



Copernicus Maritime Surveillance Service

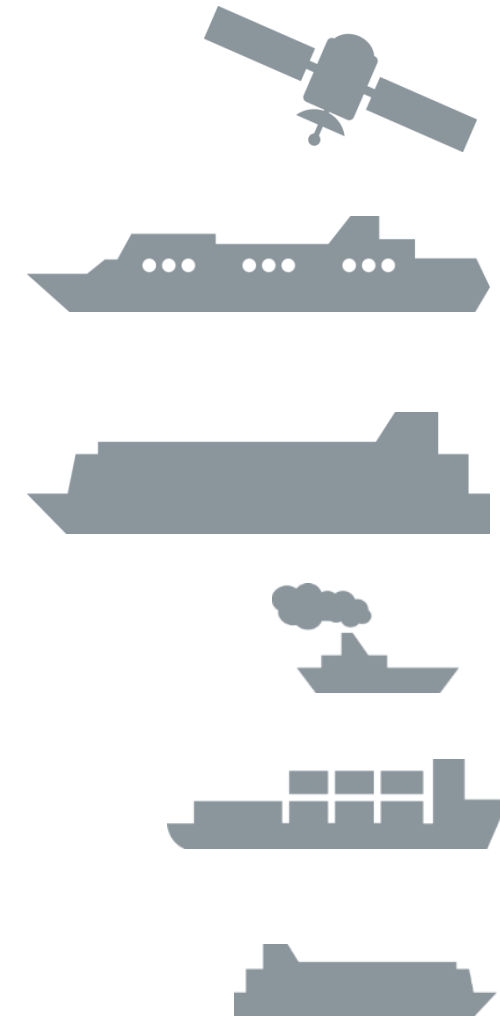
Integrated Maritime Services User Group

Carin Egerton / Project Officer
Earth Observation Services

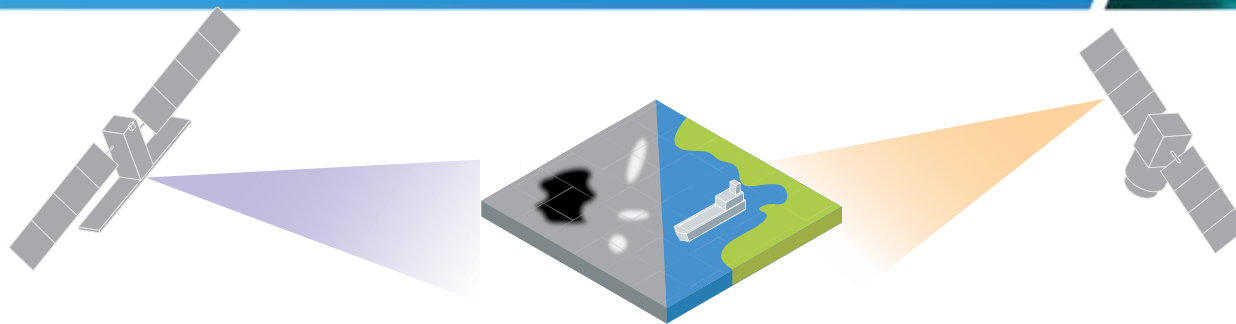
24/10/2018

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EMSA EO Services Overview



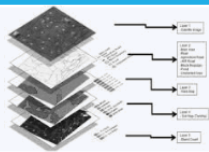
SAR radar satellites (5)

Radarsat-2, Sentinel-1A, Sentinel-1B, TerraSAR-X, TanDEM-X



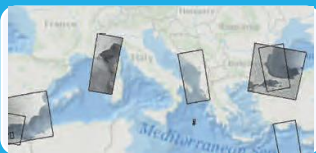
Optical satellites (10)

Deimos-2, GeoEye-1, Pleiades-1A/1B, SPOT 6/7, WorldView-1/2/3/4



Service Providers

- CLS, KSAT, MDA, EDISOFT, e-GEOS, Airbus DS and EUSI
- process, analyse and deliver requested EO products (satellite images and value added products) to the EMSA Data Centre



