



Security

Copernicus Security Service

ESA Living Planet Symposium
2022

23 May 2022



European
Commission





- **Copernicus Security Service; planned evolutions in all 3 components (with restricted access):**
 - Border Surveillance (Frontex)
 - Maritime Surveillance (EMSA)
 - Support to EU External Actions (EU Satellite Centre)
- **Guaranteed continuation of the service until 2027: new Contribution Agreements signed with EMSA (Oct. 2021) and Frontex (Nov. 2021); in final negotiation phase with EU Satellite Centre**
- **Copernicus Security service needs to remain fit-for-purpose and at the technological forefront; services evolution, and research and innovation, are key elements:**
 - Horizon Europe
 - Strategic Research Agenda (SRA) for Copernicus Security Applications



Security

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1- Support to Border Surveillance

The logo for FRONTEX, featuring the word "FRONTEX" in a bold, blue, sans-serif font. The letter "X" is stylized with three horizontal lines passing through it.

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SCOPE and ACCESS CONDITIONS

- **Copernicus Border Surveillance Service (CBSS) is provided to users in the framework of EUROSUR Fusion Service (EFS).**
- **The purpose of CBSS is to provide support to the activities of national border management authorities in:**
 - Tackling irregular migration and cross-border crime
 - Contributing to strategic autonomy of the EU
- **Within the EUROSUR framework, Frontex maintains an overview of the situation at European borders and the pre-frontier area; this information is available to all Member States and Schengen associated countries.**
- **Only members of the European Border and Coast Guard can request a Copernicus/EFS service.**
- **Inter-agency cooperation between Frontex, EMSA and SatCen**

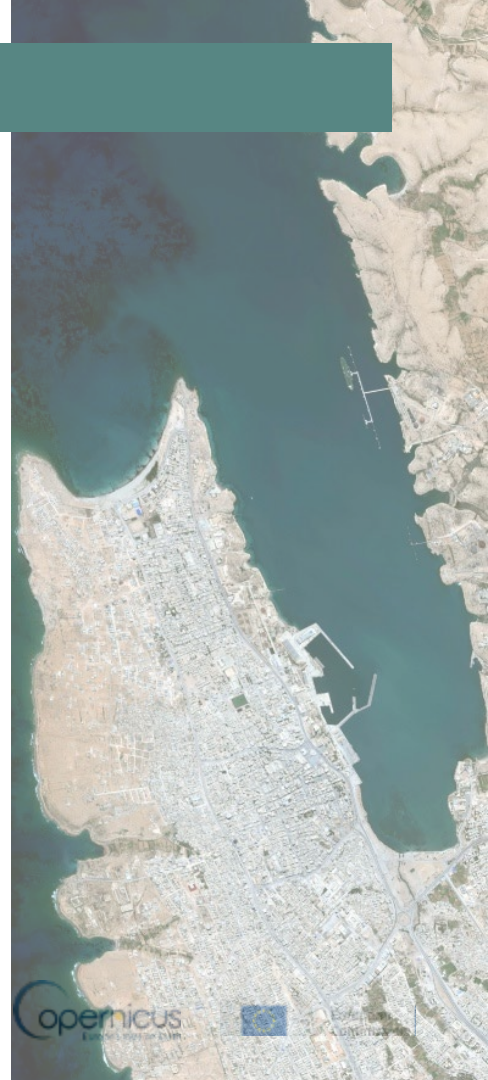


Security

SERVICE EVOLUTION

Service evolution is driven by :

- Identification of new users and cooperation opportunities
- Exploration of new technologies
- Identification of newly accessible data, applying foresight and predictive analysis techniques
- Carrying out an improvement of products based on the feedback from its users.





