



# Copernicus Maritime Surveillance Service

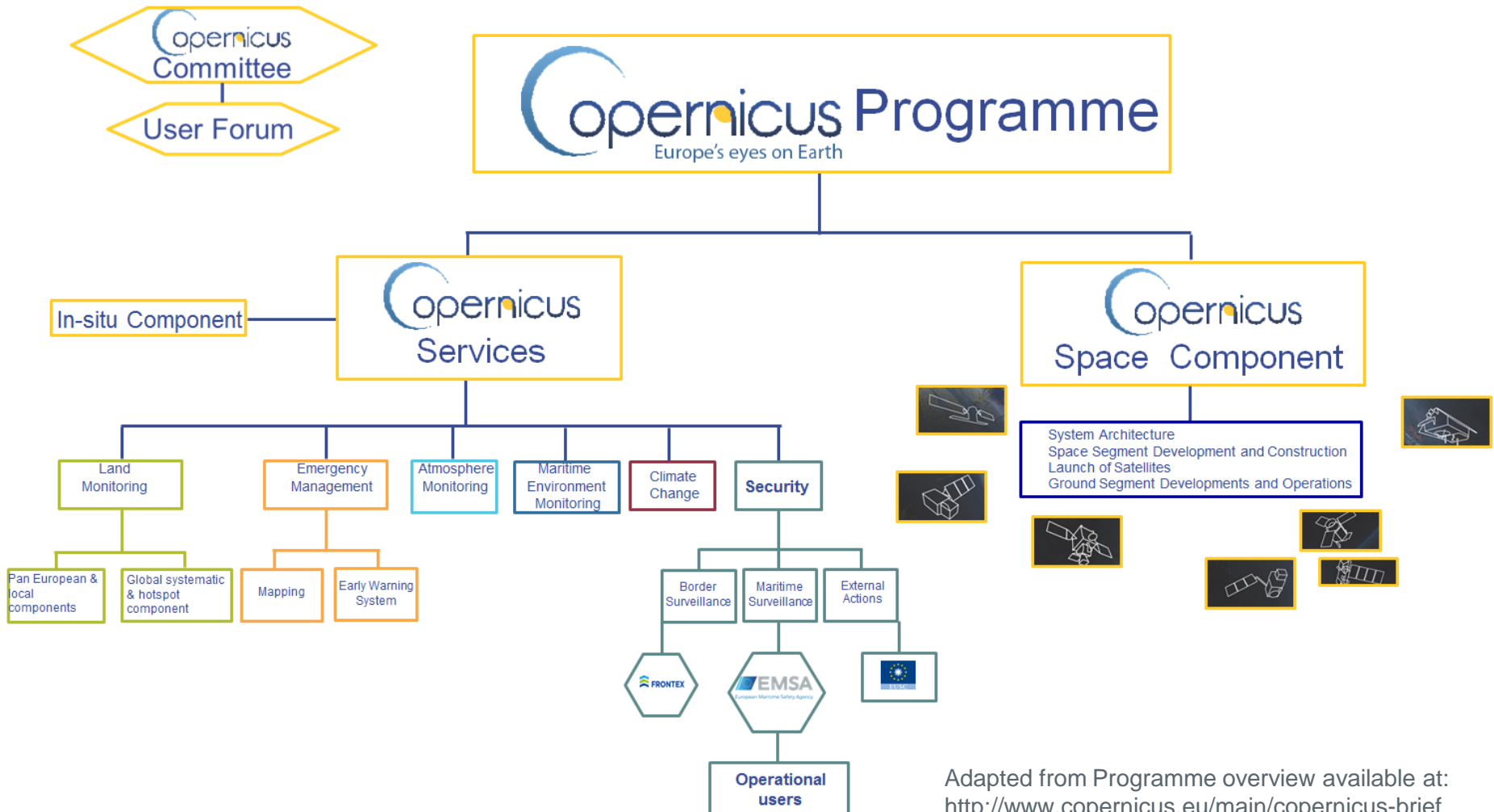
## Presentation to IMS UCM

Catrin Egerton / Project Officer  
Department C: Operations

Lisbon / 18 May 2017

# What is Copernicus?

A European Union Programme aimed at developing European information services based on satellite Earth Observation and in-situ (non-space) data analyses

