

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 currently is built upon the University of Liege hydrodynamic forecasting products (<http://www.seamod.ro/>) and the high temporal SKIRON winds forecast and the new CYCOFOS waves in the Black Sea.

Date 11 May 2016

Bulletin Content

The bulletin presents the forecasts of the currents, wind and oil transport at the surface and the dispersed in the water column for 72 hours after the initial blowout of a pipeline located at the seabed supposed to have occurred on the 10/05/2016 at 08:15 CET.

Data and methods:

The position of the oil spill is supposed to coincide with a blowout of a pipeline located on the seabed at the depth of 50 meter at position LAT = 44° .2494 N, LON = 29° . 47508E. The overall amount of oil released is set to 300m3 crude oil released during a period of 2 days.

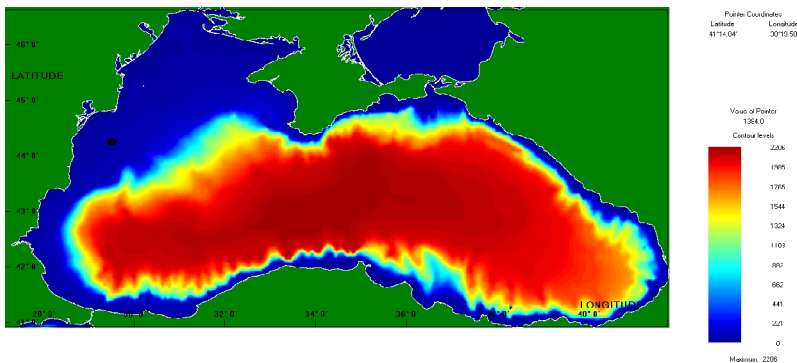


Figure 1. Bathymetry of the Black Sea with the location of the pipeline oil spill blowout (black dot).

Description of MEDSLIK oil spill prediction results

Forecasting Data used:

- 6 hourly surface currents and SST from the University of Liege Black Sea Forecast System
- 1-hourly SKIRON wind fields for the Black Sea
- 3-hourly CYCOFOS waves for the Black Sea

Description of the results

Oil spill after 24 hours

(11/05/2016 08:15 CET, figure 2)

The sea surface currents in the area of incident are North-North-East, while the wind is South-West with intensity around 4.0 m/s.

The oil spill 24 hours after the reported incident was at sea surface 65.23% of the total released oil at that time. The oil transport at sea surface follows the direction of winds and sea current, without any impact at the coastal zone. The evaporated oil constitutes the 34.17% of the oil released during the 1st day after the incident.

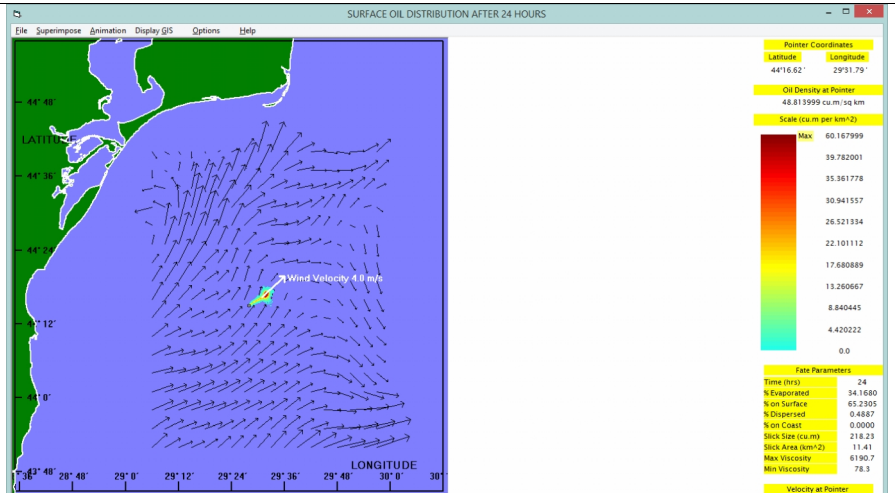


Figure 2: Surface currents (**black arrows**) and wind (**white arrow**), at 08:15 CET 11/05/2016. Position of the incident is highlighted with the dot.

Oil spill after 48 hours

(12/05/2016 08:15 CET, figure 3)

The surface currents are North-East, while the wind is South-West with intensity around 4.2 m/s. The oil spill 48 hours after the incident was at sea surface 63.12% of the total released during the 2 days. The oil transport following the direction of winds and of the sea currents, without any impact at the coastal zone. The evaporated oil constitutes the 34.75% of the total oil spilled.

