EMODNET Oil Platform Leak Bulletin

The EMODNET Oil Platform Leak Bulletin contains the forecast/scenario information on the fate and transport of oil leaks emanating from fixed platforms.
The bulletin is built upon MyOcean products (http://www.myocean.eu and http://gnoo.bo.ingv.it/myocean) and the ECMWF forecast surface atmospheric variables, winds and air temperature.

Date 30 July 2014

Preface

At 7:29 of July 28, 2014 it was communicated that:

On Sunday 27/07/2014 at 05:05 CET a helicopter bringing vital supplies to an active drillship "Magna Belgica" in the wider area of 'Caliph prospect' off the coast of Libya encountered a technical failure and collapsed on the drillship starting a fire and crude oil leak immediately. The spill was contained within a duration of 5 hours with total of 50 tons crude oil loss at sea surface. After initial repairs the vessel set sail for inspection in Naples. Reaching the strait of Messina around 06:15 CET this morning, the drillship experienced engine and rudder failure leading to a collision with a cargo ship. The drillship was heavily damaged and will have lost a total load of 2000 tons of diesel fuel oil by 10:20 CET today (28/07/2014).

Please investigate the fate of the spill and possible consequences (see details in input form) for both the initial leak at Caliph prospect and the larger loss of diesel fuel oil in the strait of Messina.

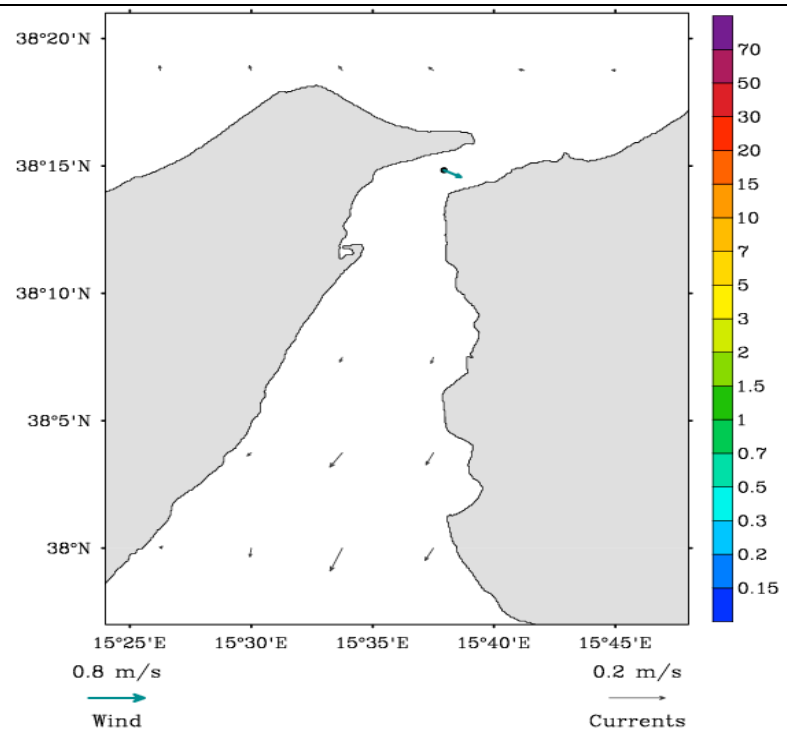
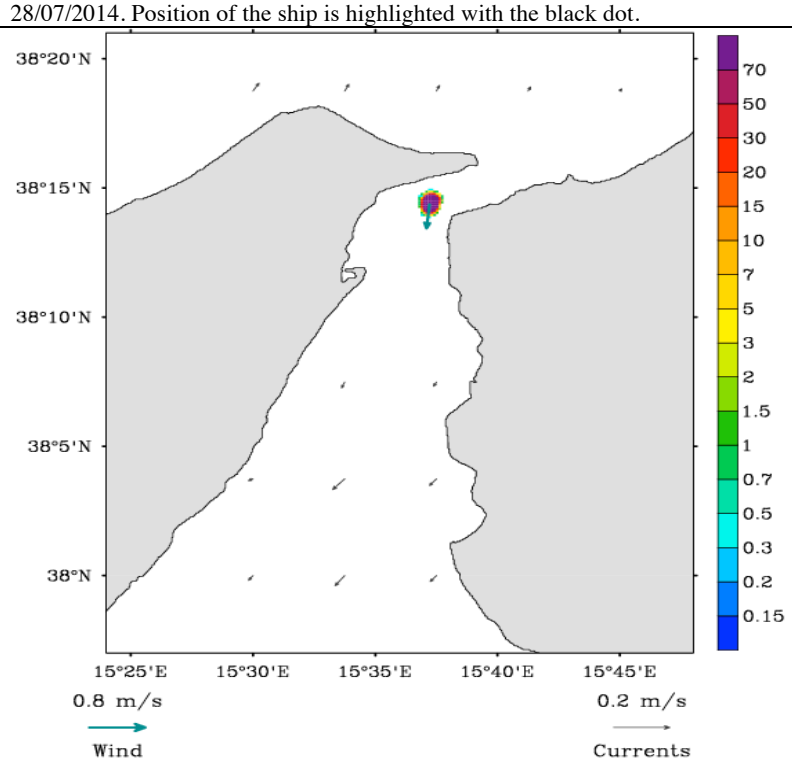
Bulletin Content