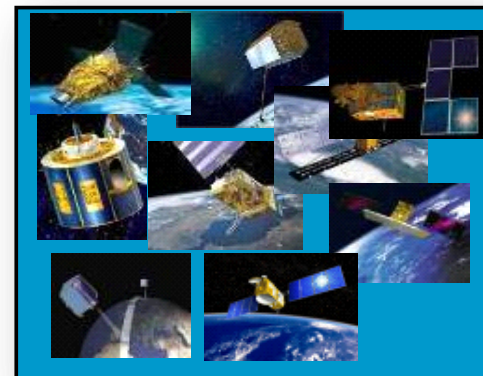


Adapted from Programme overview available at:  
<http://www.copernicus.eu/main/copernicus-brief>

# Copernicus Architecture



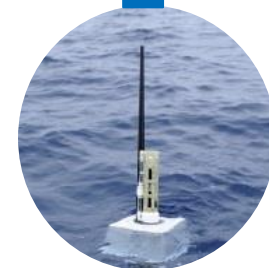
Six services use Earth  
Observation data to deliver  
added value information for:



*Sentinels*  
(EU-funded satellites)

*Contributing missions*

- Land
- Marine Environment
- Atmosphere
- Climate Change
- Emergency
- Security Applications
  - Border Surveillance
  - Support to EU External Actions
  - Maritime Surveillance



*in-situ data*

## The Copernicus services for security applications to support EU policies in:

- Border surveillance (FRONTEX)
- Maritime surveillance (EMSA)
- Support to EU External Actions (EUSC)



## Distinctive:

- Specific conditions of access
- Combined with other data (sensitive or restricted)
- Provided directly and securely to specific end users

## Background

- EMSA is the “Entrusted Entity” for the implementation of Maritime Surveillance Services.
- Budget 2016-2020: 40M EUR
- Budget 2017: 7.4M EUR



*3 December 2015*

*Miss Lowri Evans (Director General – DG-GROW) and Mr. Markku Mylly (Executive Director – EMSA) sign the Delegation Agreement*



## For monitoring human activity at sea

*Objective to understand, manage and/or prevent activities carried out at sea that could impact the security, safety, economy, or environment of the European Union and its Member States.*