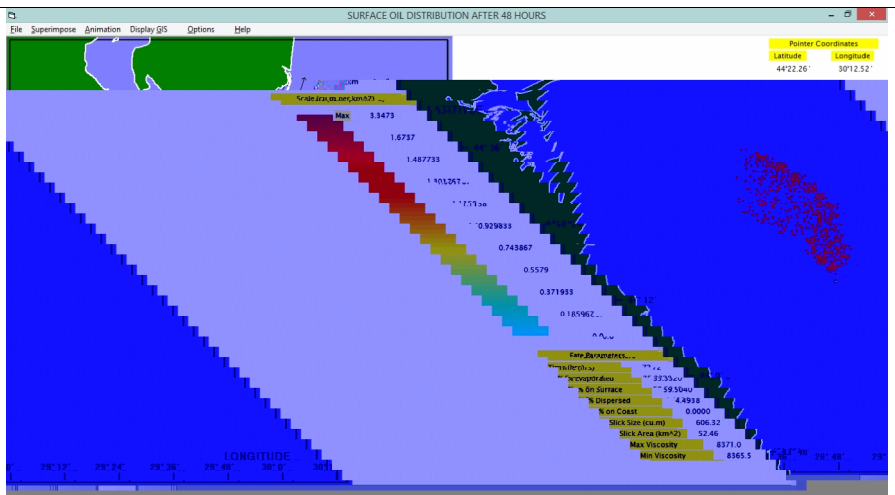
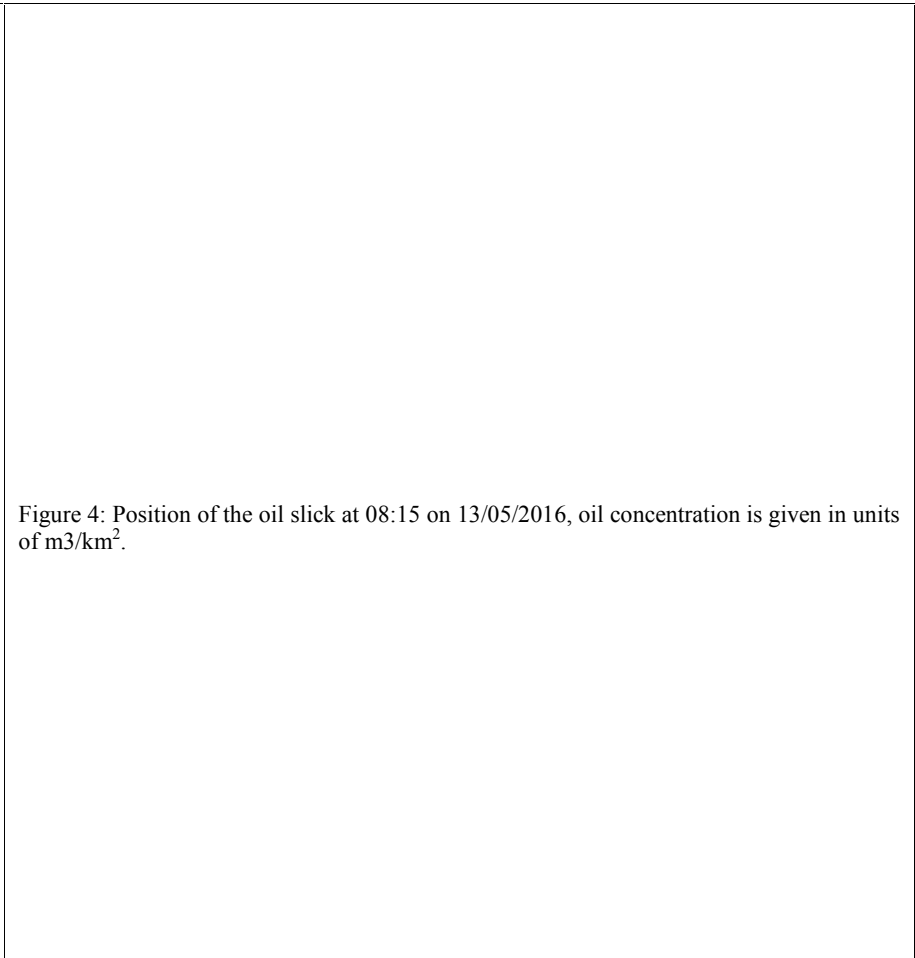
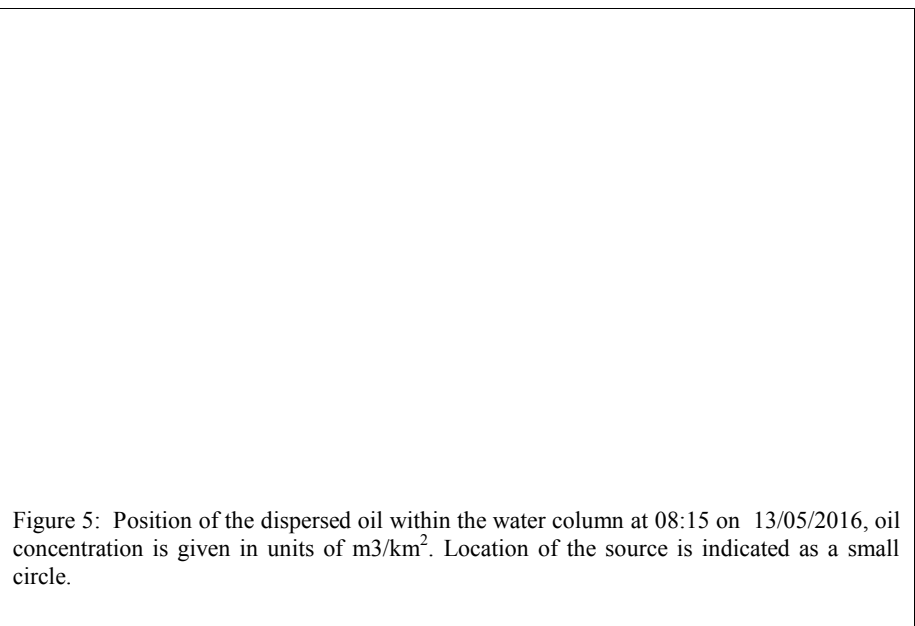


