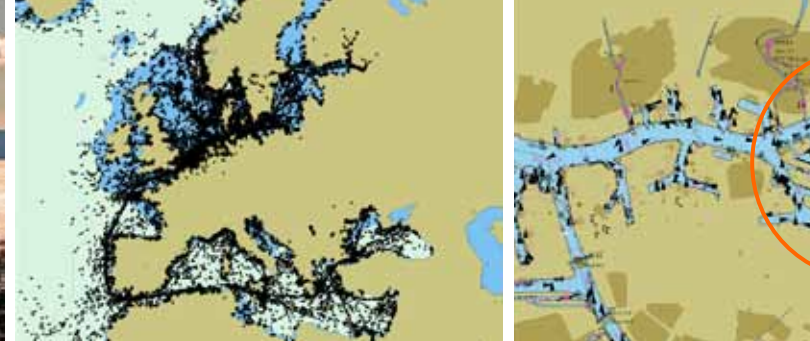


Sharing the European Vessel Traffic Image and Beyond





WHY MONITOR SHIPPING?

To implement effective maritime policies, governments and institutions need detailed, reliable knowledge about what really happens at sea. Evidence-based information is, for example, required to successfully manage the marine environment. In general, there is a growing demand for an accurate picture of maritime activities.

EMSA'S ROLE

In recent years, EMSA has become the leading provider of fast, accurate and comprehensive information on ship movements in Europe. EMSA also monitors European ships operating worldwide. Ships and their cargoes can now be monitored more effectively than in the past, and there is a more consistent approach across all EU sea areas.

WHO NEEDS INFORMATION ON VESSEL TRAFFIC?

- EU Member States** are the main stakeholders. Their competent authorities need to ensure that ships in and around EU waters satisfy safety and environmental requirements. Their coastguards need full information on the position of ships in order to intervene in case of incidents.
- Port operators** want to know the location of ships which will arrive from other parts of the world, so that they can better plan their operations. **Customs authorities** need similar information to plan their checks and controls.
- Security authorities** want to identify suspect ships that might be involved in the planning of illegal activities. This includes the activities of **border control administrations** who want to identify vessels carrying illegal immigrants as soon as possible.

In addition, other entities like **fisheries control authorities** or **naval forces** operate their own vessel monitoring systems but may gain added value from combining their information with EMSA sources.



NATIONAL MONITORING

Within the EU, at national level, vessel traffic monitoring is carried out by different authorities in Member States on a continuous basis. Coastal monitoring installations



Operational communication with ships happens at national level.

locate and identify ships in areas of interest (approaches to ports, confined channels etc.). They communicate with ships when required, in order to ensure that shipping operates in a safe manner. In areas where navigation is particularly difficult, pilot assistance may also be needed. Emergency services at national level are on standby at all times. This approach has long been at the core of traffic monitoring, and will continue to be for many years.

NEW TECHNOLOGIES AND CAPABILITIES

Innovation has led to more comprehensive monitoring. This includes the ability to use satellites, as well as terrestrial capabilities, much more effectively than in the past, in order to monitor ships and their cargo, wherever they are, by combining different databases.



Satellites and coastal radio receivers enable tracking of vessels.

REGIONAL MONITORING

In Europe, these advances have led to the development of regional vessel traffic monitoring centres. These cover the Baltic, Atlantic coast, North Sea, Mediterranean and Black Sea areas. They have also led to the development of a comprehensive, 'joined-up' system which:

- Covers the **entire coastline of the EU** and its partners, and the rest of the world when required.
- Identifies risks** and provides information on relative risks (in terms of ships, cargoes, local conditions, etc.).
- Knows where ships have been and **where they are going**.
- Knows immediately when **accidents/disasters** have happened, or are happening, and responds accordingly.
- Knows when deliberate and accidental **oil pollution** has occurred and responds accordingly.



WHAT DOES EMSA DO?

EMSA is at the centre of the initiative to develop, implement, improve and integrate vessel traffic monitoring in Europe. EMSA currently operates a suite of three maritime monitoring systems:

- SafeSeaNet
- the EU Long Range Identification and Tracking (LRIT) Data Centre
- CleanSeaNet

These systems are under continuous development. New capabilities are being developed with potential to serve multiple users.



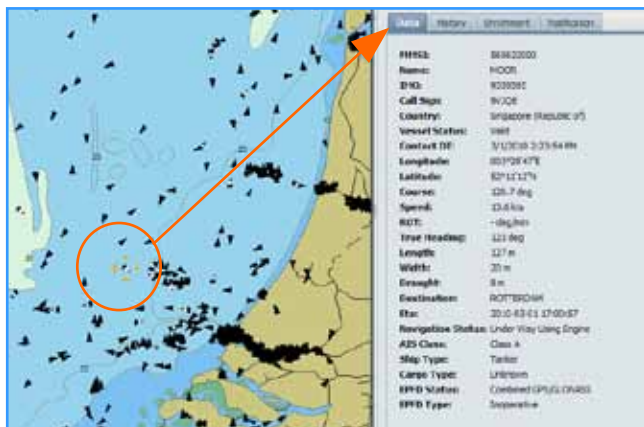
The Maritime Support Services room at EMSA in Lisbon

SafeSeaNet

Since its creation in 2003, EMSA has been playing a central role in the technical development of the EU vessel traffic monitoring system. The basis for this work is Directive 2002/59/EC, which provides for a European Community vessel traffic monitoring and information system to be established. The core system is SafeSeaNet, which enables Member States' competent authorities to provide and receive information on ships and their hazardous cargoes.