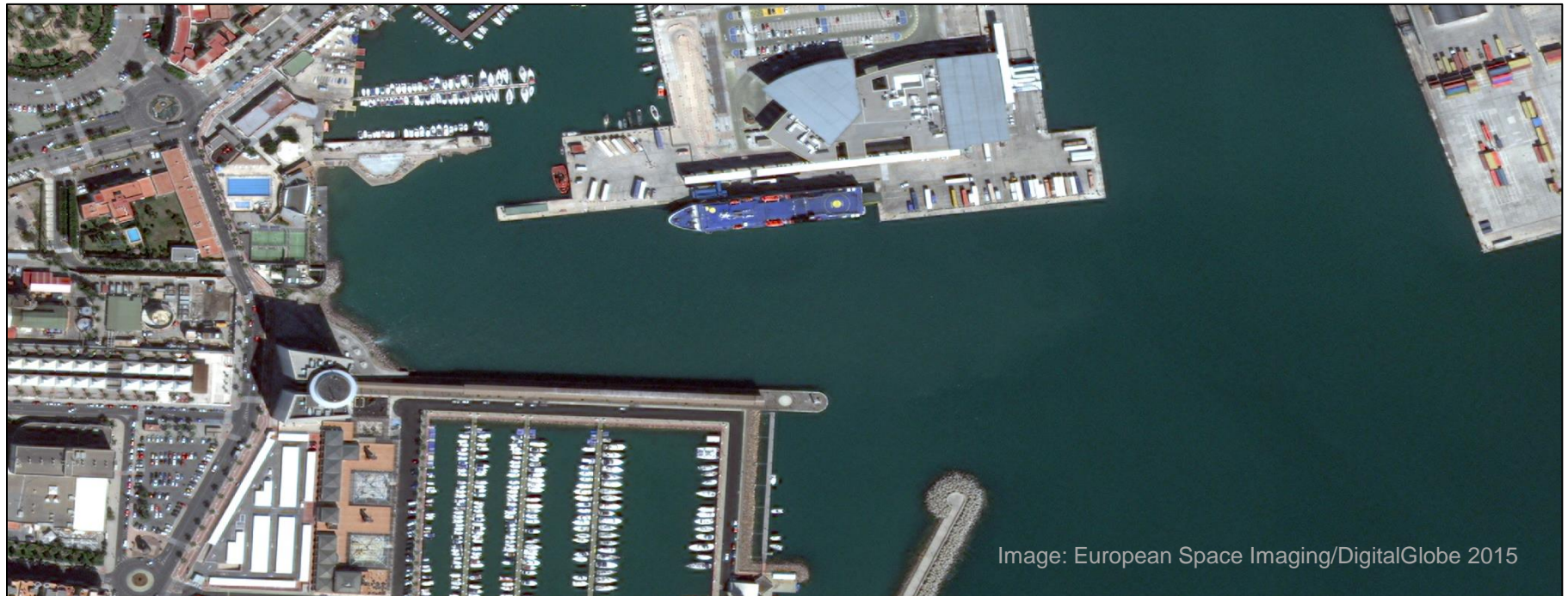


Image: European Space Imaging/DigitalGlobe 2015

# EO platforms available at EMSA

## Synthetic Aperture Radar:

Class	Resolution (x)	Product
VHR1	$x \leq 1\text{m}$	TerraSAR-X Staring Spotlight RADARSAT-2 Wide Ultra-Fine
VHR2	$1\text{m} < x \leq 4\text{m}$	TerraSAR-X Stripmap RADARSAT-2 Ultra-Fine
HR1	$4\text{m} < x \leq 10\text{m}$	RADARSAT-2 Extra Fine TerraSAR-X StripmapRad RADARSAT-2 Multi-Look Fine
HR2	$10\text{m} < x \leq 30\text{m}$	TerraSAR-X ScanSAR RADARSAT-2 Wide RADARSAT-2 Standard
MR1	$30\text{m} < x \leq 100\text{m}$	TerraSAR-X Wide ScanSAR RADARSAT-2 ScanSAR Narrow RADARSAT-2 Ship Detection Sentinel-1 Interferometric Wide Swath RADARSAT-2 Ocean Surveillance RADARSAT-2 ScanSAR Wide Sentinel-1 Extra Wide Swath



Optical.

Class	Resolution (x)	Product
VHR1	$x \leq 1\text{m}$	WorldView-4 WorldView-3 WorldView-2 WorldView-1 GeoEye-1 Pleiades 1A Pleiades 1B Deimos 2
VHR2	$1\text{m} < x \leq 4\text{m}$	Spot 6 Spot 7
HR1	$4\text{m} < x \leq 10\text{m}$	Currently not available
HR2	$10\text{m} < x \leq 30\text{m}$	Landsat-8 Deimos1



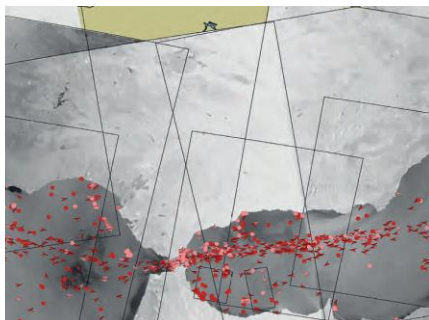
# CMS provided through IMS

- EMSA provides integrated maritime services to a variety of users
- Before CMS, the IMS services did not contain Earth Observation (EO) information
- CMS establishes a EO component to IMS
- New EO component provides added value by:
  - Addressing new user needs
  - Increasing the variety of information (expanding the existing data sources)
  - Expanding the volume of information and geographical scope of services
- For national administrations, being an IMS user is a prerequisite to requesting CMS data

