



EU GLOBAL ACTION
ON SPACE

Fostering Innovation and Cooperation in Space between the EU and LAC

4 – 5 April 2024
Delfins Beach Resort, Bonaire

Funded by the European Union



Promoting the European Union Space Programme





EU GLOBAL ACTION
ON SPACE

Introduction



***Tomas Dimitrov,**
EU Global Action on Space*



***Rosalia Jefferson,**
Distinguished Toast Master*



EU GLOBAL ACTION
ON SPACE

Opening Remarks



*Mr E.E. Edison Rijna,
Special Envoy for the Caribbean
Netherlands for EU funds, UN funds and
economic relations with Latin America*



EU GLOBAL ACTION
ON **SPACE**

Opening Remarks



*Director General Mr. Roald Lapperre,
Ministry of Interior and Kingdom
Relations*



EU GLOBAL ACTION
ON SPACE

Opening Remarks



Ambassador Rene Van Nes,
*Head of the EU Delegation to Guyana, for
Suriname and with responsibility for Aruba,
Bonaire, Curaçao, Saba, St Barthelemy, St
Eustatius and St Maarten*



EU GLOBAL ACTION
ON **SPACE**

Opening Remarks



*Mr. Reynolds Oleana,
Governor of Bonaire*



EU GLOBAL ACTION
ON SPACE

The EU Space Programme and the EU-LAC collaboration in the space sector



Moderator:
Mr E.E. Edison Rijna,
Special Envoy for the
Caribbean Netherlands for EU
funds, UN funds and economic
relations with Latin America



Jolanda Van Eijndthoven,
Head of Unit, Space Data
Economy and International
Cooperation, DG DEFIS,
European Commission



Jim Bos,
Project Manager Galileo
Sensor Station Bonaire, Dutch
Ministry of Infrastructure and
Water Management



Dr Itziar Alonso,
Project Manager - Copernicus
LAC Centre in Panama
Sustainable Initiatives Office,
Directorate of Earth
Observation Programmes, ESA



Prospects for enhanced cooperation on space between the European Union and the Caribbean

