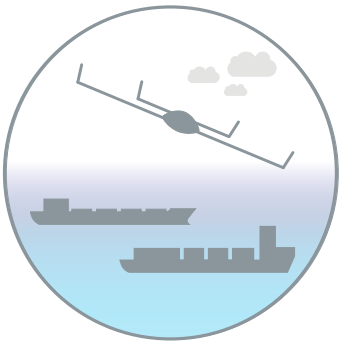
RPAS SERVICE

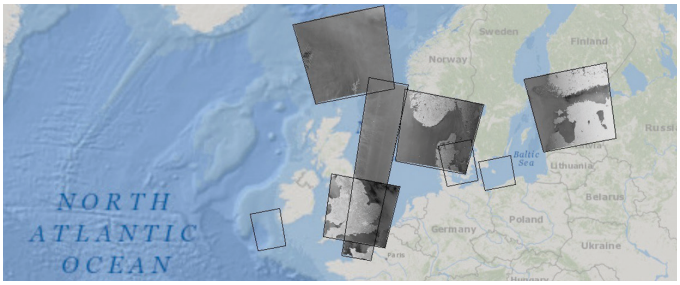
MARINE POLLUTION MONITORING AND DETECTION

EMSA
European Maritime Safety Agency

THE MARITIME CHALLENGE



Marine pollution, in particular oil spills at sea, and the associated impact on the coastline can cause extensive socio-economic and environmental damage, e.g. polluting tourist beaches and/or contaminating fishery facilities. Such pollution can be reduced by the prompt response of Member State authorities and by the setting up of effective deterrents. This can be achieved by incorporating a structured monitoring and detection program into the national response chain. Whereas satellite data can detect oil pollution on a very large scale, Remotely Piloted Aircraft Systems (RPAS) have the enhanced capability to detect and analyse an oil spill at any time of the day and can stay on site during response operations, There are currently a range of tools available from EMSA with different operational advantages.



Satellite images offer valuable data for the detection of marine pollution

Aerial view of oil spill

THE EMSA SERVICE

Remotely Piloted Aircraft Systems (RPAS) can provide operational information on the size and shape of a slick. This complements the data gathered by CleanSeaNet, EMSA's satellite-based oil spill monitoring and detection service. The RPAS can also assist in the identification of the source of the slick, e.g. through SAR and IR sensors for slick detection and volume estimation as well optical/IR cameras to identify potential polluters.

The combination of Near-Real-Time delivery of satellite radar images to a Member State authority with subsequent RPAS overflight can provide on-site operational information, i.e. confirmation of an oil spill, analysing the potential spill type, the size and volume of the spill. This is a cost effective solution to efficient marine pollution monitoring. Within the context of supporting at-sea response operations, RPAS can identify 'hot spot' areas as well as provide real time feedback on the efficiency of clean-up activities.

The data flows generated by the service are provided free of charge to any requesting authority belonging to EU Member States, Iceland, Norway and the European Commission, i.e. there are no contractual costs for the user. The service can also be provided to European agencies, such as Frontex and EFCA . Each deployment will be for a minimum of two months and the RPAS will be under the command (operational instruction) of the relevant Member State authority or agency. Actual flight control/management will be undertaken by qualified pilots from the service provider. In order to facilitate operational efficiency and effectiveness, the relevant Member State authority should provide an appropriate take-off/landing area, on-site facilities (e.g. internet, water, etc.) as well as support in obtaining the RPAS permit to fly from the national aviation authority for the deployment concerned.

It should be highlighted that the RPAS (platform and sensor payload) is multi-purpose in nature and can be used for a range of activities. These include the monitoring and detection of marine pollution including oil spills and litter, vessels and people in distress, as well as the general identification and tracking of vessels of all sizes and their activities including identifying potentially illegal activities (i.e. illegal fishing, drug trafficking, illegal migration, etc.). The EMSA service is scalable so that it can be provided to several Member States in parallel.

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KEY CHARACTERISTICS

Advantages of using RPAS include:

- Wide range, long endurance, and rapid flight activation, e.g. applicable for regular monitoring of a maritime zone for an extended period or targeting a specific area or as triggered by a CleanSeaNet alert
- Capability to stay on site to support response operations
- Designed to operate during day and night and in a broad range of environmental conditions, i.e. variable temperature, high humidity, rain and (as there is no human pilot onboard) potentially dangerous environments
- Invisible to vessels
- Aircraft-to-aircraft notification by transponder to increase aviation safety.

The sensor payload provides:

- Maritime radar for initial long range detection of vessels and oil slicks
- Electro-optical cameras to characterize the spill in-line with the “Bonn Agreement Oil Appearance Code” to classify oil spills and to record the maritime scene, e.g. photographic evidence linking spill to vessel and/or general observing of vessel activities
- Thermal infrared cameras for slick thickness detection, vessel identification, fire analysis, locating people in distress, general observation of vessel activities at night or in poor visibility conditions
- Distress signal transponder to determine the location of the person/object in distress
- AIS transponder to identify vessels and determine their position.