



GlobCurrent 2012 **User Consultation Meeting, 7 March 2012, Ifremer, Brest (France)**

Oil and chemical spill modelling: operational examples

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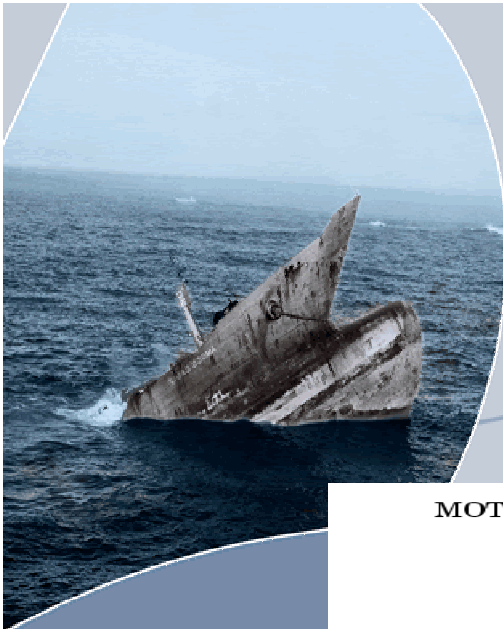
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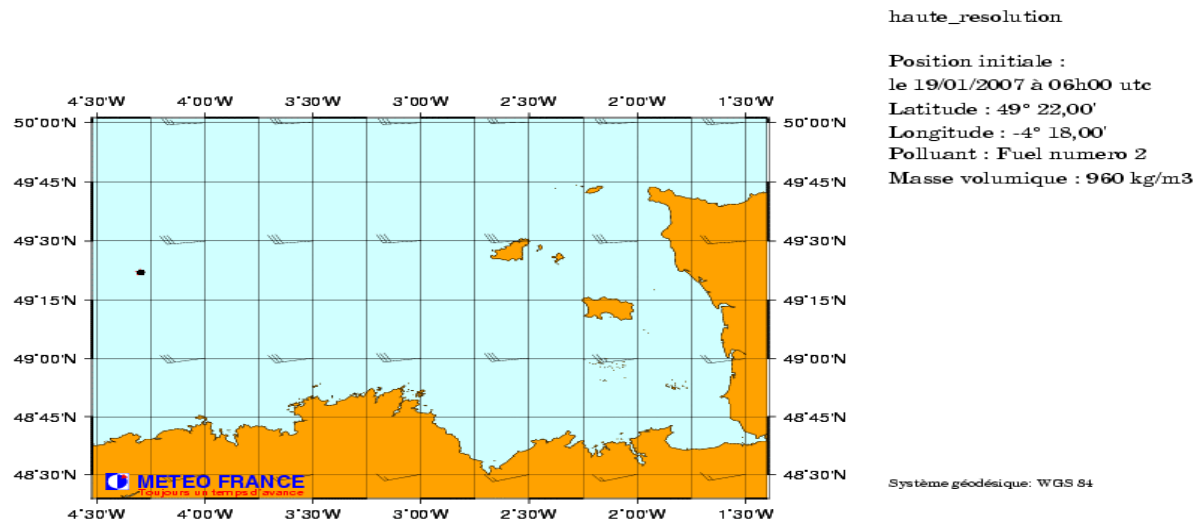
OILSPILL MODELLING



Example : oil spill pollution in the English Channel
(MOTHY : Météo France Model)



MOTHY/CEP : Prévion pour le 19/01/2007 à 06 utc



Attention : document technique de prévision de dérive d'hydrocarbure, réalisé à partir d'un seul point choisi dans un ensemble complexe de nappes (observées ou non).
Caution: Technical support for oil drift forecast from a single point out of a complex set of slicks (observed or not).