# Function areas served



Fisheries Control



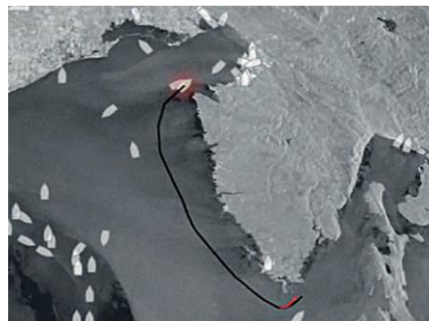
Maritime Safety and Security



Law Enforcement



Customs



Marine Environment Monitoring



Other (defence, anti-piracy)

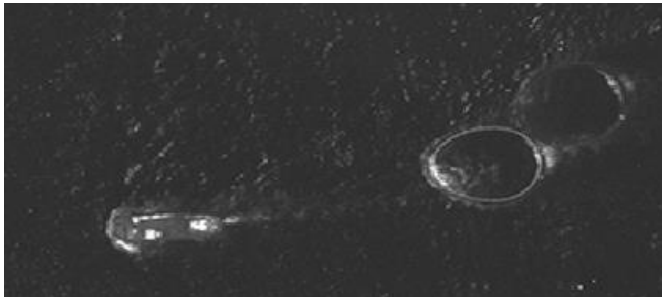
## EO capabilities in support of operational activities:

- Monitoring of fishing grounds
- Monitoring of fish cages / farms
- Monitoring of fishing ports



NB: EFCA is the focal point for users:

- All requests to CMS for fisheries control activities are coordinated by EFCA



Vessel towing fish cages © European Space Imaging/DigitalGlobe 2013

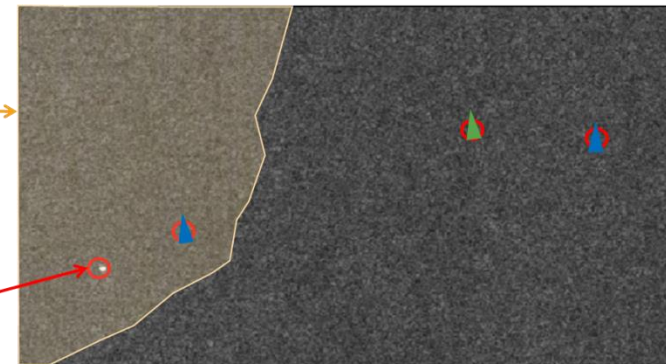


Fishing vessels in port © CNES 2016, Distribution Airbus DS

Restricted Fishing area

- Satellite detected vessels
- ▲ Correlated targets- Fishing (VMS)
- ▲ Correlated targets- Cargo (AIS)

Non-cooperative vessel:  
Target of interest for further analysis



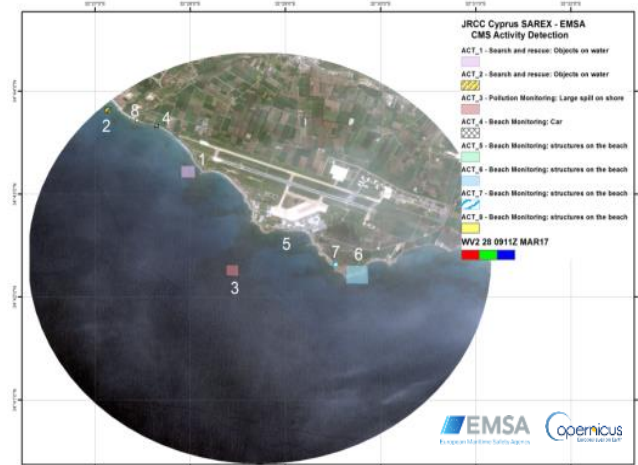
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The main applications identified under the maritime safety and security function area include:

- support to search and rescue operations;
- support to the safety of navigation, including support to ice and iceberg monitoring;
- support to maritime security (including ship to ship transfers).