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FRONTEX AND ENVIRONMENTAL CRIME

- Frontex (without investigative powers) **supports** relevant authorities in operational response to cross-border crime relating to security of the EU external border
- The CBSS can be requested to provide support in case of environmental crimes related to cross-border crime



Illegal burial of polluting waste in a pre-frontier area impacted by irregular immigration (2021)
Pre-frontier Monitoring

Theft and illicit trafficking of metals (2018) Satellite Imagery





Security

CLIMATE CHANGE AND BORDER MANAGEMENT

Environmental changes are among the major push factor factors due to:

- Sea level rise
- Exposure to natural hazard (e.g., droughts, floods, heatwaves, sea level rise, changes in storm frequency and in rainfall patterns, forest fires)
- Food and water scarcity
- Energy security
- Land degradation / decreasing land productivity



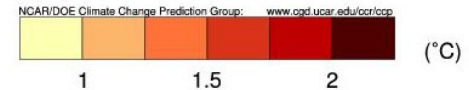
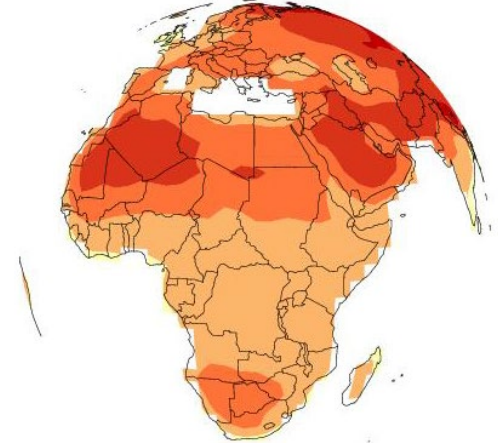
- **A large-scale migration from vulnerable region**
- **The exacerbation of other megatrends**



Climate migration may lead to:

- The change of the profile of origin and transit countries
- The creation of a greater variation in migratory routes, modi operandi and more diverse flows of migrants at the EU's external borders

IPCC A1B Sfc Air Temperature 2030-1990



Climate migration as a major geopolitical risk and a threat multiplier



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2- Support to Maritime Surveillance



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European Maritime Safety Agency





The **Copernicus Maritime Surveillance (CMS)** Service provides Earth Observation products to support a better understanding and improved monitoring of activities at sea

▪ **Function areas**

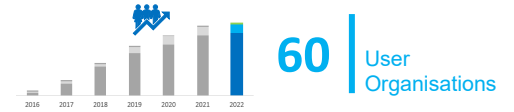
(more than **2500 images** delivered Jan-April 2022)

- Fisheries control
- Maritime safety
- Maritime Security
- Law enforcement
- Customs
- Marine pollution monitoring
- International Cooperation

▪ **Authorised Users:**

The CMS service can be accessed by European Union (EU) and European Free Trade Association (EFTA) national administrations with responsibilities at sea, as well as relevant EU bodies and institutions.

60 User organisations registered



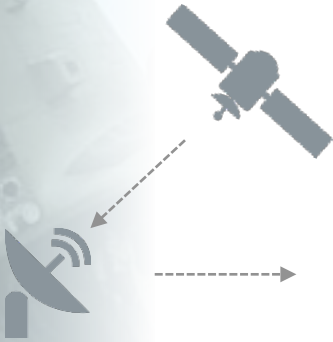


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Catalogue

Products extracted from Satellite Data

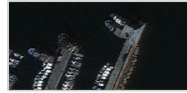
Fusion Products



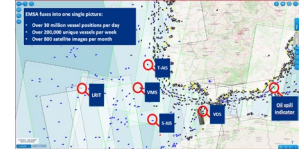
20 minutes after satellite acquisition(*)

Information is delivered to Copernicus maritime Surveillance users via Secure web interface