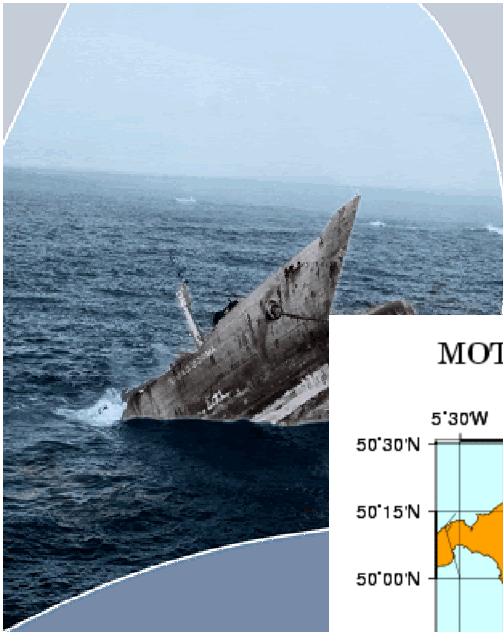
Probable trajectory of the pollutants :

- > to help the authorities to organize the response (clean up at sea / land)
- > to update the observation strategy for the coming days

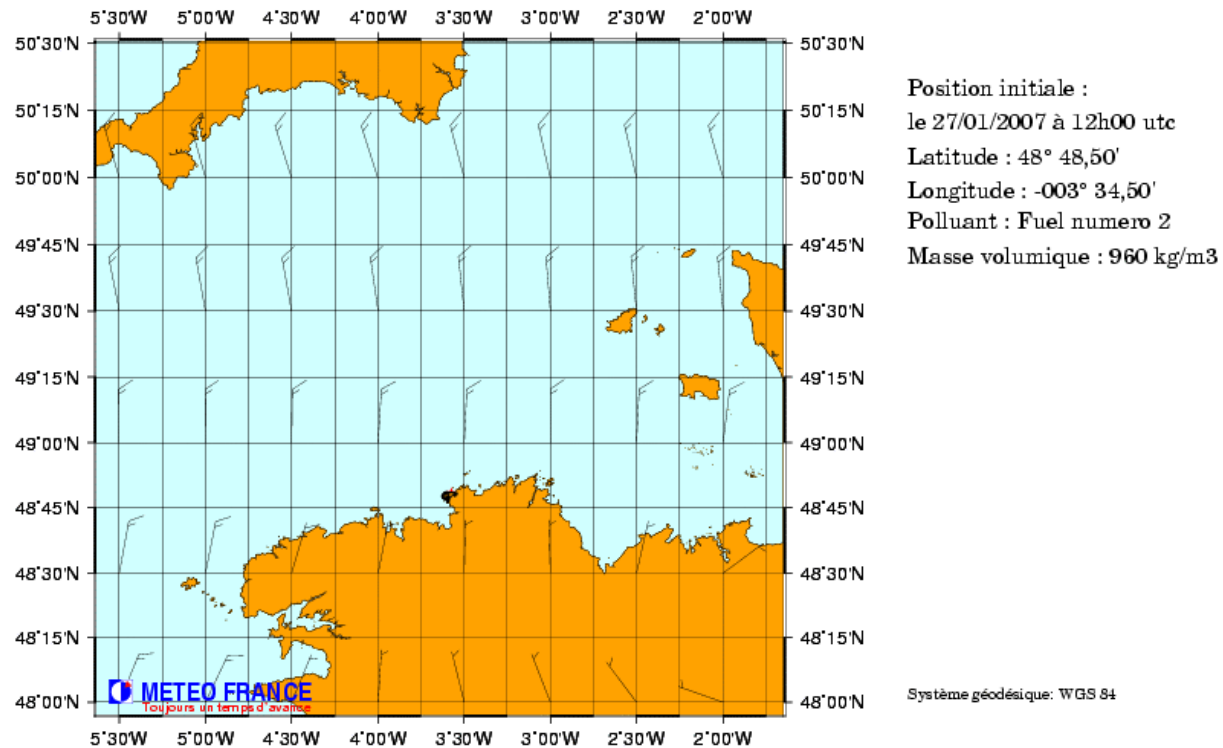
OILSPILL MODELLING BACKTRACKING



Example : oil spill pollution in the English Channel
(MOTHY : Météo France Model)