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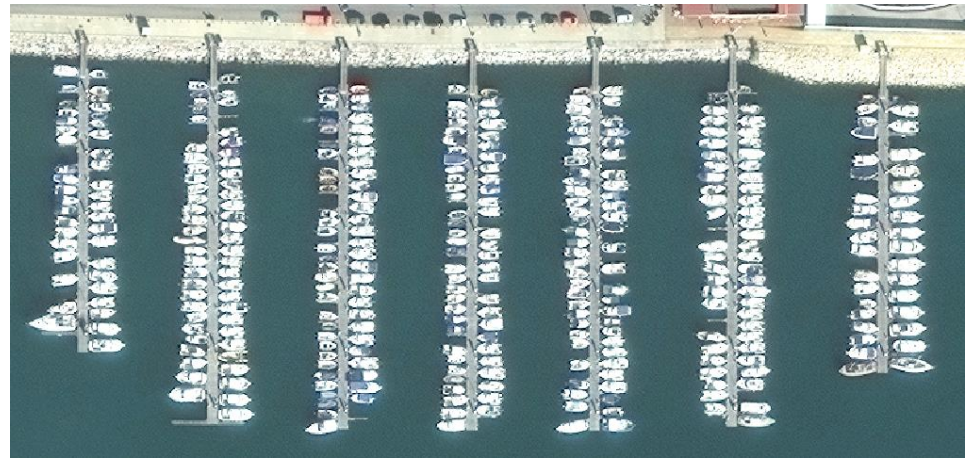
WV2 @ European Space Imaging/DigitalGlobe  
2017

## CMS service provides:

- Monitoring of third countries' ports and shores for departure of specific ships
- Detection of abnormal behaviour (e.g. transshipment of drugs from a larger vessels to small boats)
- Search for non-cooperative targets



© European Space Imaging/DigitalGlobe [2015]



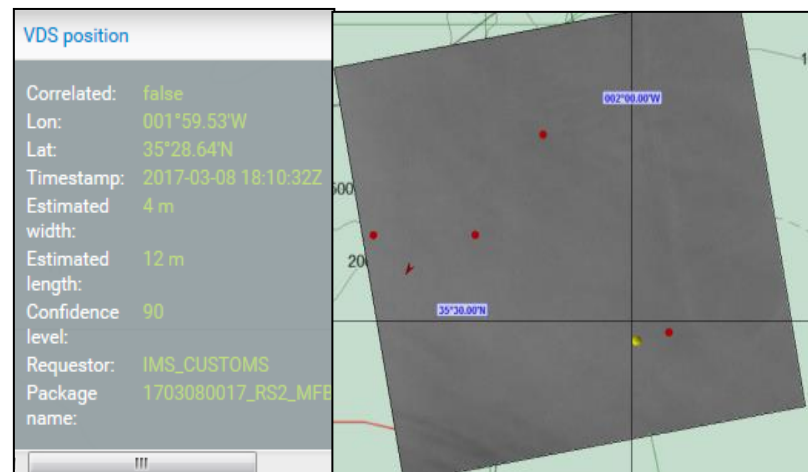
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Satellite monitoring may provide support to:

- monitoring of ports and beaches for departure of specific ships,
- detection of abnormal behaviour
- monitoring the ship-to-ship transfers and movement of goods
- early warning/identification of criminal trafficking of goods



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Pollution monitoring support consists of:

- Detection of illegal oil discharges in the marine environment and identification of possible polluters
- Early warning/identification of incidents/accidents that may have an environmental impact
- Support for pollution response operations

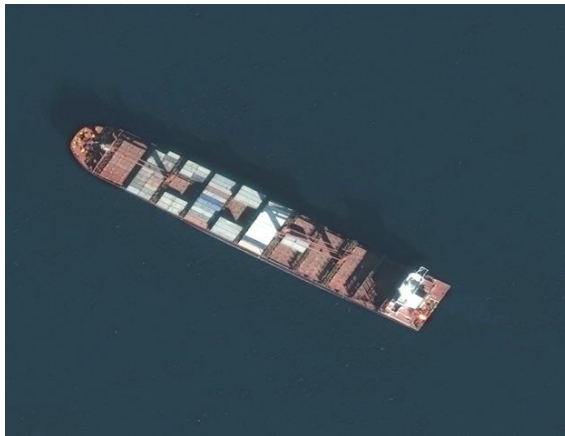
Copernicus provides the capability to extend the scope of the existing EMSA CleanSeaNet service beyond European waters to other areas of interest (e.g. overseas territories)



© EMSA

Services not falling under the previous function areas may be requested too, e.g. air pollution monitoring, defence, anti-piracy support, and ‘Blue Belt’ initiatives.