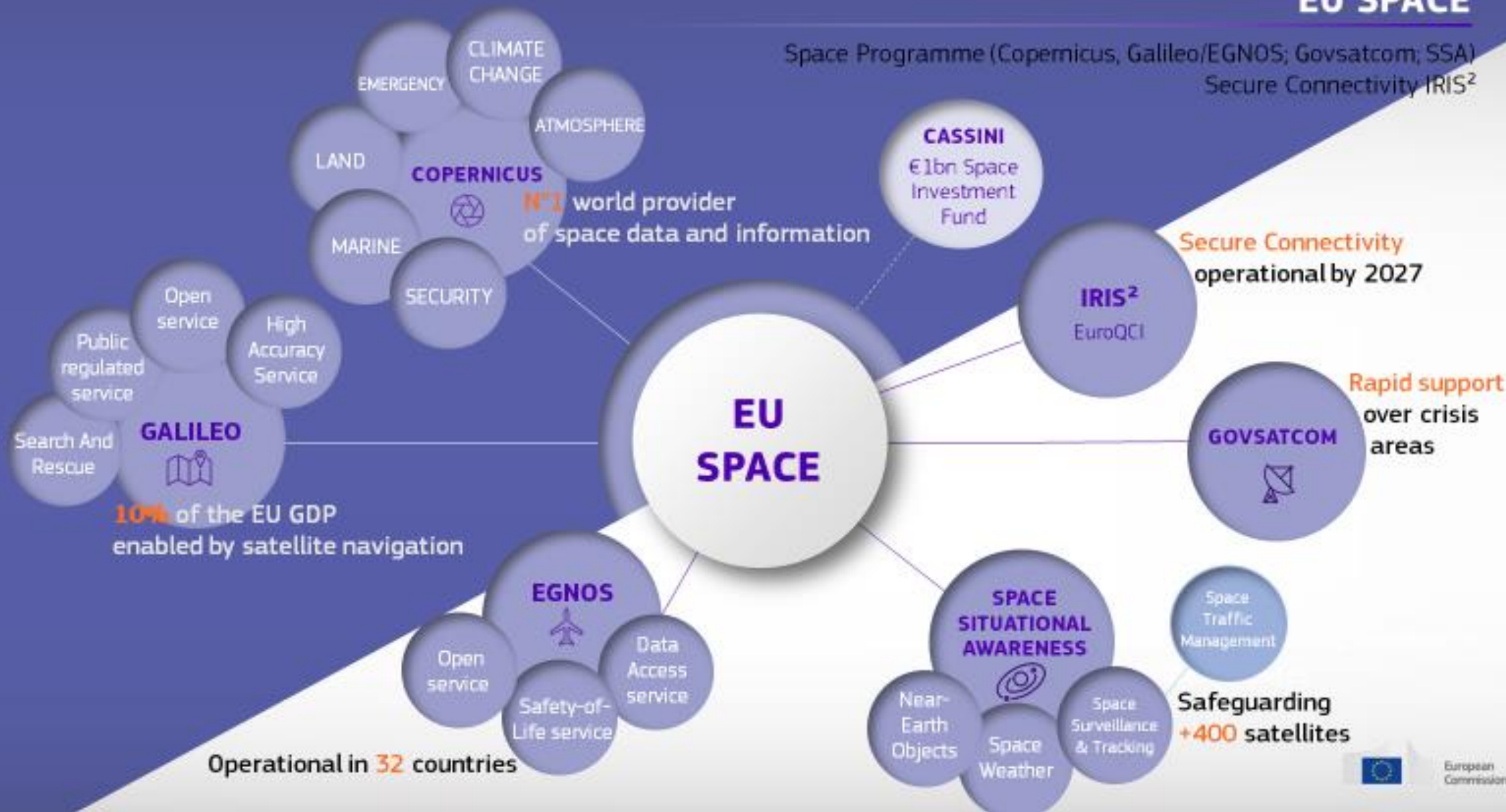
Jolanda Van Eijndthoven

Head of Unit 'Space Data Economy and international cooperation'

Directorate-General for Defence Industry and Space

European Commission, Brussels

Space Programme (Copernicus, Galileo/EGNOS; Govsatcom, SSA)
Secure Connectivity IRIS²



EU Space Programme components

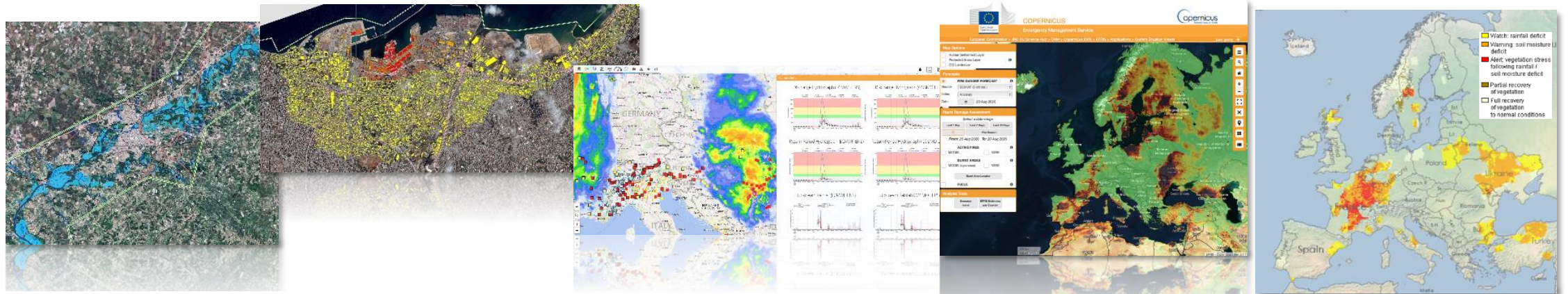
Galileo



- **Open Service**
- High-accuracy service
- Signal authentication service
- **Public regulated service (PRS)**
- Emergency service
- **Timing service**
- **Search and rescue support service (SAR)**
- Integrity – monitoring services
- Space weather information