MOTHY/CEP REBOURS : Prévion pour le 27/01/2007 à 06 utc



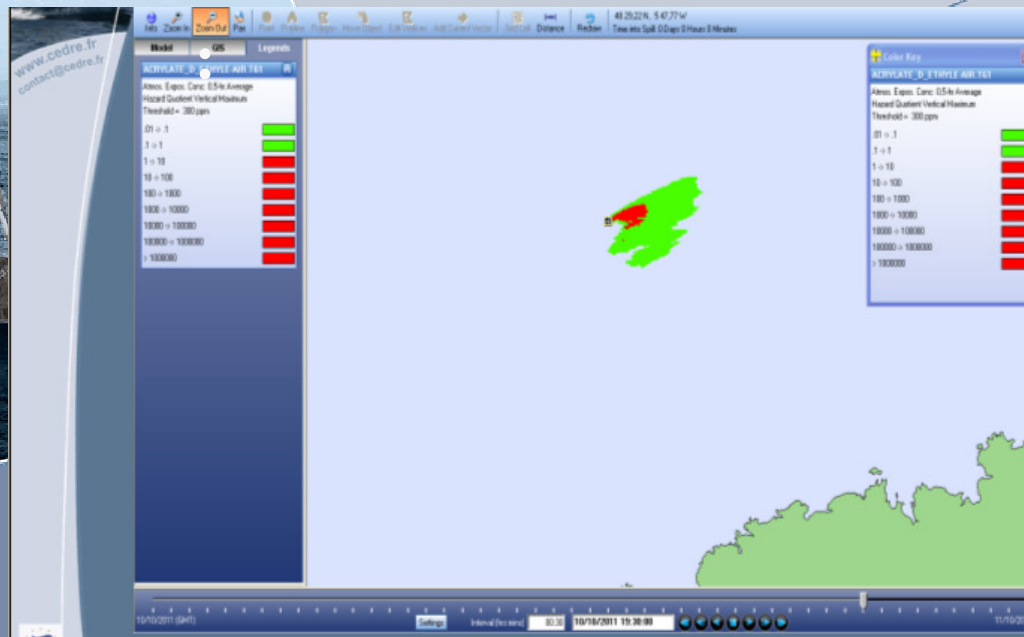
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Usefull to identify the source of the pollution

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CHEMICAL SPILL MODELLING

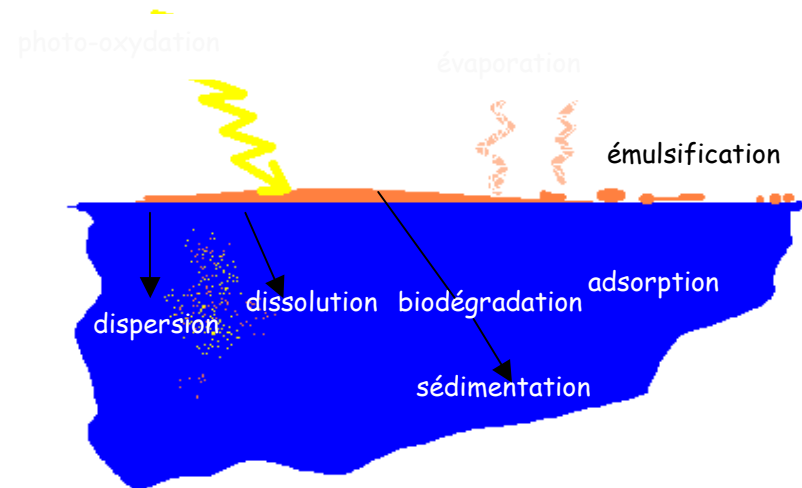


Evolution of the chemical concentration in the water column

Parameters :

- Dissolving
- Spreading
- Evaporation
- Dispersal
- Sedimentation
- Biodegradation

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OCEAN MODELS (input)



MOTHY (Météo France) :

- Global ocean MERCATOR system with a resolution of $1/4^\circ$
- Atlantic and Mediterranean MERCATOR system with a resolution of $1/12^\circ$
- Mediterranean MFS system with a resolution of $1/16^\circ$

OILMAP and CHEMMAP software (ASA):

PREVIMER (Ifremer) – France :
résolution en fonction des zones
géographiques : de 1 km, 300 mètres ou
100 mètres.