The bulletin presents the forecasts of the currents, wind and oil transport and dispersion at the surface and at the coasts for 96 hours after the initial spill supposed to have occurred on the 28/07/2014 at 06.15 CET or 04:15 UTC.

Data and methods:

The position of the oil spill is supposed to coincide with the ship position LAT = 38° 14.84' N, LON = 15° 37.94' E, in the Messina Strait. The overall amount of diesel fuel oil released is set to 2000 Tons with API 40 value. The oil is released as a continuous oil spill during 5 hours starting at the beginning of the simulation.

Description of the results

Release point of the oil spill (28/07/2014 06:00 CET, figure 1) Surface currents are south-westward (figure 1), in the proximity of the Messina Strait. Wind is north-westerly and reaches a velocity of about 0.1 m/s.	 Figure 1: Surface currents **(black arrows)** and wind **(green arrow)**, at 06:00 CET 28/07/2014. Position of the ship is highlighted with the black dot.
Oil spill after 24 hours (29/07/2014 06:00 CET, figure 2) Surface currents are south-westward. Winds are northerly reaching a velocity of 0.5 m/s. In the first 24 hours of simulation the oil slick remains approximately in the same location and increases in size.	 Figure 2: Position of the oil slick at 06:00 of 29/07/2014, oil concentration is given in units of ton/km^2. Surface currents **(black arrows)** and wind **(green arrow)** are displayed at 05:00 CET for 29/07/2014.

Oil spill after 48 hours (30/07/2014 06:00 CET, figure 3)
Surface currents are eastward and the wind is south-westerly at about 5 m/s. The oil spreads north-westward beign partially adsorbed at the coasts.

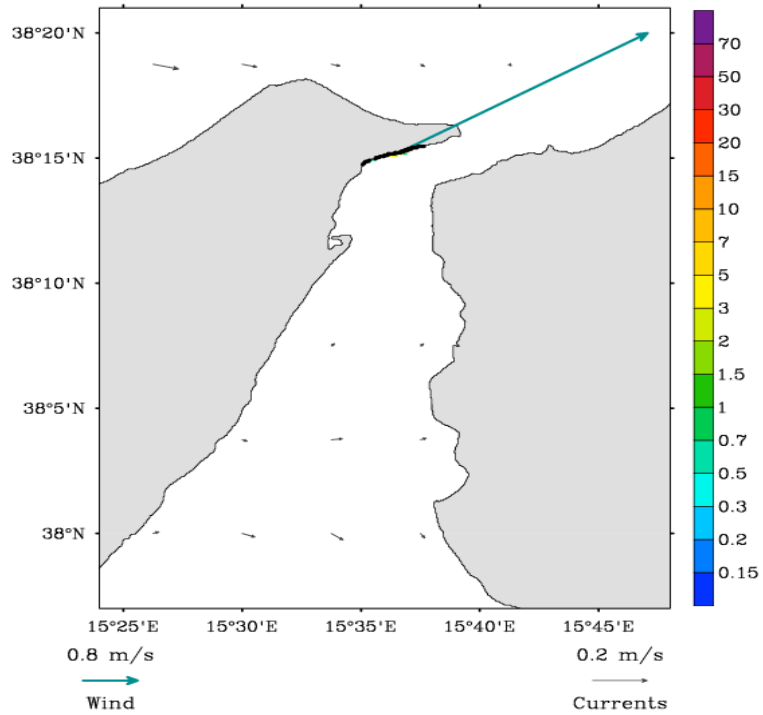
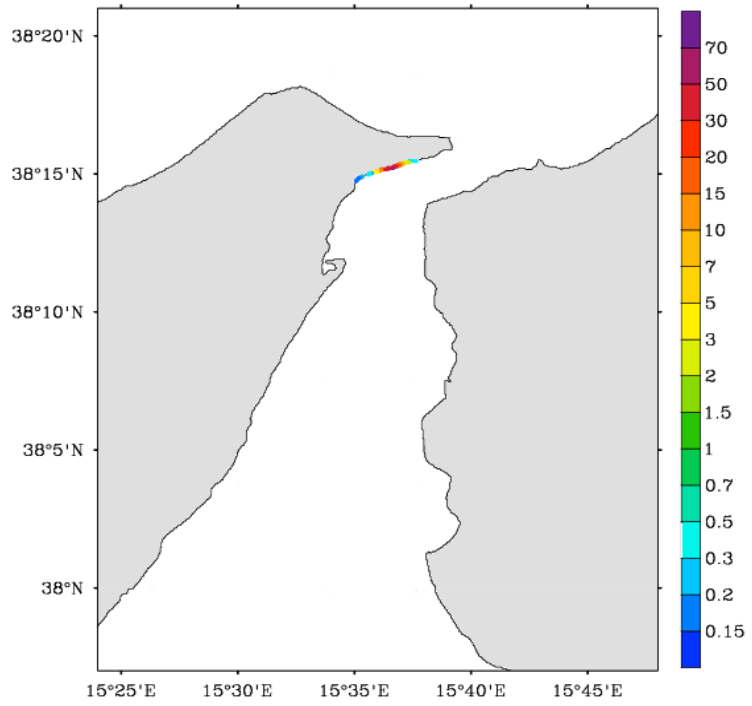