Figure 3: Position of the oil slick at 08:00 of 06/10/2015, oil concentration is given in units of m³/km². Surface currents (**black arrows**) and wind (**white arrow**).

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<p><u>Oil spill after 72 hours</u> (13/05/2016 08:15 CET, figure 4)</p> <p>The sea surface currents in the area of incident are Northerly, while the wind is South-East with intensity as high as 7.6 m/s.</p> <p>The oil spill 72 hours after the reported incident was at sea surface 59.512% of the total released oil. The oil transport following the direction of winds and of the sea currents, without any impact at the coastal zone. The evaporated oil Constitutes the 35.3% of the total oil spilled.</p> <p>The oil spill has been transported far away from the location of the incident, one day after the oil release from the pipeline has been stopped.</p>	 <p>Figure 4: Position of the oil slick at 08:15 on 13/05/2016, oil concentration is given in units of m3/km².</p>
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<p><u>Oil spill after 72 hours</u> (13/05/2016 08:15 CET, figure 5)</p> <p>The dispersion of the oil in the water column constitutes only the 4.5% of the total oil released and follows the general direction of the sea surface oil transport, i.e. to the North-East.</p> <p>Despite the fact that the source of the oil spill located at the seabed, the amount of the dispersed oil In the water column</p>	 <p>Figure 5: Position of the dispersed oil within the water column at 08:15 on 13/05/2016, oil concentration is given in units of m3/km². Location of the source is indicated as a small circle.</p>
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constitutes a small fraction 4.5%. This is due mainly to the fact that the location of the subsurface source of the oil spill was at shallow water, i.e. at 50 m and the oil rise the surface very quickly. Moreover, the weak subsurface sea currents at the area of the oil spill source case an insignificant diversion of the oil plume from the vertical axis (Figure 6) to the North-East, as the dominant sea currents.