NCOM (US Navy) (world cover :
accuracy $1/8^\circ$ (about 7.5 nautical miles),
72 hours forecast)

HYCOM (HYbrid Coordinate Ocean
Model) : -2 to 11 nautical miles, 120 hours
forecast)

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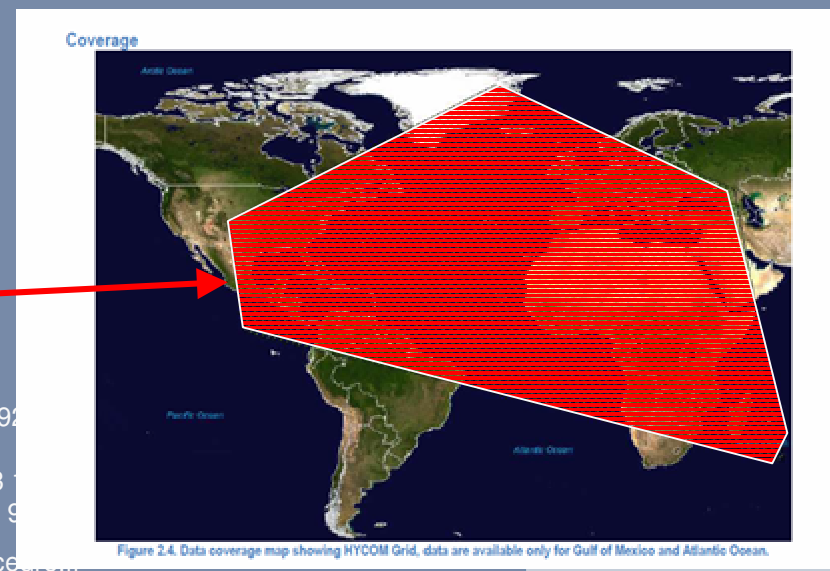
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French Slick Drift Monitoring and Prediction Committee

which include Cedre, Ifremer, SHOM, METEO FRANCE, MRCC, French Navy



- Analyse the crisis situation and data using every output available from model
- Make operationnal recommandations
- Produce a synthetic map for broadcasting

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Example of models comparison

1 - METNO model (from Norwegian Meteorological Institute / Norway)



Firefox browser window showing the Cedre web application interface. The address bar displays the URL: http://cedremp.dyn-map.com/cartes/module_netmar/flash/.

The application interface includes a navigation menu with options: Localisation, Analyse, Affichage, Perso. The main content area displays a satellite map with a color-coded oil spill model overlay. The model shows a plume of oil spreading from a source point, with colors ranging from red (hot) to yellow and green (cooler).

The left sidebar contains a 'Thèmes' (Layers) panel with the following settings:

- RPOSI**
 - METNO**
 - metno_merc1 aout 20 2010 22:00:00
 - metno_merc2 aout 21 2010 10:00:00
 - metno_merc3 aout 21 2010 22:00:00
 - metno_merc4 aout 22 2010 10:00:00
 - metno_merc5 aout 22 2010 22:00:00
 - metno_merc6 aout 23 2010 10:00:00
 - FOND**
 - Communes
 - Monde
 - Départements
 - Régions
 - polrep_netmar SATELLITE EMSA
 - oilmap_spillet
 - 08/20/2010 22:00:00
 - 08/21/2010 10:00:00
 - 08/21/2010 22:00:00
 - 08/22/2010 10:00:00
 - 08/22/2010 22:00:00
 - 08/23/2010 10:00:00
 - oilmap_line
 - obs_sat
 - DST
 - Pisciculture
 - Espaces halieutiques (atlas 2000)
 - Conchiculture
 - Cartage eau

Example of models comparison

2 - MOTHY (METEO FRANCE)



Mozilla Firefox : Ifremer

http://cedremp.dyn-map.com/cartes/module_netmar/flash/

Navigation

MOTHY : Importer | Imprimer

Localisation Analyse Affichage Perso.