Figure 3: **Top Panel:** Position of the oil slick at 06:00 of 30/07/2014, oil concentration is given in units of ton/km^2. Oil on the coasts is highlighted in black. Surface currents **(black arrows)** and wind **(green arrow)** are displayed at 05:00 CET for 30/07/2014. **Bottom Panel:** oil on the coasts in tons/km after 48 hours.



Oil spill after 72 hours (31/07/2014 06:00 CET, figure 4)

Currents are south-westward near the Messina Strait. The wind is south-easterly and its intensity is about 2.5 m/s. The oil detaches again from the coasts due to removal and it moves south-eastward.

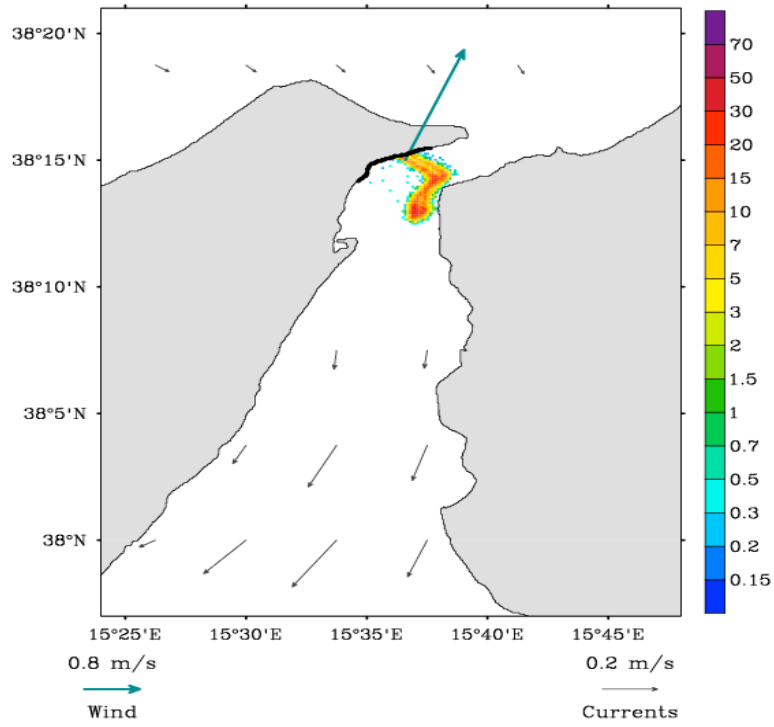
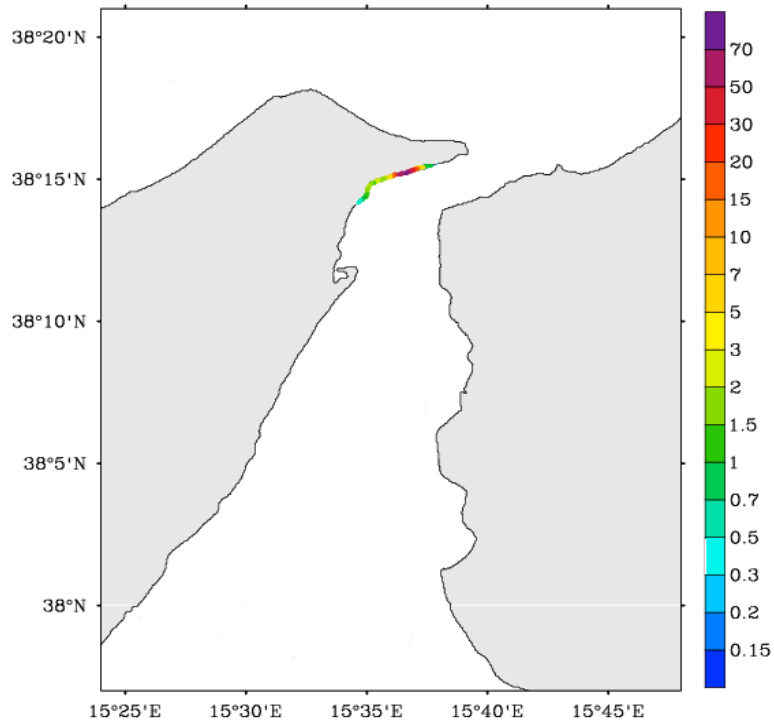


