Ocean Pollution Bulletin

Bulletin on the oil spill accident in the East China Sea

January 18, 2018

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Foreword

On the January 6, 2018 two vessels collided off Shangai, China. The stricken Iranian tanker Sanchi carried 136,000 tonnes of "gas condensate", a very light, volatile and explosive oil type. The exact location of the spill, its duration, spilled volume and density of the condensate are currently unknown. After one week, the vessel ended up sinking in the East China Sea with an unknown amount of bunker oil inside.

Given the large uncertainties, it has been assumed in this simulation that one single leak occurred of very light oil and it lasted for 384 hours (16 days) starting on the 06/01/2018 – 13:00 GMT. The source was assumed to be fixed (31.1N / 126.5 E) and the position was defined based on the available news. It also seemed reasonable to presume that only part of the oil contained in the vessel was released into the sea (100,000 tonnes of oil spilled) and local effects due to the on-board explosions and spilled oil ignition were neglected. The potential effects of the uncertainties in the present bulletin are unknown.

The features of the leak are the following:

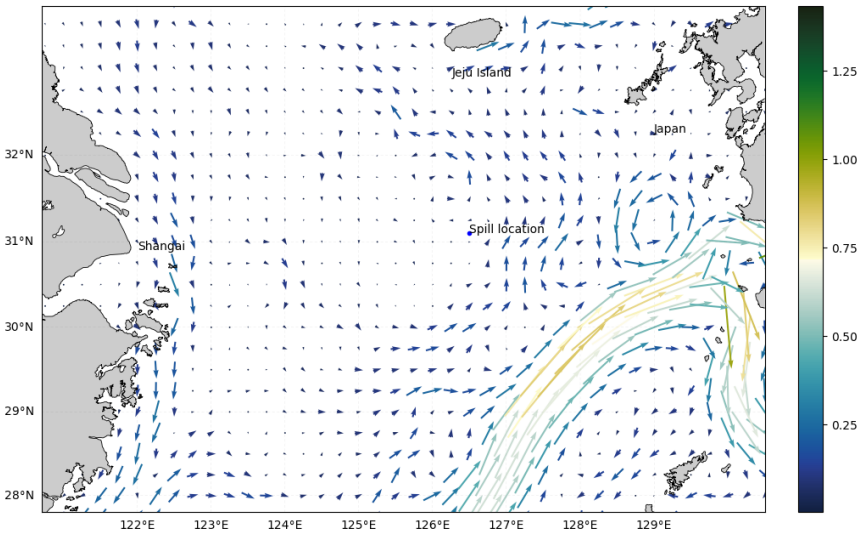
- Leak date and time: 06/01/2018 at 13:00
- Depth of the leak: 0 m
- Oil spill position: 31.1N, 126.5 E
- Type of oil: API=42
- Rate of leakage or total: 100000 tons
- Duration of leakage: 168h
- Forecast simulation length: 384 h (16 days)

Bulletin Content

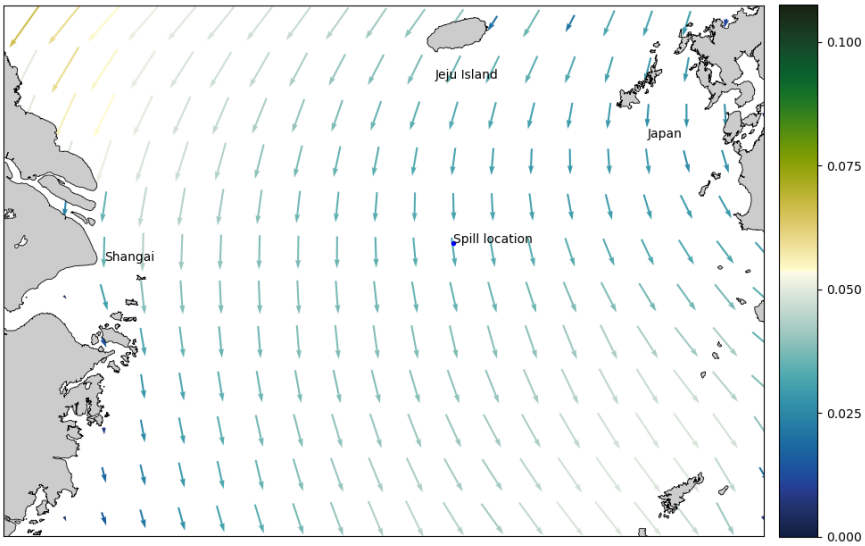
The present bulletin presents the average surface currents and drift due to ocean waves (i.e. Stokes drift) for the forecasted period between the 06/01 and 22/01/2018, and the oil spill trajectory in the period of interest.