Earth Observation Data Centre

Delivery to users

- web portal, mobile app, system to system

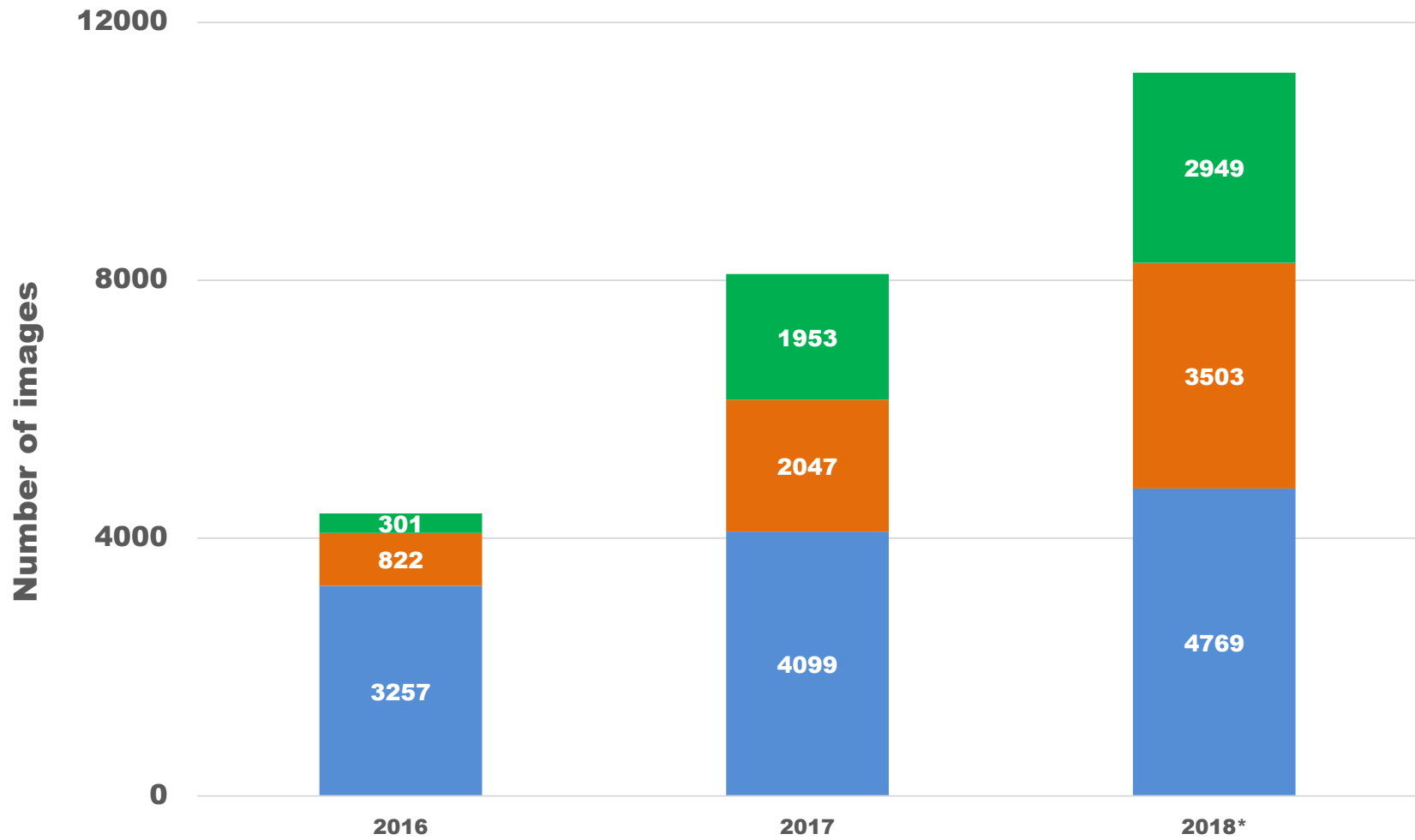


IMS users

Total user organisations: 27

- Croatia
 - MRCC Rijeka
- Cyprus
 - Joint Rescue Coordination Centre (JRCC), Larnaca
- Denmark
 - Danish Defence Command – Joint Arctic Command (JACO)
 - Danish Defence Command
- France
 - Customs National Intelligence And Investigation Directorate (DNRED)
 - Gendarmerie maritime – Ministère de la Défense
 - L'Institut polaire français Paul-Émile Victor (IPEV)
 - Marine Nationale / French Navy
 - Maritime Rescue Coordination Centre (MRCC) Garde
 - MRCC Gris-Nez
 - MRCC La Réunion
 - MRCC New Caledonia
- Germany
 - Polizei Niedersachsen / German Waterways Police
 - Bundesamt für Seeschifffahrt und Hydrographie (BSH) / German Federal Maritime and Hydrographic Agency
- Iceland
 - Icelandic Coast Guard
- Ireland
 - Irish Air Corps
- Italy
 - Presidenza del Consiglio dei Ministri
- Malta
 - National Security Authority
- Portugal
 - Marinha Portuguesa / Portuguese Navy