Figure 4: **Top Panel:** Position of the oil slick at 06:00 of 31/07/2014, oil concentration is given in units of ton/km^2. Oil on the coasts is highlighted in black. Surface currents **(black arrows)** and wind **(green arrow)** are displayed at 05:00 CET for 31/07/2014. **Bottom Panel:** oil on the coasts after 72 hours in tons/km



Oil spill after 96 hours (01/08/2014 06:00 CET, figure 5)

Currents are now weaker and southward. The wind is southerly and its intensity is about 0.1 m/s. The oil is now adsorbed partially on the Calabrian coasts and two minor oil slicks move southward.

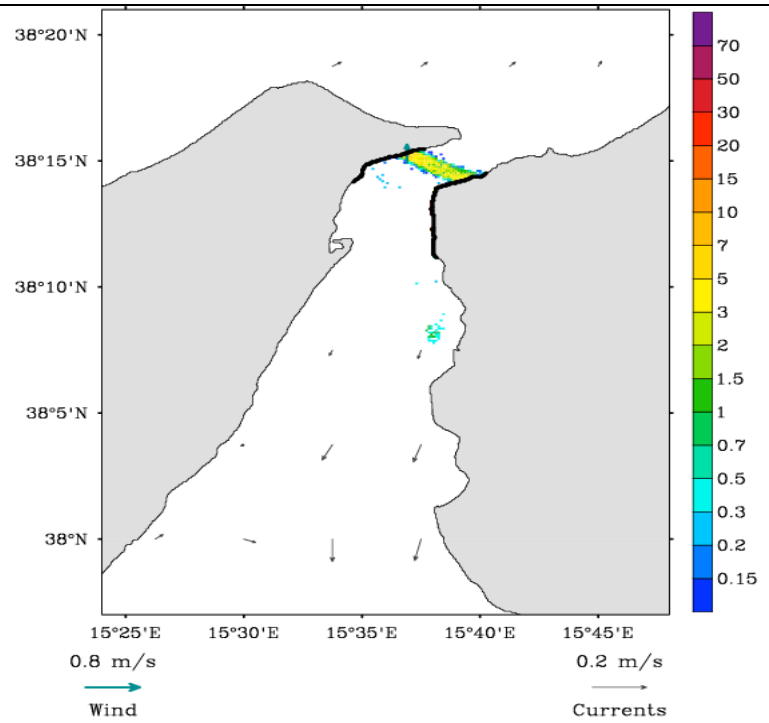
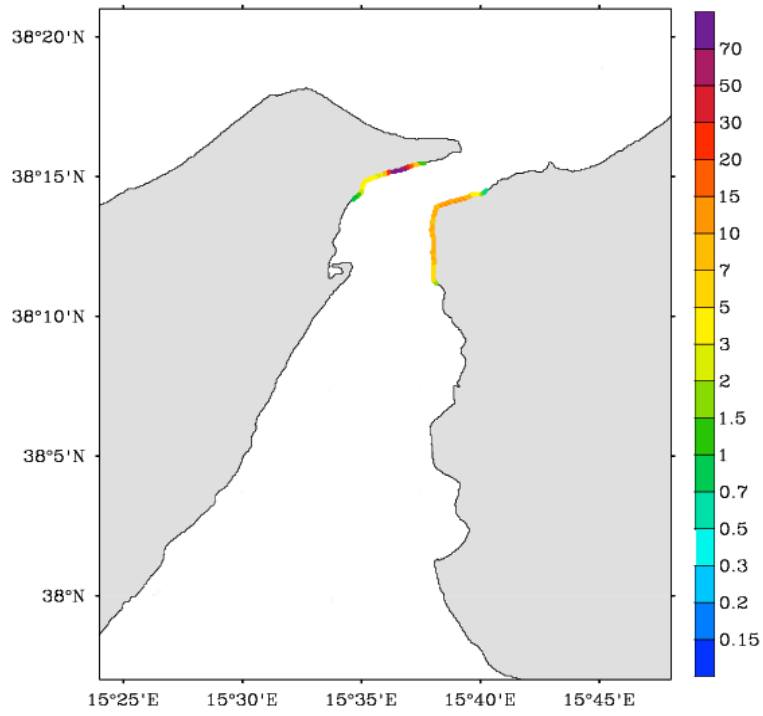