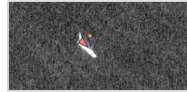
Satellite image



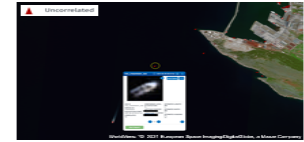
Vessel traffic correlation



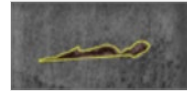
Vessel Detection



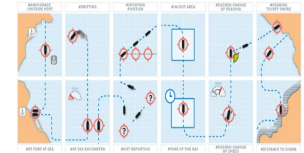
Dark Vessels Detection



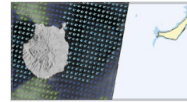
Oil spill Detection



Automated Behaviour Monitoring algorithms



Wind and wave



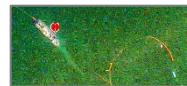
Feature detection



Oil spill Alert reports



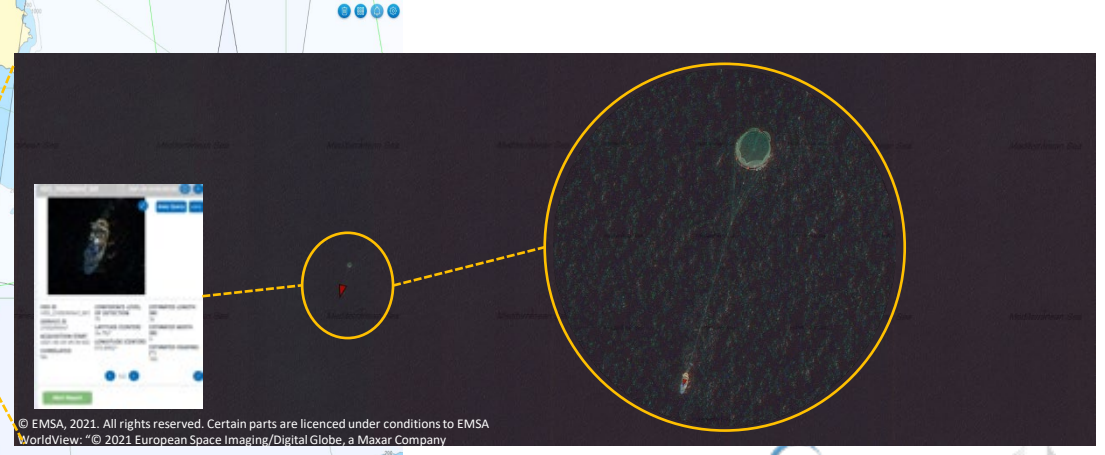
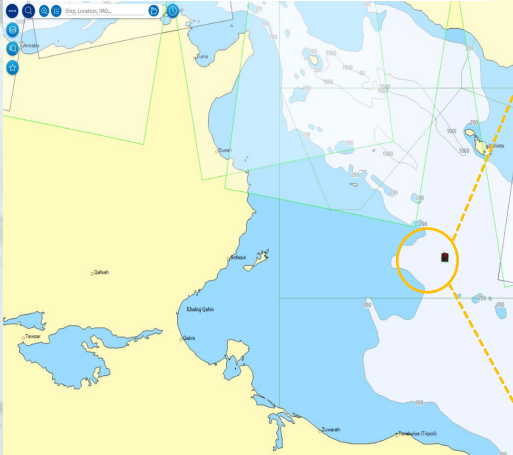
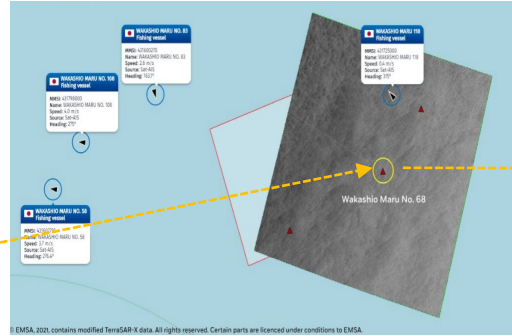
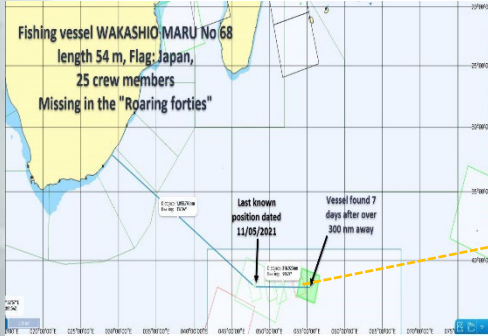
Activity detection





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Maritime Safety and Fisheries control



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WorldView: © 2021 European Space Imagine/Digital Globe, a Maxar Company



Security

Way forward



Data

- Additional data sources
- Improved satellite capabilities
- Enhanced synergies / orchestration between satellite assets (tip and cue strategies)



Ability to fulfil user needs



Value

- Enhanced value added products
- Additional insights from satellite datasets (e.g. graph analytics)
- From detection to prediction

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3- Support to EU External Actions



Security

Copernicus Security Service - SEA

SEA assists its **Authorized Users** enhancing **prevention, preparedness, and response** to crisis by offering a comprehensive approach for situational awareness and decision-making. The three **on-demand** Services:

Geospatial Analysis

Geospatial Analysis is used to confirm any information requested by the user.