Available
In development

Copernicus Emergency Management Service



On-demand
mapping



Rapid
Mapping



Risk and Recovery
Mapping

Early warning
and monitoring



Floods



Fires



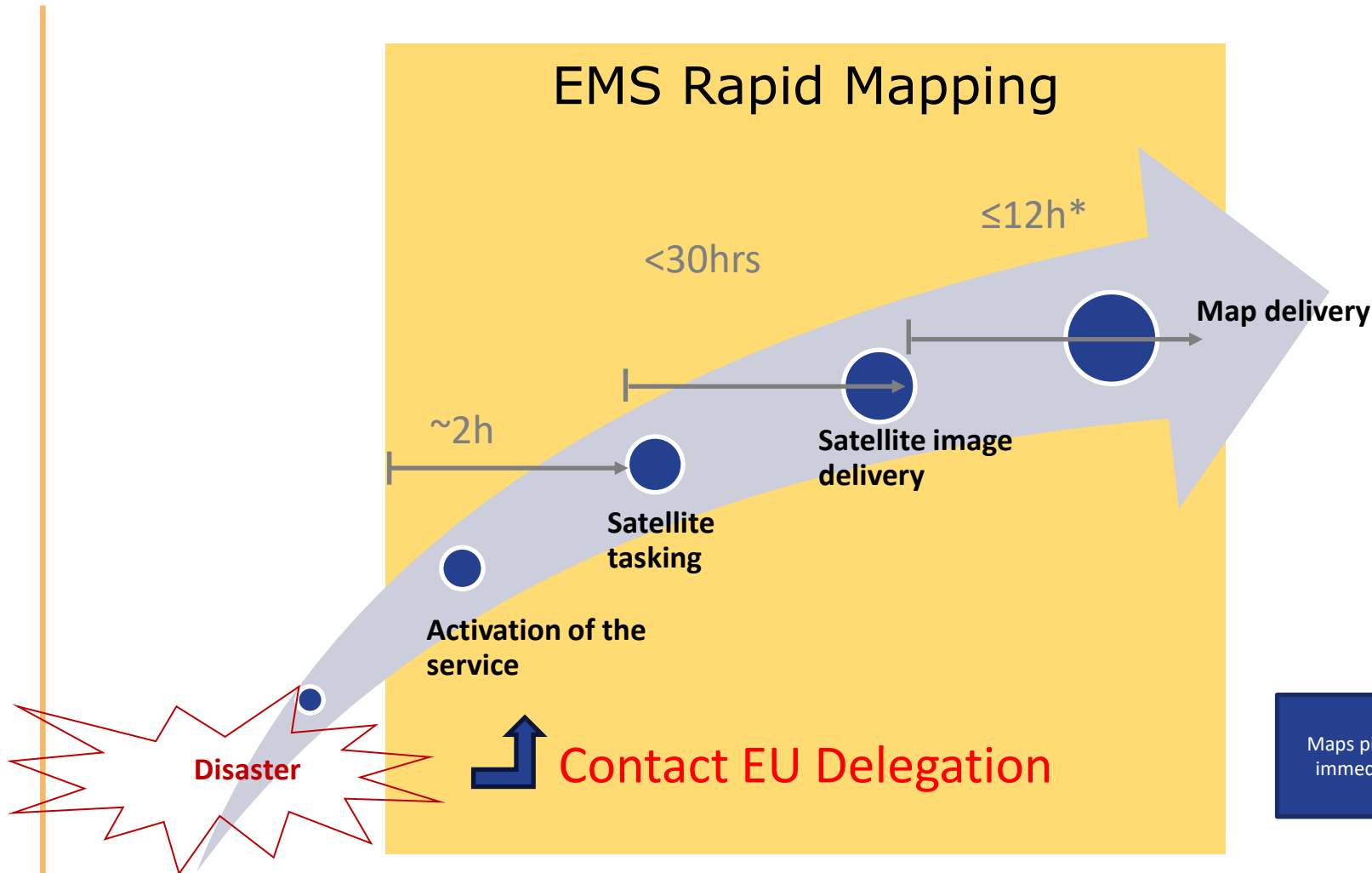
Droughts

- Provides **earth-observation, model & in-situ** based disaster management information
- Two main components: **On-demand mapping** and **Early Warning and Monitoring**