Figure 5: **Top panel:** Position of the oil slick at 06:00 of 01/08/2014, oil concentration is given in units of ton/km^2. Oil on the coasts is highlighted in black. Surface currents **(black arrows)** and wind **(green arrow)** are displayed at 05:00 CET for 01/08/2014. **Bottom Panel:** oil on the coasts after 96 hours in tons/km



Final discussion

The scenario for this accident showed that after 92 hours almost all the released, non-evaporated oil arrived at both coasts of the Strait of Messina. Due to the light oil (API=40), 50% of the oil evaporated in the first 6-7 hours and attached to the coasts after 40 hours. Re-detachment of oil from the coasts is evident from 42 to 75 hours.
The Figure 6 below illustrates the area average percentage of oil in four categories, evaporated, at the sea surface, dispersed in the water column and at the coasts.

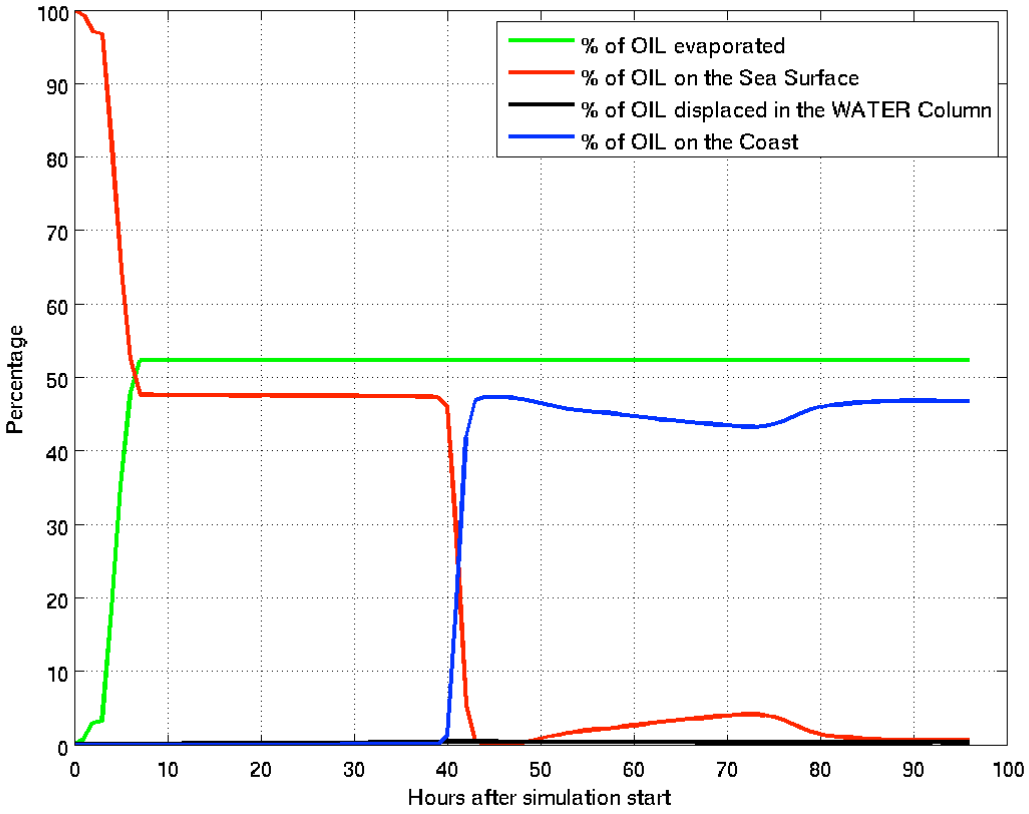


Fig. 6: Percentage of the oil on four compartments: at the surface, disprsed in the water column, evaporated and at the coasts as a function of the model simulation.