WHAT DOES SAFESEANET PROVIDE?

- Ship **identification**, **position** and **status** (e.g. underway/anchored).
- Information on the ship itself (e.g. **type/dimensions**).
- **Hazardous cargo** details.
- Estimated **time of departure and arrival** at different ports.
- **Incident reports** (when something goes wrong).



By clicking on a ship icon (black triangle) on the map-based interface, users access multiple layers of specific vessel information.

WITH SAFESEANET YOU CAN:

- **Show the current positions** of all ships in and around EU waters in a single picture.
- **Zoom in and out** to show the situation at all levels, from the full EU picture to individual quays in ports.
- **Display selected types of ships** (e.g. tankers, banned vessels, single hulled tankers, ships carrying hazardous goods, etc.).
- **Select other map data** (e.g. depths/positions of AIS stations).
- **Show the historical positions** of ships and track the full positional details of their voyages.
- **Find a specific ship** using the name or IMO number.

The current ship identification/location system obtains information from national coastal Automatic Identification System (AIS) stations in Member States. These can normally be relied upon to receive radio signals from ships in European coastal waters. The width of the Coastal zone depends on such parameters as the height of the coastal station and atmospheric conditions. This limitation is likely to disappear in the coming years, as AIS signals can now be received by satellites, and this will allow ships around the world to be tracked without such distance limitations. EMSA is actively involved with the European Space Agency in maximising the satellite monitoring opportunities in this area.

Maritime administrations, ports, traffic monitoring centres and coastguards are the main current users of SafeSeaNet, but additional users are progressively being identified. For example, the system is being modified to support port state control inspections and customs.

INTEGRATING MONITORING SYSTEMS

The SafeSeaNet, LRIT and CleanSeaNet systems offer significant benefits to Member States when operated independently. However, when the systems are integrated into a single picture, the result becomes far more user-friendly and powerful. It allows users to obtain all required ship information (including information on movements, hazardous cargo, accidents and pollution) in and around EU waters, as well as worldwide, via a single interface.

The EU LRIT Data Centre

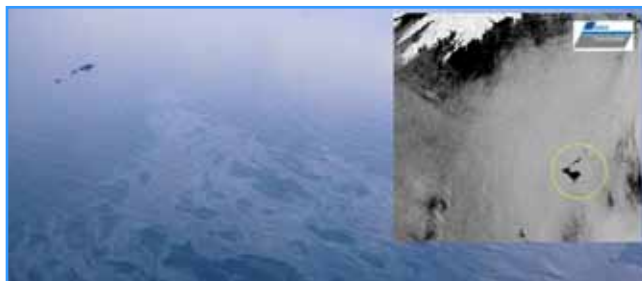


8,000 EU flagged ships are tracked worldwide.

The LRIT system is a global ship identification and tracking system based on substantial constellations of communications satellites (Inmarsat C and Iridium), and it is far more controlled than an AIS-based system, where information is in the commercial domain. Ships transmit LRIT signals to their flag state and these are relayed to over 50 LRIT centres around the world. The centres interact with each other through the International Data Exchange, which ensures that suppliers and receivers of information are linked effectively.

EMSA operates the biggest, and also one of the first, LRIT data centres. In dealing with ships from all participating EU and associated Member States, it receives the data from over 8,000 ships, which represent almost 25% of the ships in the global LRIT system. The information sent by ships is not nearly as detailed as that in AIS signals, but at present, the LRIT system is global, whereas SafeSeaNet only covers European waters.

CleanSeaNet



CleanSeaNet detected an oil slick off the coast of Ireland in 2009, Aerial photos confirm the slick and show the polluting vessel.

CleanSeaNet identifies and monitors pollution at sea, and is also satellite based. This system uses a small number of remote sensing satellites (mainly Envisat and Radarsat 1 and 2). These take snapshots of different sea areas (up to 400 x 400 km) in response to requests from Member States. The images are collected by EMSA and interpreted by experts to see whether there is any pollution caused by ships pumping oily waste overboard.

When potential pollution is spotted, Member States verify the situation (usually using aerial surveillance). If pollution is confirmed, they have the option of taking additional steps. Typically, the first step is to identify the most likely polluter(s). This can be done by using AIS information from SafeSeaNet overlaid on the pollution slick on the CleanSeaNet image. This will show the ship(s) in the area at the time and the record(s) of their movements. Using this and other evidence, polluters can be identified and penalties imposed. The knowledge that this will be done can also have a significant deterrent effect on future polluters. Satellite images are also used to locate "non-cooperative" vessels that do not identify themselves via AIS or LRIT signals.