- Spain
 - Sociedad de Salvamento y Seguridad Marítima (SASEMAR)
 - Departamento de Aduanas e II.EE. / Spanish Directorate of Customs Surveillance
 - Armada Española / Spanish Navy
- Sweden
 - Swedish Coast Guard
- The Netherlands
 - Netherlands Coast Guard
- *European*
 - *European Fisheries Control Agency (EFCA)*
 - *Maritime Analysis and Operations Centre – Narcotics (MAOC(N))*
- *International*
 - *United Nations Office of Drugs and Crime (UNODC)*

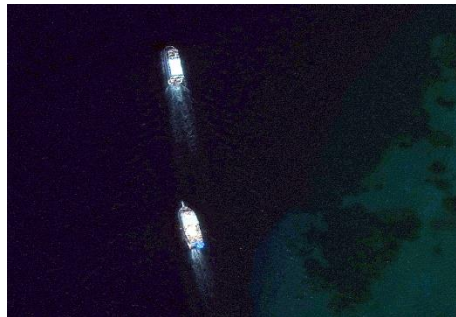
Earth Observation Services Images delivered



CMS Function Areas



Fisheries Control



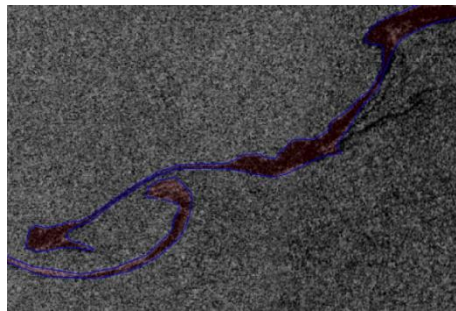
Maritime Safety and Security



Law Enforcement



Customs



**Marine Environment
(Pollution Monitoring)**



**Other (Support to
International
Organisations)**

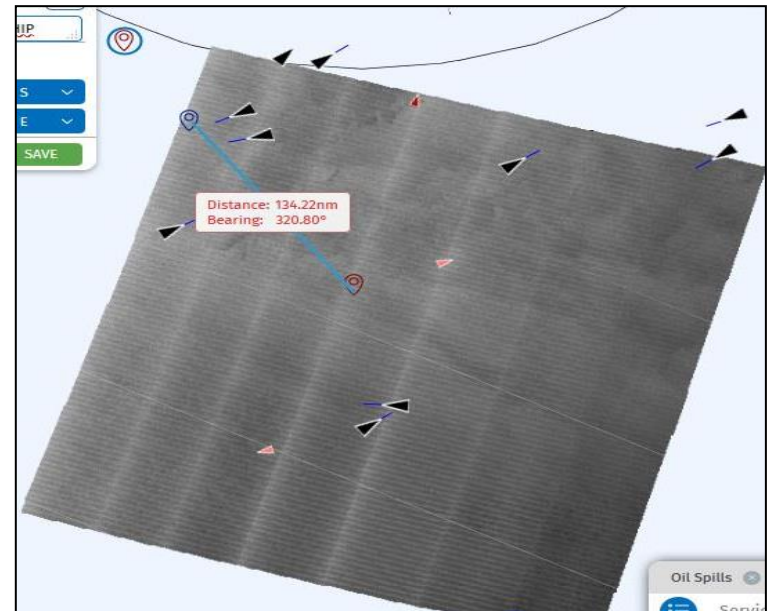


MRCC La Reunion: Vessel locating

- Vessel drifting after fire damage
- Location estimated based on drift modelling
- CMS SAR image helped determine likely search area (by elimination)