Example: Activity Report

Mapping for Situational Awareness

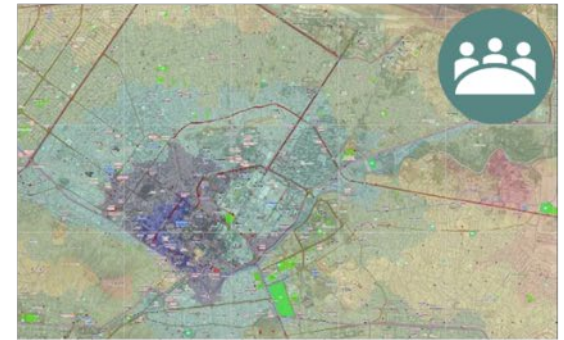
Mapping for Situational Awareness provides up-to-date cartographic and thematic information.



Example: Reference Map

Support to Planning

Support to Planning is conceived to be used in the preparatory phase of a mission or event.



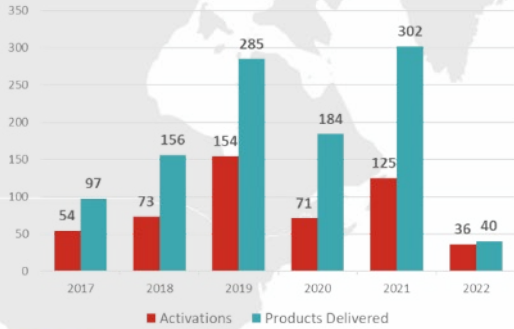
Example: Time Response Map, Support to Evacuation Plan



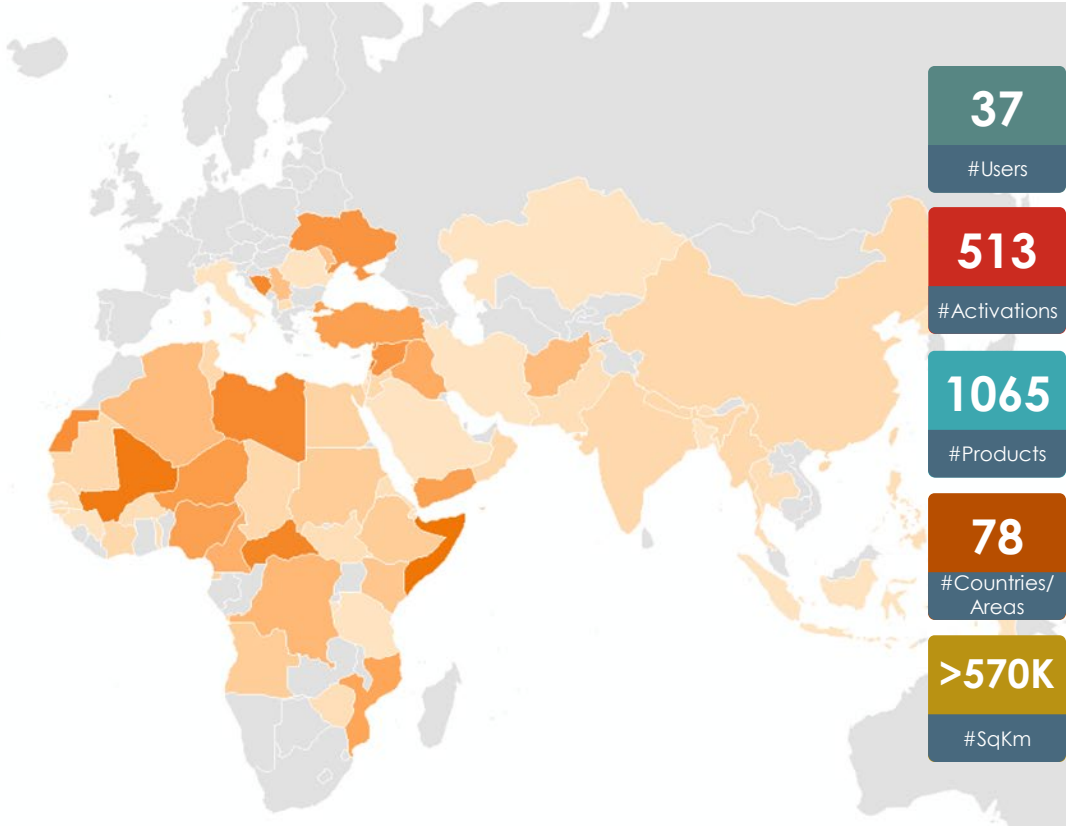
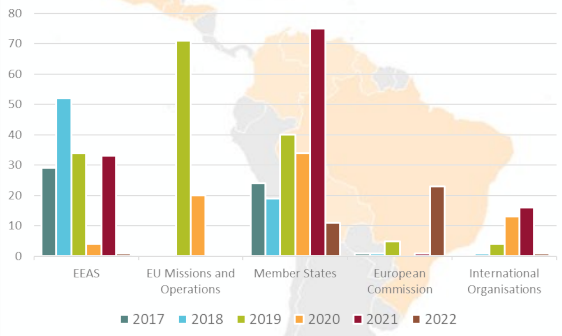
Security

