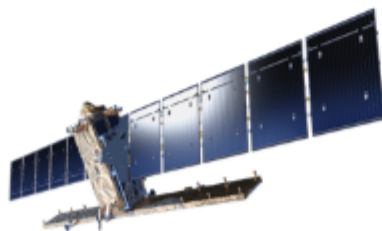
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Sentinel Satellites

The **Sentinel Satellites** are developed for the specific needs of the Copernicus programme. They provide a unique set of observations for Copernicus. [Visit Sentinel Online!](#)

They consist of six different families, presented below.

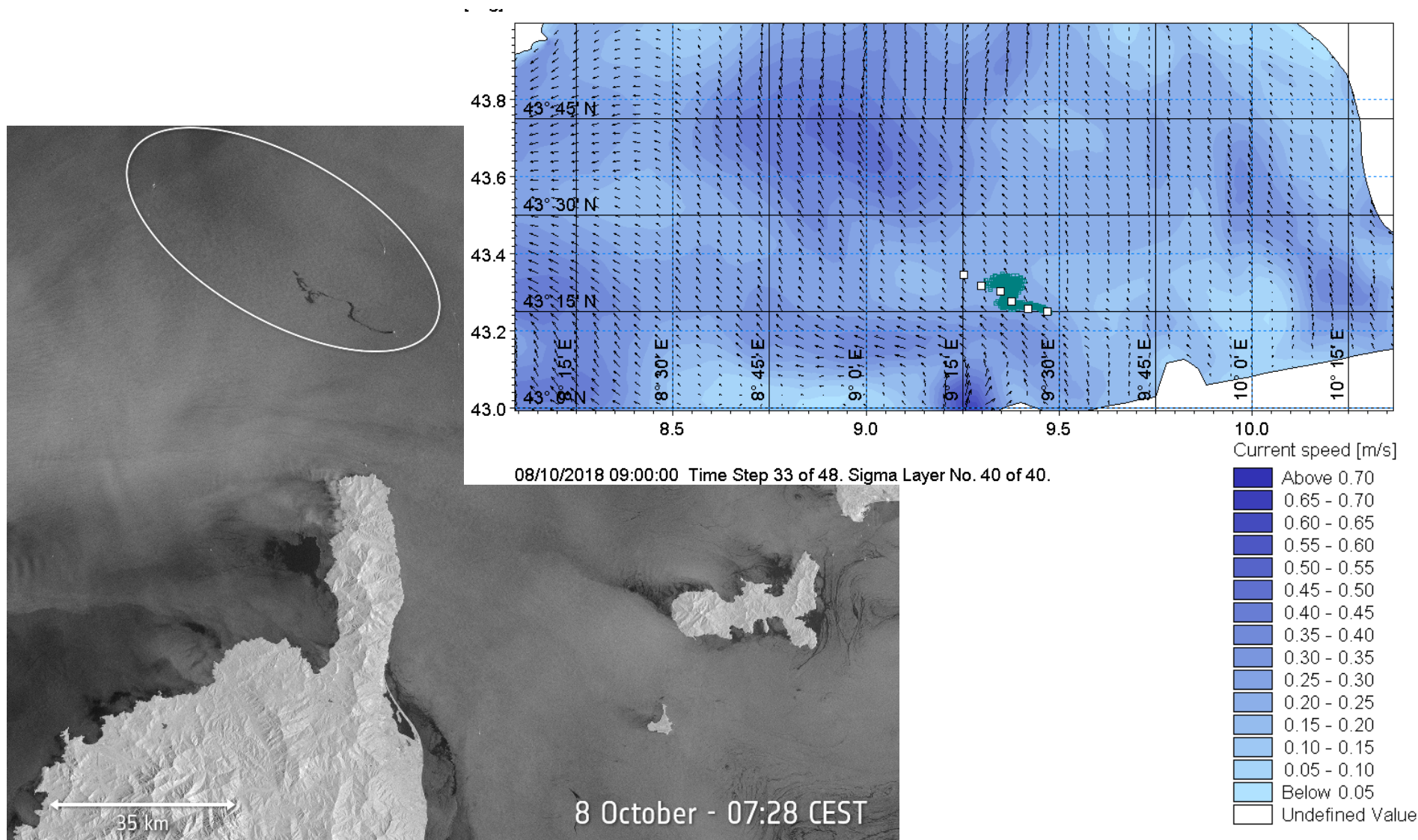
Sentinel-1



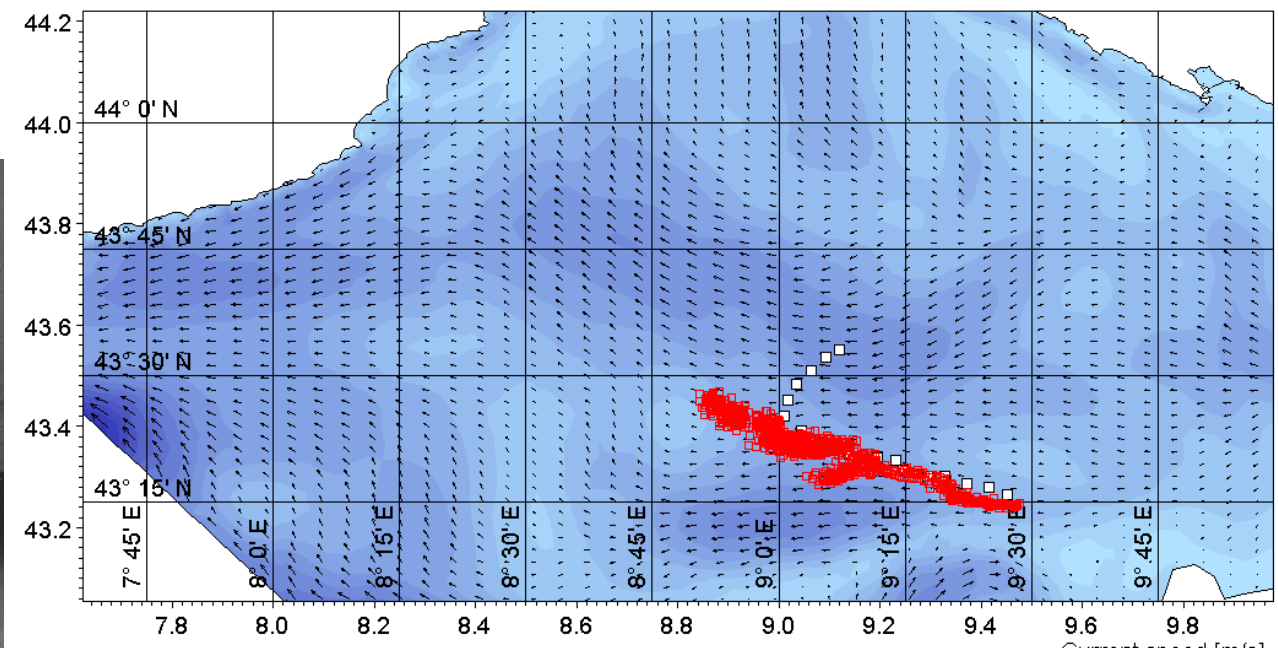
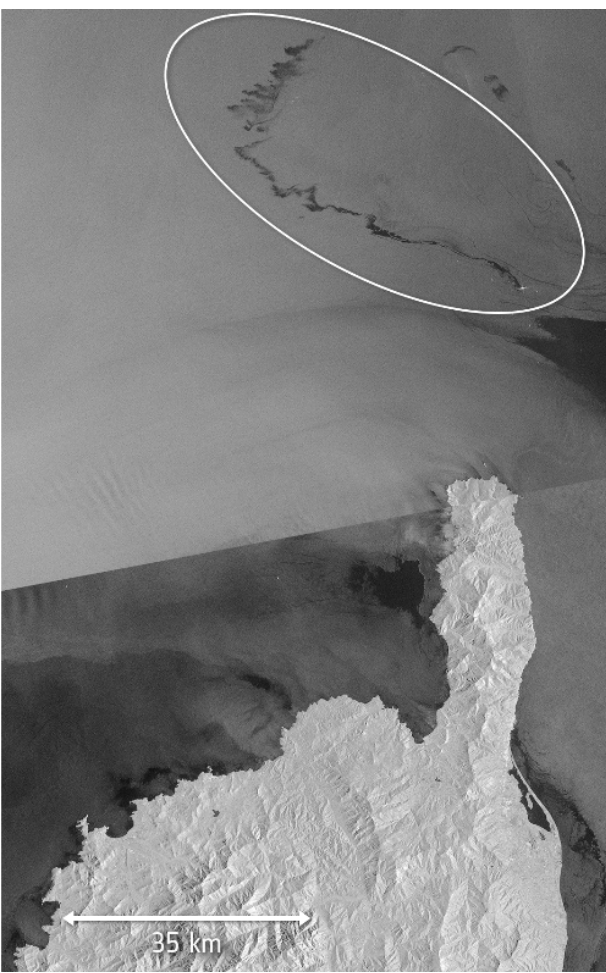
Sentinel-1 provides all-weather, day and night radar imagery for land and ocean services. The twin satellites Sentinel-1A and Sentinel-1B were respectively launched on 3 April 2014 and on 25 April 2016.