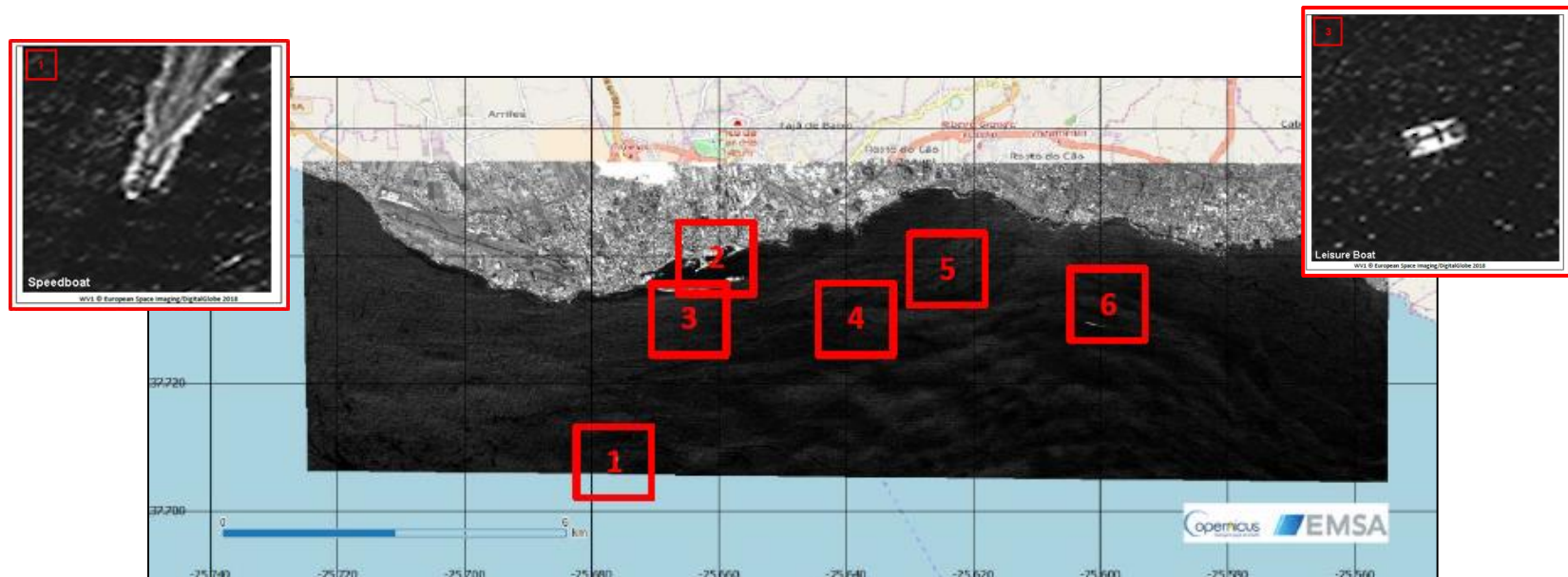
© Master of the ship M/V STI OCHARD, 2017.



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Advanced Search and Rescue Exercise – ASAREX18

- Delivery of two optical images
- EO products provided a clearer picture of the surface
- Exercise: support to decision-making in search and rescue operation

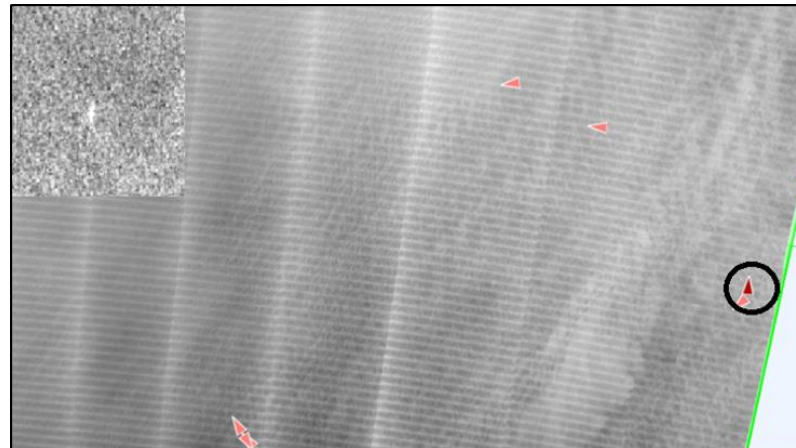


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Icelandic Coast Guard: Icelandic waters