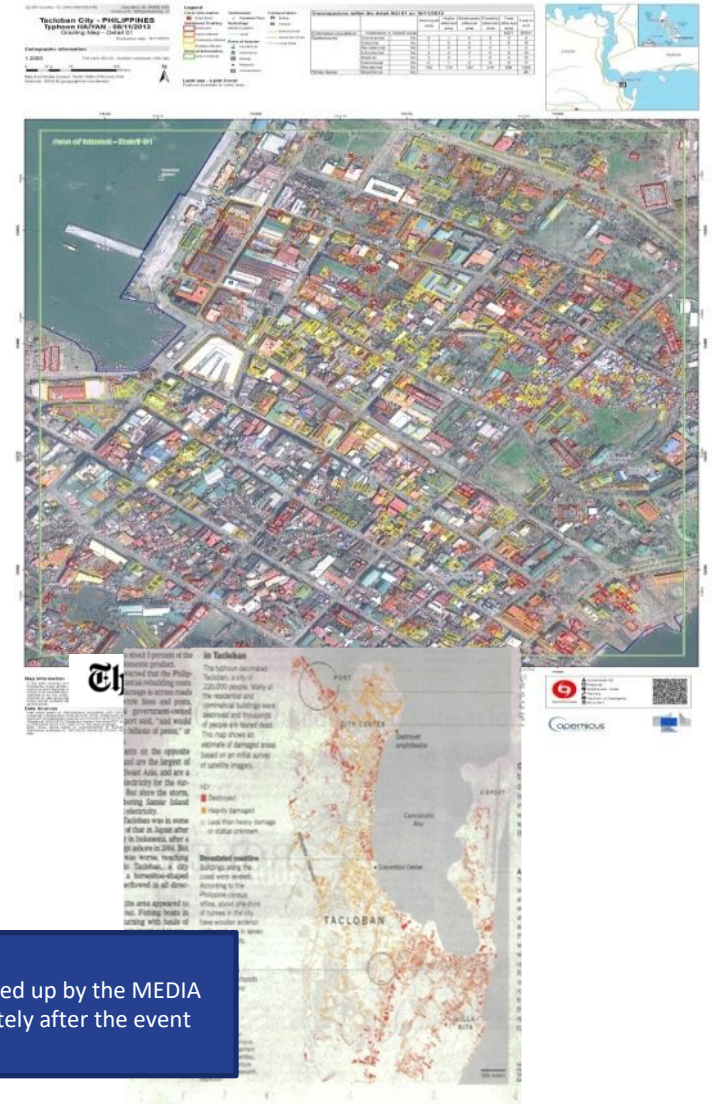


Emergency Management

Rapid Mapping Timeline



* Production time in service level 1



Copernicus Emergency Management Service - Activation

Contact your European Union Delegation

**Delegation of the European Union to Guyana, for Suriname
and with responsibility for Aruba, Bonaire, Curaçao, Saba,
St Barthelemy, St Eustatius and St Maarten:**