[Learn more...](#)

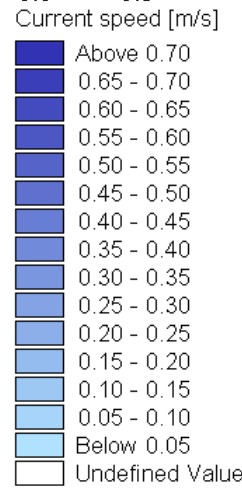
Validazione della posizione della macchia di inquinante attraverso l'immagine fornita dal satellite



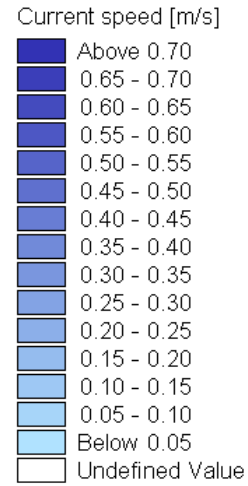
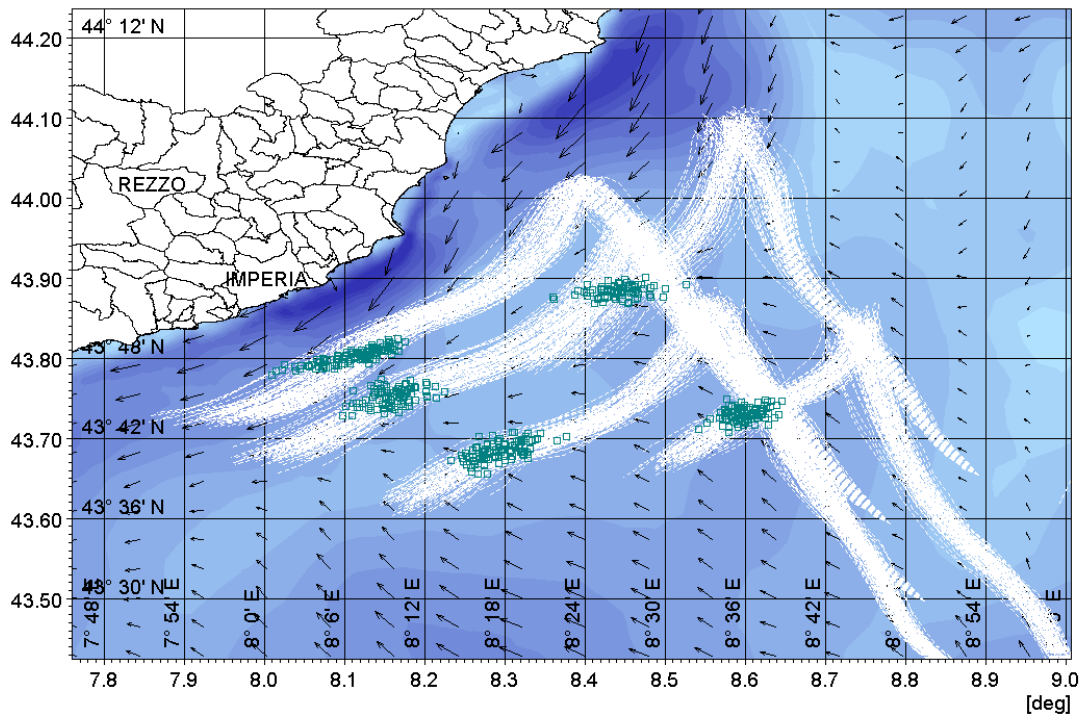
Utilizzo dell'informazione fornita dal satellite come punto di partenza per la simulazione successiva



09/10/2018 17:00:00 Time Step 41 of 48. Sigma Layer No. 40 of 40.