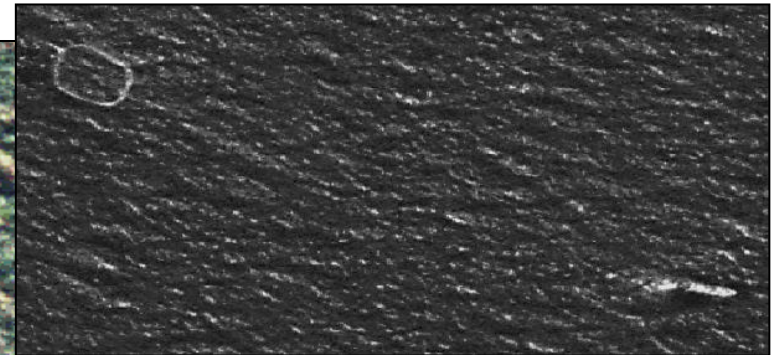
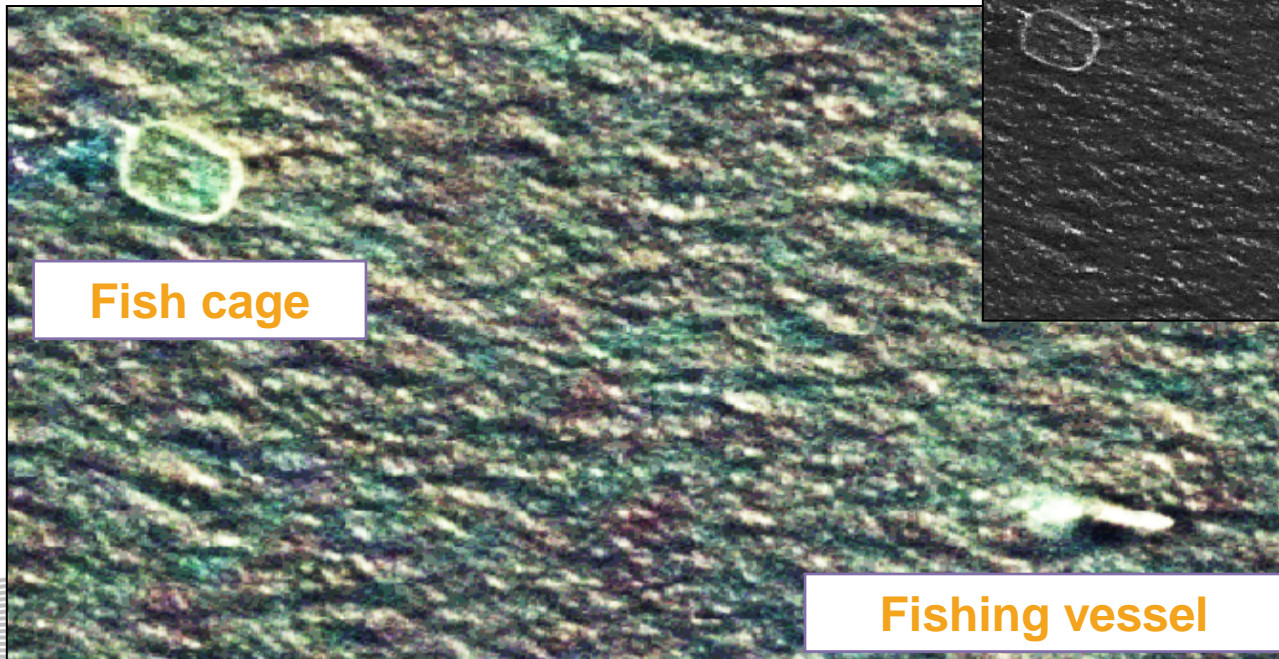
- SAR acquisition, correlated with vessel position information, detected fishing vessel not reporting
- Verified by another vessel in vicinity and surveillance aircraft
- Fishing vessel contacted by authorities and commander consequently turned on the vessel's AIS transmitter