Thèmes

- RPOSI
 - MOTHY_20aout2010
 - Point de départ simulation
 - Barycentre à 12h le 20/08/
 - Tête de nappe à 12h le 20/
 - Corps de nappe à 12h le 21
 - Barycentre à 0h le 21/08/2
 - Tête de nappe à 0h le 21/0
 - Corps de nappe à 0h le 21/
 - Barycentre à 12h le 21/08/
 - Tête de nappe à 12h le 21/
 - Corps de nappe à 12h le 2:
 - Barycentre à 0h le 23/08/2
 - Tête de nappe à 0h le 23/0
 - Corps de nappe à 0h le 23/
 - Barycentre à 12h le 23/08/
 - Tête de nappe à 12h le 23/
 - Corps de nappe à 12h le 2:
 - Barycentre à 0h le 24/08/2
 - Tête de nappe à 0h le 24/0
 - Corps de nappe à 0h le 24/
 - Ligne intra-barycentre
- METNO
- FOND
 - Communes
 - Monde
 - Départements
 - Régions
- polrep_netmar SATELLITE EMSA
- oilmap_spillet
 - 08/20/2010 22:00:00
 - 08/21/2010 10:00:00

Chargement de la couche

0 45 km

démarrer

Courrier e... N:\info_re... -- Mozlla ... N:\interve... DYNAMAP - ... Microsoft P... Fiche détail... copernic 10:17

Example of models comparison

3 -OILMAP model – ASA (with Météo France winds and Previmer currents)



Screenshot of a Mozilla Firefox browser window displaying the Cedre web application interface. The browser title is "Mozilla Firefox : Ifremer". The address bar shows the URL "http://cedremp.dyn-map.com/cartes/module_netmar/flash/".

The application interface includes a navigation menu with tabs: "Localisation", "Analyse", "Affichage", and "Perso.". A sidebar on the left lists various themes and layers:

- Thèmes:
 - RPOSI
 - METNO
 - FOND
 - Communes
 - Monde
 - Départements
 - Régions
 - polrep_netmar
 - oilmap_spillet
 - 08/20/2010 22:00:00
 - 08/21/2010 10:00:00
 - 08/21/2010 22:00:00
 - 08/22/2010 10:00:00
 - 08/22/2010 22:00:00
 - 08/23/2010 10:00:00
 - oilmap_line
 - obs_sat
 - DST
 - Pisciculture
 - Espaces halieutiques (atlas 2000)
 - Conchilicuture
 - Captage eau
 - Natura2000 DHFF
 - Natura2000 DO
 - Limite dispersants 10 t - Méditerranée
 - Limite dispersants 10 t - Gascogne
 - Limite dispersants 100 t - Méditerranée
 - Limite dispersants 100 t - Gascogne
 - Limites dispersants (Manche)
 - Limite dispersants 1000 t - Méditerranée

The main map area displays a satellite image of the ocean with several colored circular markers (red, orange, yellow, green) indicating oil spill locations. A scale bar at the bottom left of the map indicates 0 to 45 km. The Windows taskbar at the bottom shows the system tray with the time 10:17 and several open applications including "Courrier e...", "N:\info_re...", "Mozilla...", "N:\interve...", "DYNAMAP - ...", "Microsoft P...", "Fiche détaill...", and "copernic".

Operationnal Needs



- Access to hydrodynamic data
 - short delay
 - Ocean input in a predefined format (opendap)
- Uncertainty of hydrodynamic input
- Integration of currents vector in WEBGIS viewer together with the pollutant drift forecast (WMS, WFS etc ...)

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