9 October - 19:14 CEST

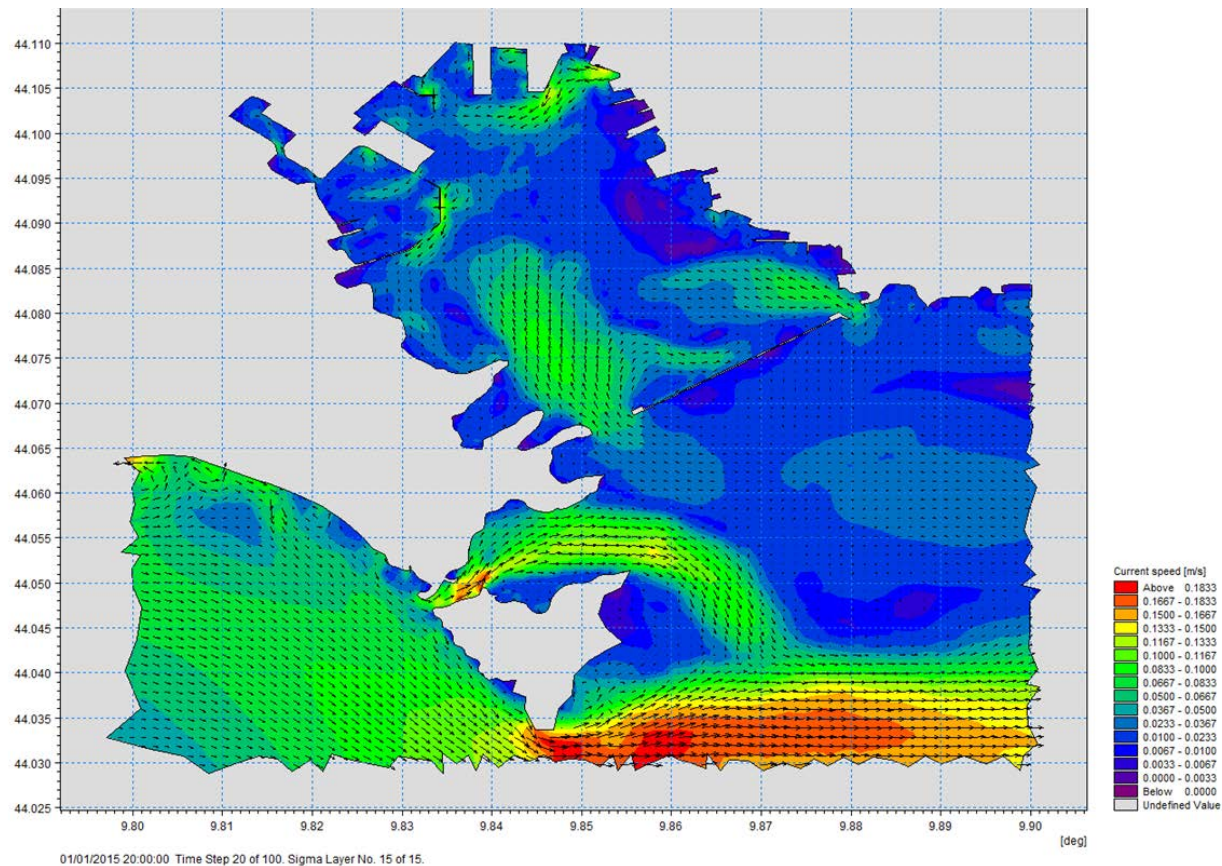


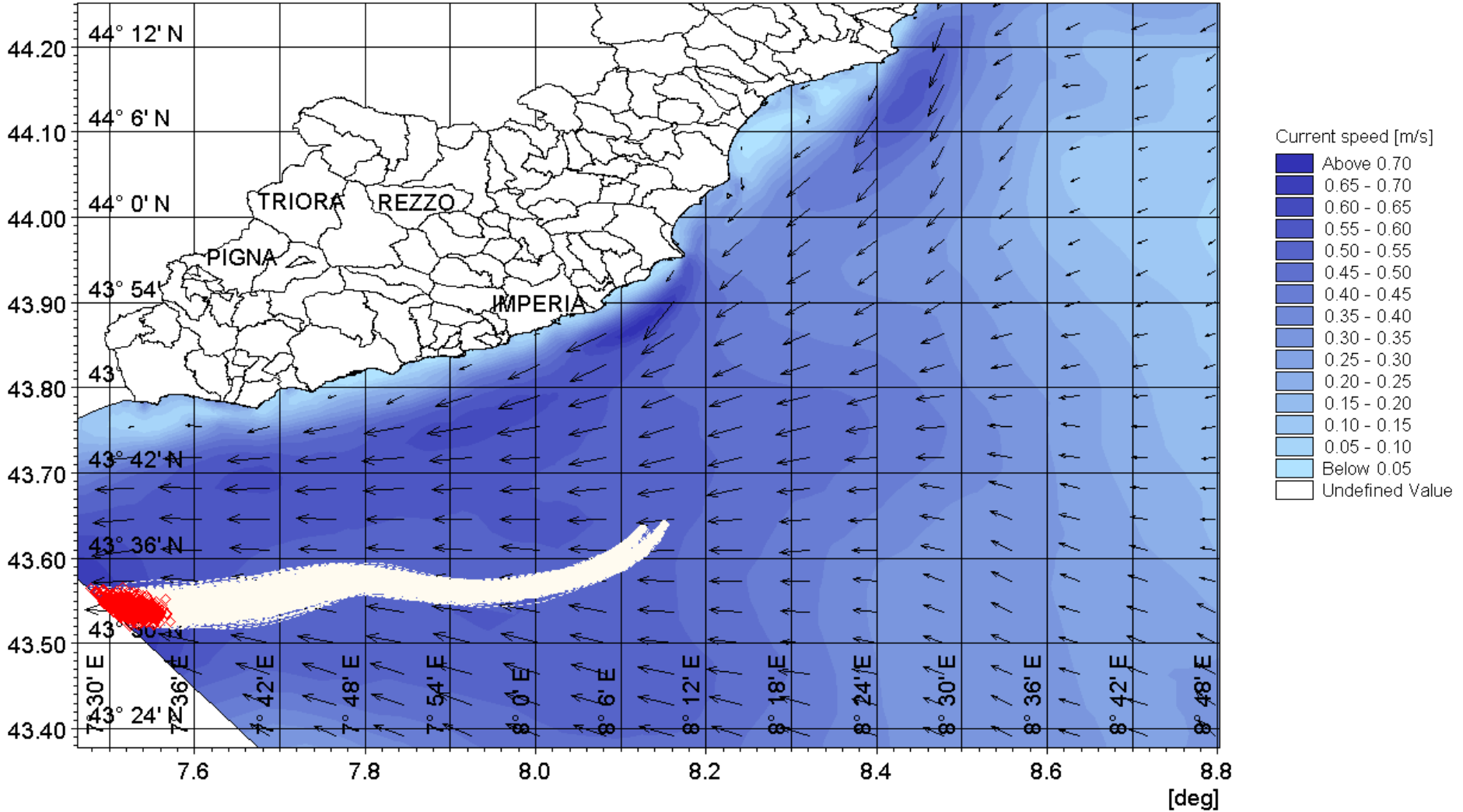
12/10/2018 06:00:00 Time Step 42 of 48. Sigma Layer No. 40 of 40.



Proposte future

- *Rianalisi orarie delle correnti del modello MFS per casi studio locali con alta variabilità.*





13/10/2018 05:00:00 Time Step 41 of 48. Sigma Layer No. 40 of 40.

Grazie per l'attenzione