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EFCA: Support for monitoring tug towing fish cage

- Detection of vessel of interest
- Detection of fish cage
- Monitoring of towing operations
- VHR optical image tasked 2h30m before acquisition



© Deimos Imaging (2017)

© Deimos Imaging (2017)

MAOC(N) May 2017

- Vessel suspected of heroin transshipment & still in Suez Bay
- Optical image requested from CMS confirmed vessel no longer in Suez Bay
- Information passed to Turkish authorities; interception of vessel northbound
- Seized 1 tonne heroine, arrested 9 crew
- <http://worldmaritimeneews.com/archives/222131/over-a-ton-of-heroin-seized-aboard-osv-off-turkey/>; <https://www.reuters.com/article/us-turkey-drugs-idUSKBN18Y0RI>



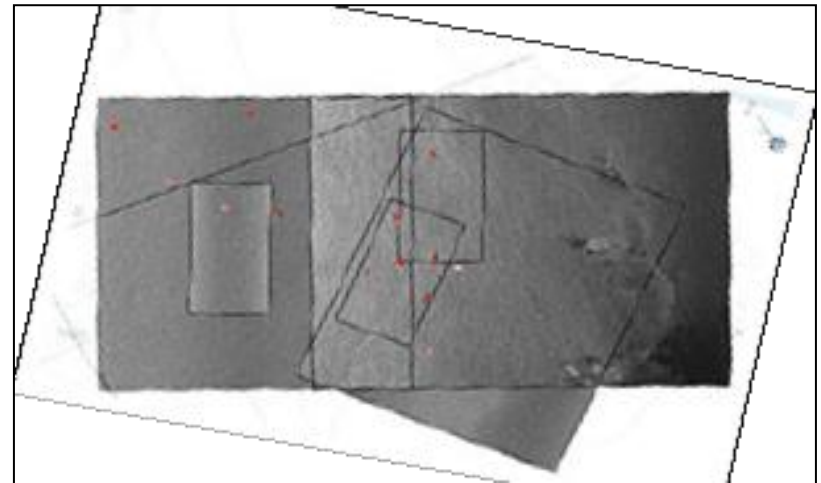
Reuters (2017)



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Spanish Directorate of Customs Surveillance: Operation Compadre, May 2017

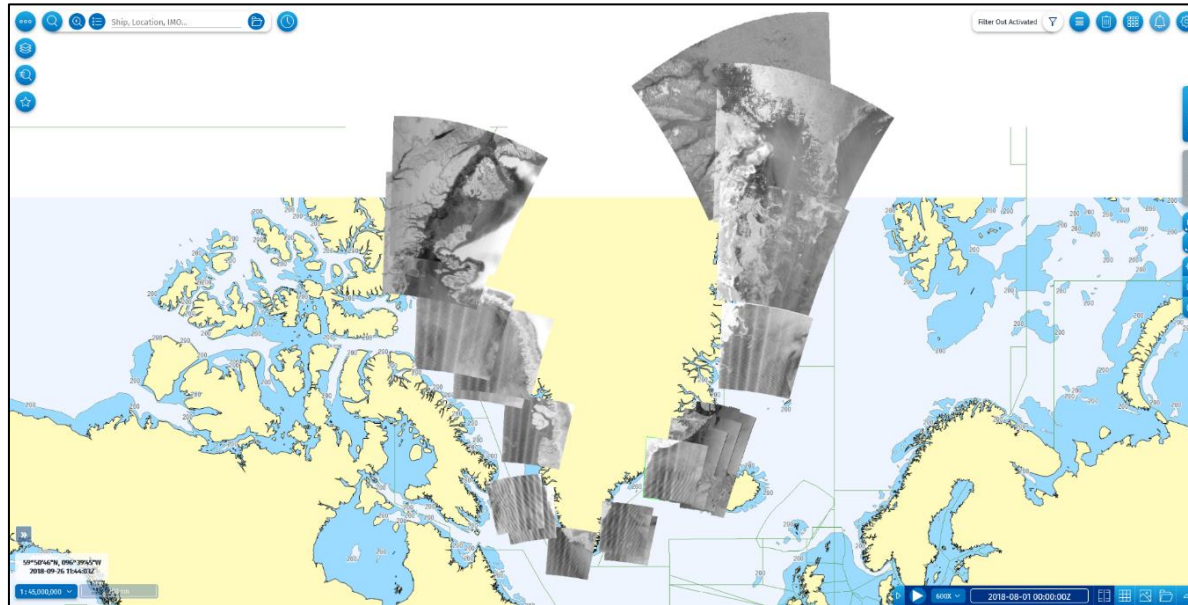
- Joint operation - Spanish AEAT, Portuguese authorities, US DEA, UK NCA
- Intelligence driven - searching for particular vessel type
- CMS provided SAR and VDS – no detection, reduced search area
- Interception near Canaries; 2.4 tonne cocaine; 7 arrests
- https://www.policia.es/prensa/20170515_1.html