The winds are from the NOAA NCEP GFS weather forecasts and the currents from the Global Ocean CMEMS forecasts (http://marine.copernicus.eu).

Average surface circulation for the period between 06 – 22/01 (m/s). Position of the spill marked by the blue dot.



Average Stokes drift for the period between 06 – 22/01 (in m/s):



Oil spill trajectory evolution*:

In the following figures we present the modelled trajectory of the oil for the 16 days following the spill. Considering the assumed fixed position of the spill, the accident occurred in an area of relatively weak currents avoiding the transport of the oil towards the Japanese islands by the strong stream found at the South-eastern part of the East China sea. In fact, the area affected by the spill shows a weak recirculation which could eventually "trap" the oil for periods by the order of days. As previously mentioned, the spilled oil was very light and volatile, suggesting that most of the spilled volume has already evaporated. However, condensates can mix with the seawater and trace contaminants may remain in the water for longer periods.

* Due to the large uncertainties associated to the type of oil spilled, volume of oil spilled, volume of oil burnt during and, mainly, the behaviour of gas condensate in sea water, it has been chosen to limit our conclusions to the trajectory of the spill only (i.e. simulated concentrations of oil found at the surface were disregarded). The colorbar represents the percentage of the total number of parcels released you find at each point.

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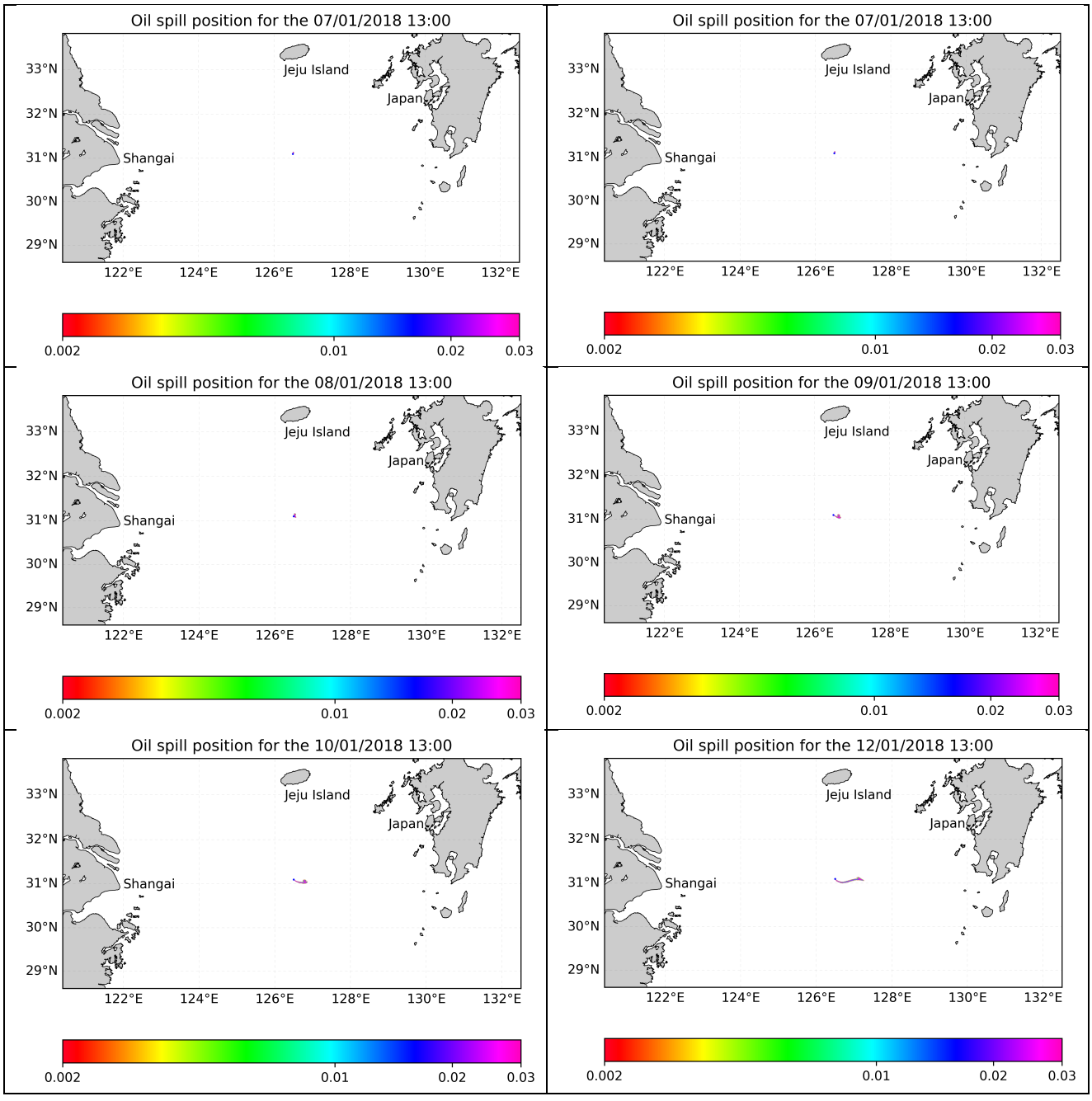