- If you are interested in services for a maritime function not listed, please ask.



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# Overview of users

## Users of the service to date:

- European Fisheries Control Agency, EFCA
- Maritime Analysis and Operation Centre – Narcotics, MAOC(N)
- Portuguese Navy
- Spanish Navy
- Spanish Customs
- Cyprus JRCC
- Icelandic Coast Guard
- L'Institut polaire français Paul-Émile Victor, IPEV
- United Nations Office on Drugs and Crime, UNODC

## Upcoming mini workshops:

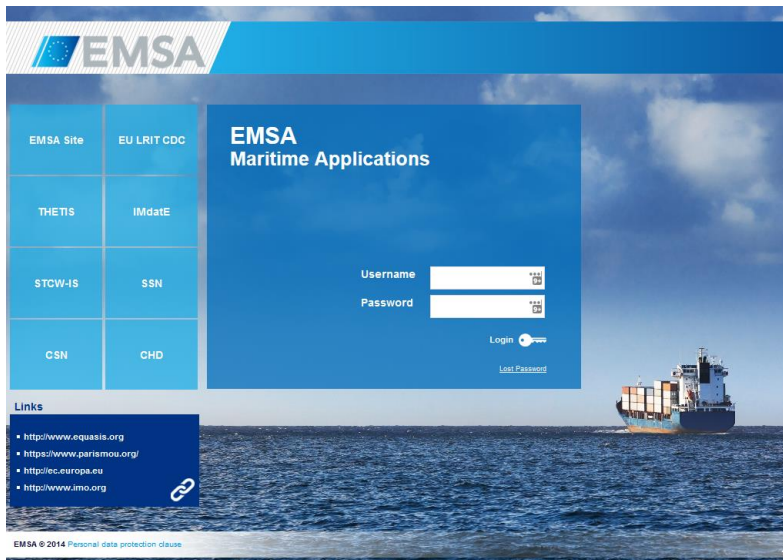
- Afternoon only
- 6 July & 14 September
- Please contact us if you would like to join

## Potentially interested users:

- Swedish Coast Guard
- Croatian Ministry of Sea, Transport and Infrastructure ( Maritime Rescue Coordination Centre, MRCC Rijeka)
- Irish Air Corps
- French Maritime Affairs (MRCC La Reunion)
- EUNAVFOR
- UNODC (further operations)
- Any other interested national authority with functions in the maritime domain – please get in touch: [copernicus@emsa.europa.eu](mailto:copernicus@emsa.europa.eu)

# CMS – Access

Authorized users only



The screenshot shows the EMSA Maritime Applications login interface. At the top left is the EMSA logo. Below it is a grid of links: EMSA Site, EU LRIT CDC, THE TIS, IMdatE, STCW-IS, SSN, CSN, and CHD. To the right of this grid is a large blue box with the title 'EMSA Maritime Applications' and a login form with fields for 'Username' and 'Password', a 'Login' button, and a 'Lost Password' link. At the bottom left, there is a 'Links' section with a list of URLs: <http://www.equasis.org>, <https://www.parlamou.org/>, <http://ec.europa.eu>, and <http://www.imo.org>. The background of the page features a large image of a cargo ship at sea. At the bottom left, there is a small text line: 'EMSA © 2014 Personal data protection clause'.

<https://portal.emsa.europa.eu>

Integrated in IMS



New layers dedicated to EO data



Image credit: European Space Imaging/DigitalGlobe 2015

**Contact:** [copernicus@emsa.europa.eu](mailto:copernicus@emsa.europa.eu)

**Visit us:** [copernicus.eu](http://copernicus.eu)  
[emsa.europa.eu](http://emsa.europa.eu)