Use Case: Marine Environment (Pollution Monitoring)

Danish Defence, Joint Arctic Command: Greenland

- Delivery of regular SAR images to monitor Greenland's waters
- Extension of CleanSeaNet service outside EU waters

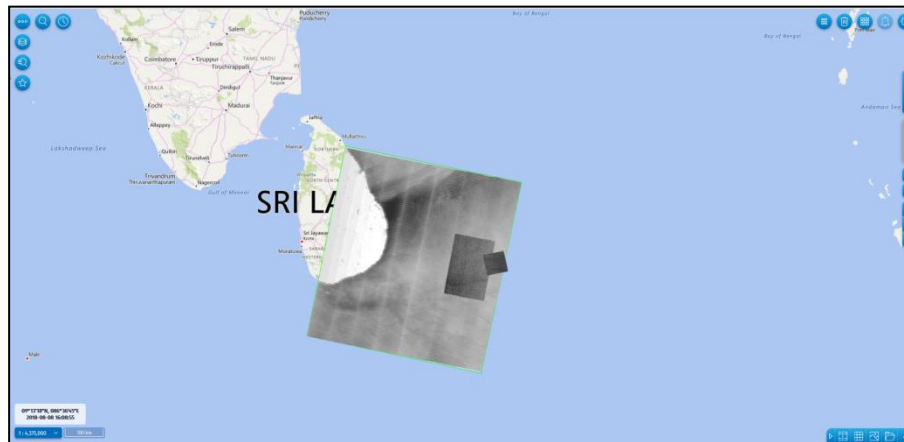


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Use Case: Support to International Organisations

UNODC: Sri Lanka

- Purpose to test authorities' capacity to fight illegal transshipping by foreign fishing trawlers
- CMS support to international organisations is coordinated with the European External Actions Service (EEAS); requests received in the context of the Common Foreign and Security Policy (CFSP) of the EU
- UNODC intending to plan CMS services around sensitive periods for transport of drugs and illegal fishing



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User Group, 9 October

- Routine (large areas, planned in advance, SAR) v short notice (high resolution, intelligence based, optical)
- SAR more useful for identifying targets for inspection (non-correlated)
- High resolution: identification of vessel, in some cases items on deck can provide further info
- Vessel locating: can be useful when particular vessel is detected, but also when not detected – e.g. reduces search area, or indicates vessel has left area (saves resources)
- With additional experience, some users are requesting more optical, others are now requesting more SAR - learning process ongoing
- Trade-offs between speed of delivery & quality/depth of analysis (and coastal v high seas?)
- Shift towards using CMS as one part of a whole, planning other assets to be complementary

EO services evolution 2018/19



1	Quasi real time delivery (20')
2	New Services : <ul style="list-style-type: none">- Oil spill detection based on optical products- Wake detection- Feature detection- Activity detection- Change detection
3	New interface (data display and request)
4	Better processing performance