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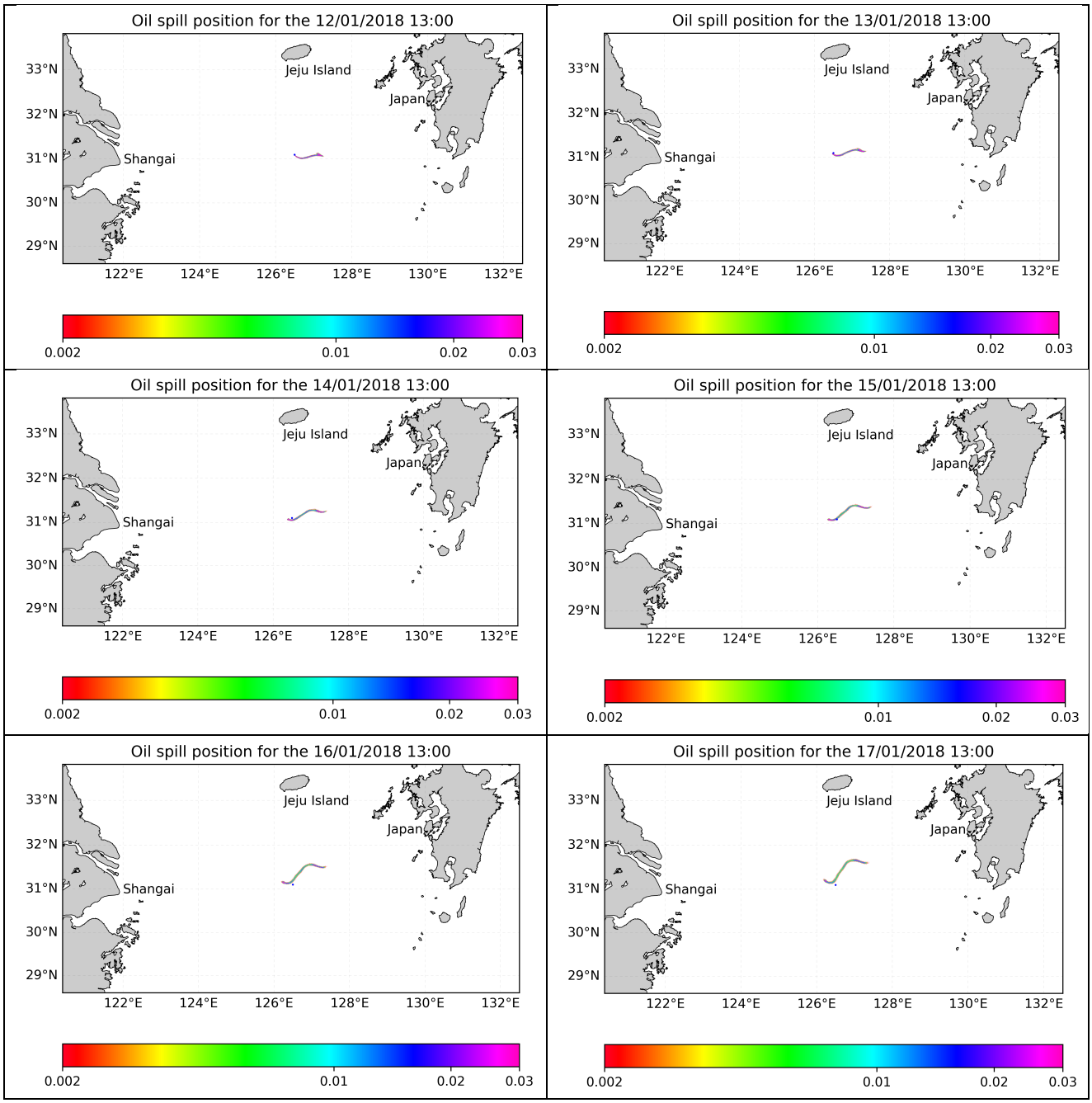

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