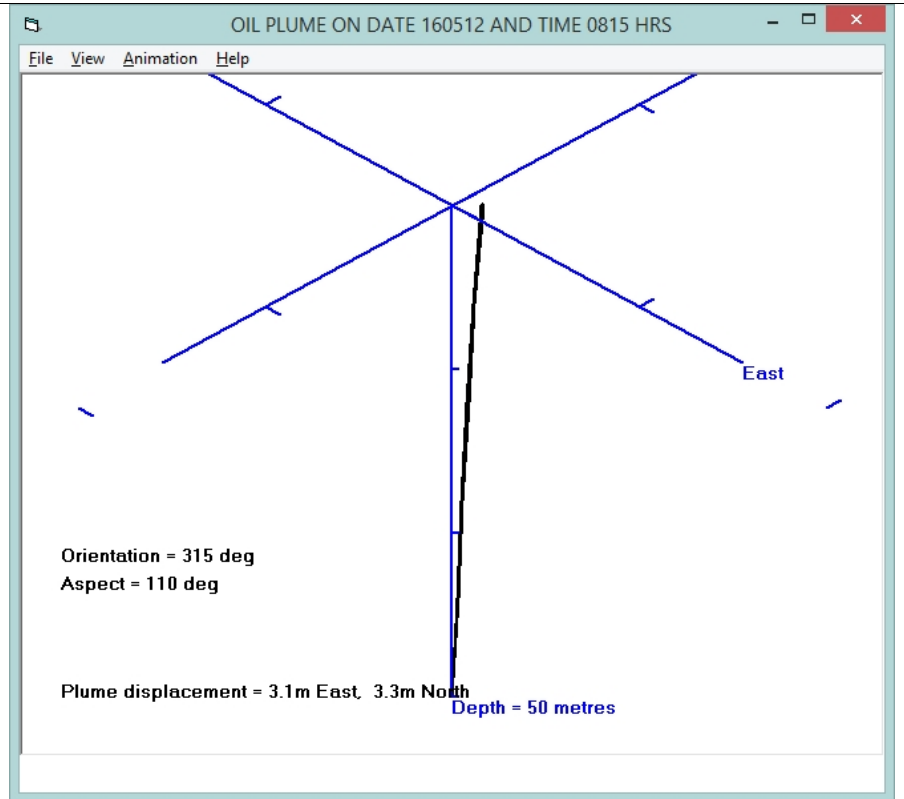


Figure 6. The plume of the oil spill from the depth of 50 m (where the blowout of the pipeline was located) up to the sea surface, at 08:15 on 12/05/2016, i.e. after 2 days from the reported incident. This plot constitutes the last hour of the oil released from the pipeline.

Oil Fate Parameters:

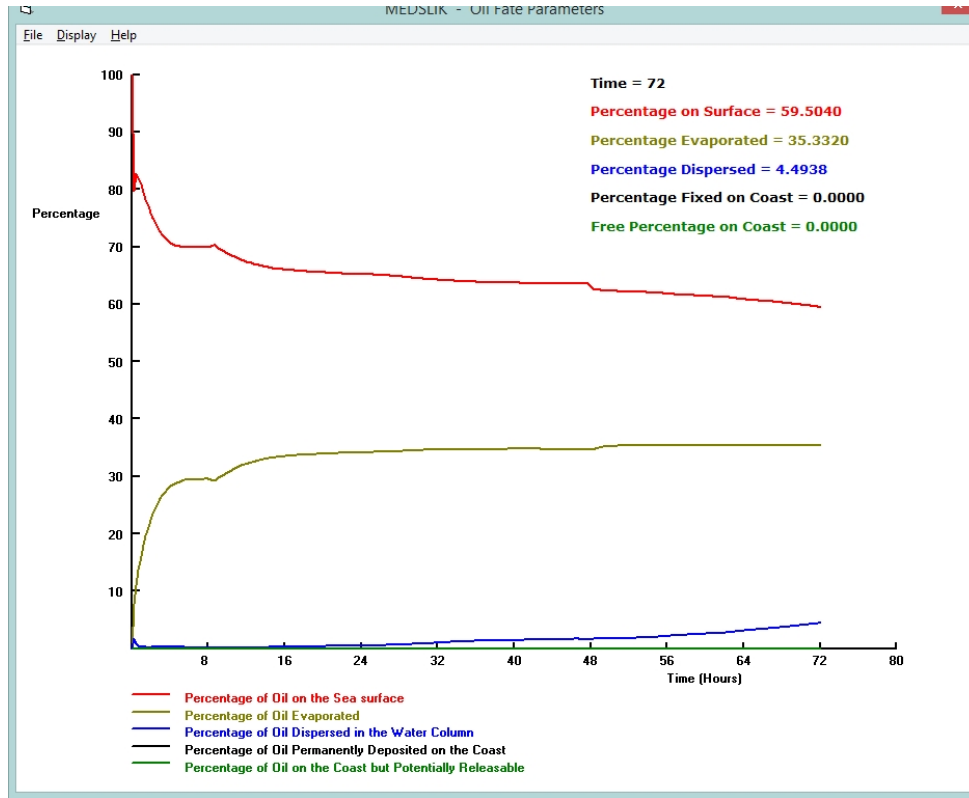


Fig. 7: Oil Fate parameters, evolution in time: oil spill at sea surface, oil evaporated, dispersed in the water column.