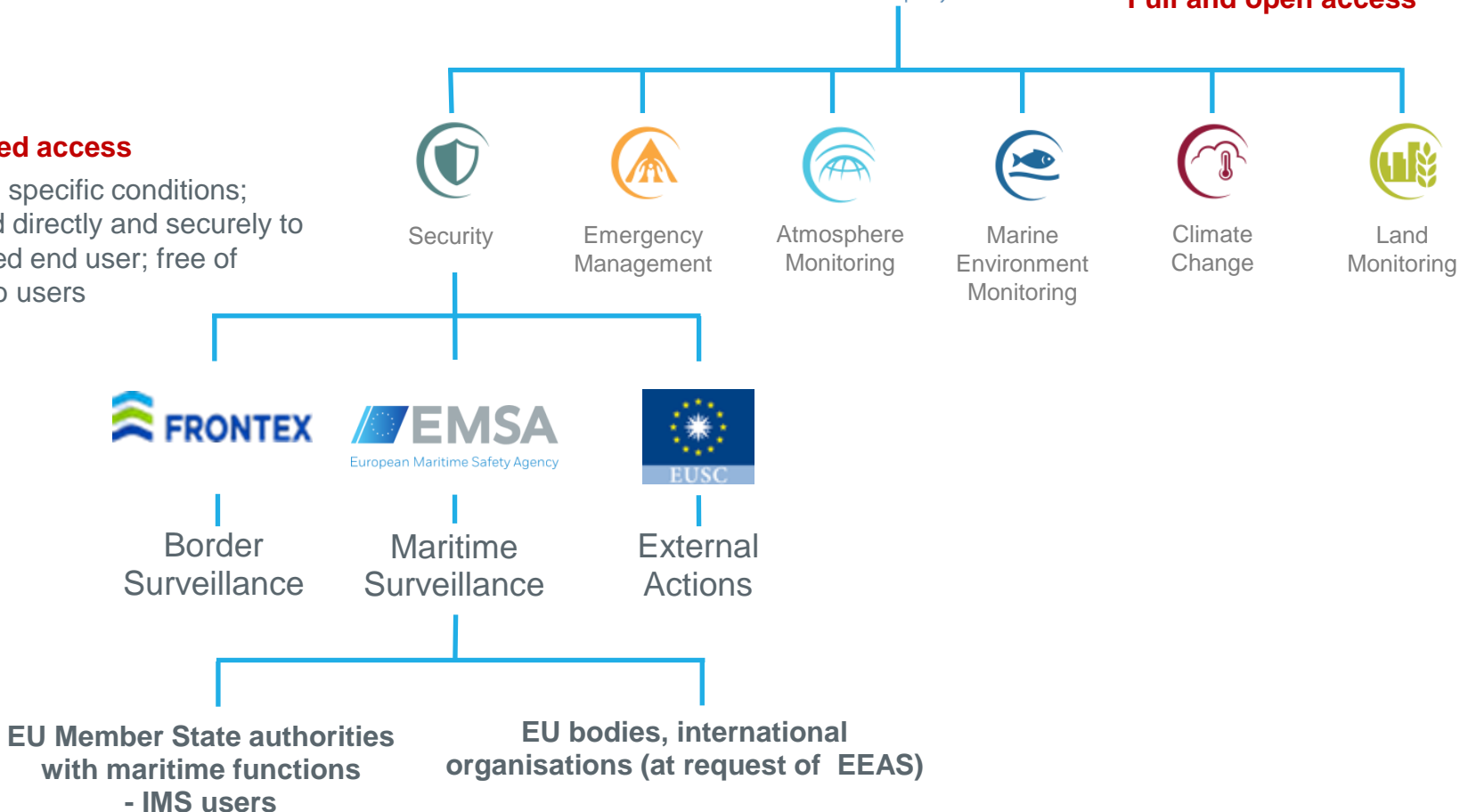
Overview



Full and open access

Restricted access

Security: specific conditions;
delivered directly and securely to
authorised end user; free of
charge to users



Accessing the service

How to access: Consult CMS Product Catalogue



- **Standard products**
 - SAR
 - Optical
- **Value Added products**
 - Vessel detection
 - Activity detection
 - SAR wind and SAR wave
 - Oil spill detection
- **Fusion products**
 - Correlation w/ AIS, SAT-AIS, LRIT, VMS
 - Alerts and notifications



Image credit: European Space Imaging/DigitalGlobe 2015

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