SEA Main Achievements

Activations and Products Delivered, 2017-2022



Activations by Authorised User Group, 2017-2022



37

#Users

513

#Activations

1065

#Products

78

#Countries/
Areas

>570K

#SqKm

The Copernicus Service in Support to EU External Action (SEA) became operational in May 2017
 #Users aggregated in accordance with the "List of authorised users of Copernicus SEA Service" of the Delegation Agreement
 Data updated 06/05/2022





Security

Copernicus SEA and Climate Security

Copernicus, through the **SatCen**, will also support improving **situational awareness** in response to **climate-related security risks** as well as monitoring of the **Arctic region**



Support early warning, planning, deployment and implementation of **EU Missions and Operations**

Monitor infrastructures, communication routes and patterns of activity in the **Arctic region**



Identify potential areas of **conflict** between communities sharing resources (resource stress due to climate change effects) and **environmental migration**



Analysis and monitoring of illegal activities. Indicators of environmental crime related to e.g. **mining**



Security

Copernicus SEA Service – 2022-27 (SESA)

Assist the EU and its MSs in the framework of applicable Union and national legislation by enhancing the **situational awareness** needed by Institutional stakeholders working in:

Union
External Action

Monitoring the
implementation of EU Law

Security
Union

Support to
Member States

Current Service

Support to Humanitarian aid



Rule of Law



Stability and Resilience for Development



Security of EU citizens abroad



Crisis, Conflict and Critical assets



Transport Safety and Security



Evolution

Environmental Compliance



Cultural Heritage



Perspective

Climate Security



Health Security



International Trade and Economic Diplomacy





Security

Copernicus Security Service

Services Evolution, Research and Innovation



A STRATEGIC RESEARCH AGENDA for Copernicus Security

- Frontex and SatCen are already actively participating and contributing to the R&D activities of the EU, especially in the framework of Horizon Europe
- Research is key to the **evolution of services** : The EU Space Programme calls for reinforced links with research, in particular with Horizon Europe.
- As from 2022: **A Strategic Research Agenda (SRA) for Copernicus Security Applications** will federate operational needs, identify gaps, facilitate spin-out of technology and provide orientations for the definition of related research activities
- The SRA will be defined in close cooperation with the Copernicus Security Service providers, EMSA, FRONTEX and SATCEN, and key stakeholders in National Research organisations and Space Agencies, as well as ESA
- **The SRA will provide guidelines for R&D to decision makers in the EU and Member States , on a yearly basis; first SRA available by end of 2022**

Thank you!

SERVICES INFO:

<https://www.copernicus.eu/en/copernicus-services/security>



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CBS:

<https://frontex.europa.eu/we-build/eu-partners/european-commission/>

CMS:

<http://www.emsa.europa.eu/copernicus.html>

SEA:

<https://sea.security.copernicus.eu>

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