



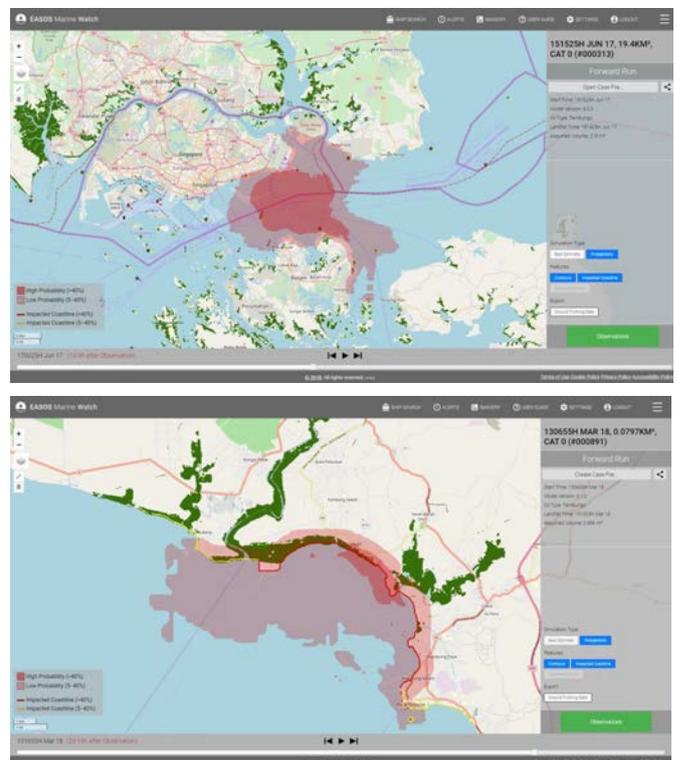
EASOS Marine Watch is a state-of-the-art application which assists in identifying and managing incidents of marine oil pollution. It enables authorities to identify, locate discharges and forecast marine oil pollution dispersal whilst highlighting vessels that might be responsible. EASOS Marine Watch delivers unparalleled insight into the presence of oil in the marine environment. Whether created by accident (through collisions, sinking, or mechanical failure) or via illegal practices (bilge cleaning), it offers pervasive wide area monitoring for oil presence.

EASOS Marine Watch helps reduce the financial impact of marine pollution with early warning of impact on the environmentally sensitive coastline. The application provides decision support for containment and cleaning efforts and enables a reduction in the loss of habitat and damage to marine life by deterring ships from pumping bilges off the coastline.

## EASOS Marine Watch enables:

- Detection of potential oil pollution incidents on the surface of the ocean
- Forecasting of marine oil pollution dispersal for the next 84 hours
- Automatic alerts based on areas of interest, oil detection size and forecasted coastal impact
- Identification of candidate vessels that could be responsible for slicks
- Modelling of what-if scenarios for oil spills and the impact of boom deployment
- Identification of nearby vessels that can assist with oil slick assessment

[easos.org.uk](http://easos.org.uk)

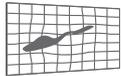


Marine Watch



## OIL SLICK DETECTION

EASOS Marine Watch uses Radar satellite imagery to automatically detect potential oil spills and alert the relevant authorities to their presence. EASOS automatically acquires the data it needs and provides a mechanism for users to purchase additional higher-resolution imagery if desired. EASOS utilises open-source satellite imagery and can cover huge areas in a cost effective manner.



## OIL SLICK DISPERSION MODELLING

EASOS Marine Watch gives early warning of where oil spills may reach land, leading to more effective and efficient clean-up activities. This uses world-leading modelling techniques for forecasting the likely dispersion of a spill based on environmental data regarding the sea state, bathymetry and meteorological conditions, as well as the oil type and its estimated volume. Users can see the predicted location of the spill at 30-minute intervals over the 84 hours from the satellite image being captured. The application can also predict where and when oil will hit land and then highlights its estimated concentration.

The application also integrates important ecological information highlighting sensitive sites such as mangrove swamps.



## SOURCE DETECTION

EASOS Marine Watch aids the identification of potential pollution offenders leading to increased fines and reduced incident occurrence through deterrence. The application allows users to model a detected slick up to 84 hours backwards in time to indicate from where and when the spill may have originated. The application uses vessel tracking data (such as AIS) to detect, track, and help identify ships in the monitored areas and allows comparison of vessel locations with oil spills.

### SPECIFICATIONS SUMMARY



#### DATA

- Synthetic Aperture Radar (SAR) satellite data is used to detect oil within the area of interest with data acquisition day or night, regardless of cloud cover
- Weather data, bathymetry, tide data, wind velocity and sea state are used to model dispersion of the oil
- Observations from ships or planes can be reported and modelled in the application
- Automatic Identification System(AIS) data used to detect relevant ships
- State of the art classification approach based on machine learning algorithms



#### MODELLING SIMULATION

- Detected oil spills are modelled to show their dispersion for the next 84 hours including:
  - time to coastal impact
  - volumes of oil impacting the coast over time
- Backward modelling used to detect possible source of oil for the previous 84 hours showing candidate vessel identification using ship location data from AIS



#### VISUALISATION

- Shows oil detections on the map within the area of interest
- Shows areas of coastal environmental sensitivity to allow prioritisation of response
- Shows the dispersion over time and volumes of the oil predicted to reach the coast
- Integrated nautical charts provide context while assessing the spill and planning a response



#### ALERT

- Ability to tailor alerts to meet the recipient's needs based on factors such as the size of the potential slick and its potential for coastal impact



#### ACTION

- Determine the predicted course of the spill, to assess the most appropriate response; whether this be to accept the potential spill, use dispersant on the spill, or use booms to protect the shoreline
- Understand the potential environmental impact of dispersed oil
- Reverse monitoring allows users to investigate potential vessels responsible for the observed slick and understand possible causes