592 226 4004

11 Sendall Place,

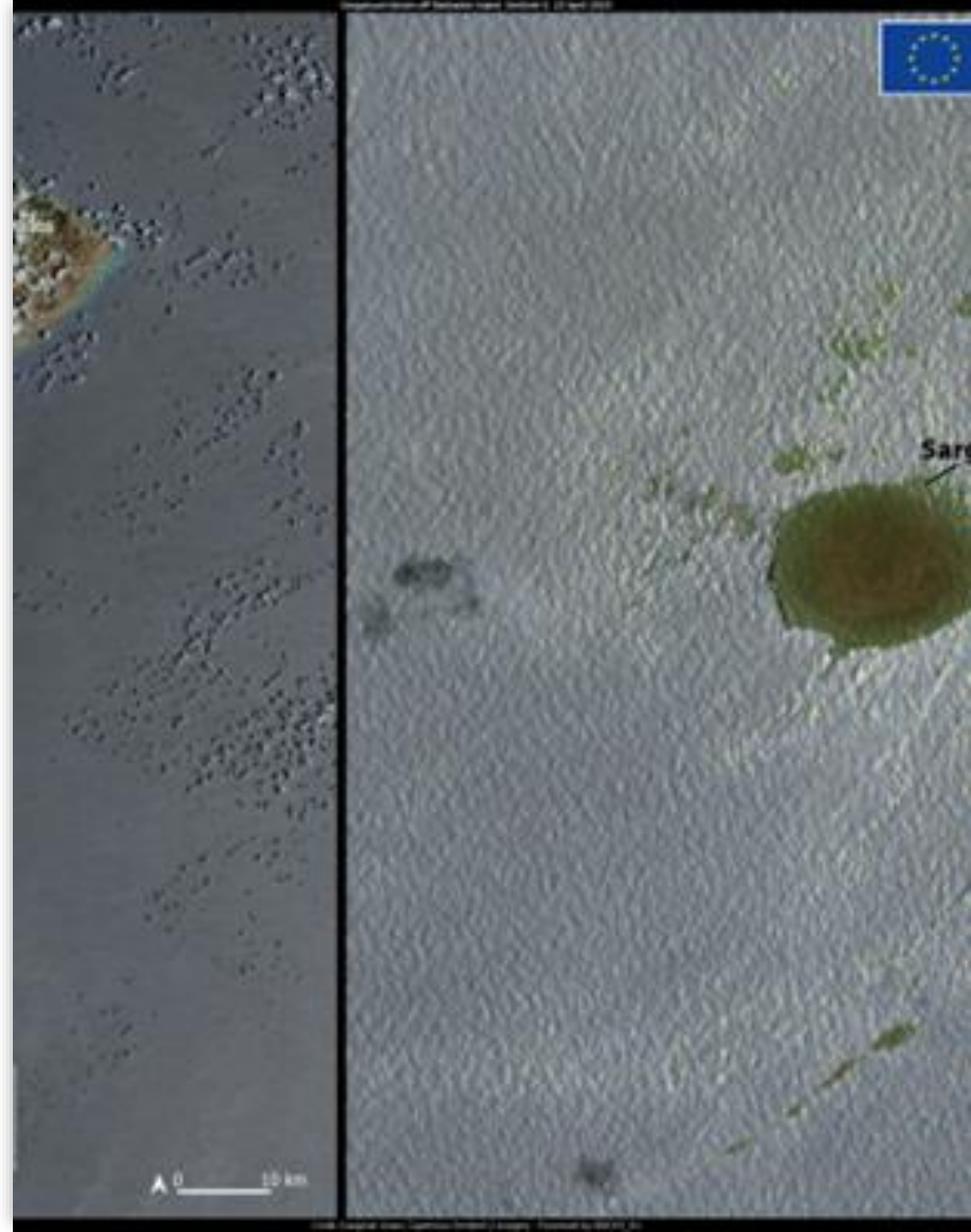
Stabroek Georgetown Guyana

Delegation-Guyana@eeas.europa.eu

Joan.nadal-sastre@eeas.europa.eu

Detecting Sargassum algae from space in the Equatorial Atlantic

- Sargassum Operational Detection Algorithms (SODA) project through the Copernicus Marine Service
- **Detecting sargassum algae using Satellite-Based Earth Observation imagery**
- **Drift forecast to estimate the sargassum trajectories** and their probability of landing on the coast using Copernicus satellite Data
- **Use satellite data** for actionable insights and **mitigate economic impact**



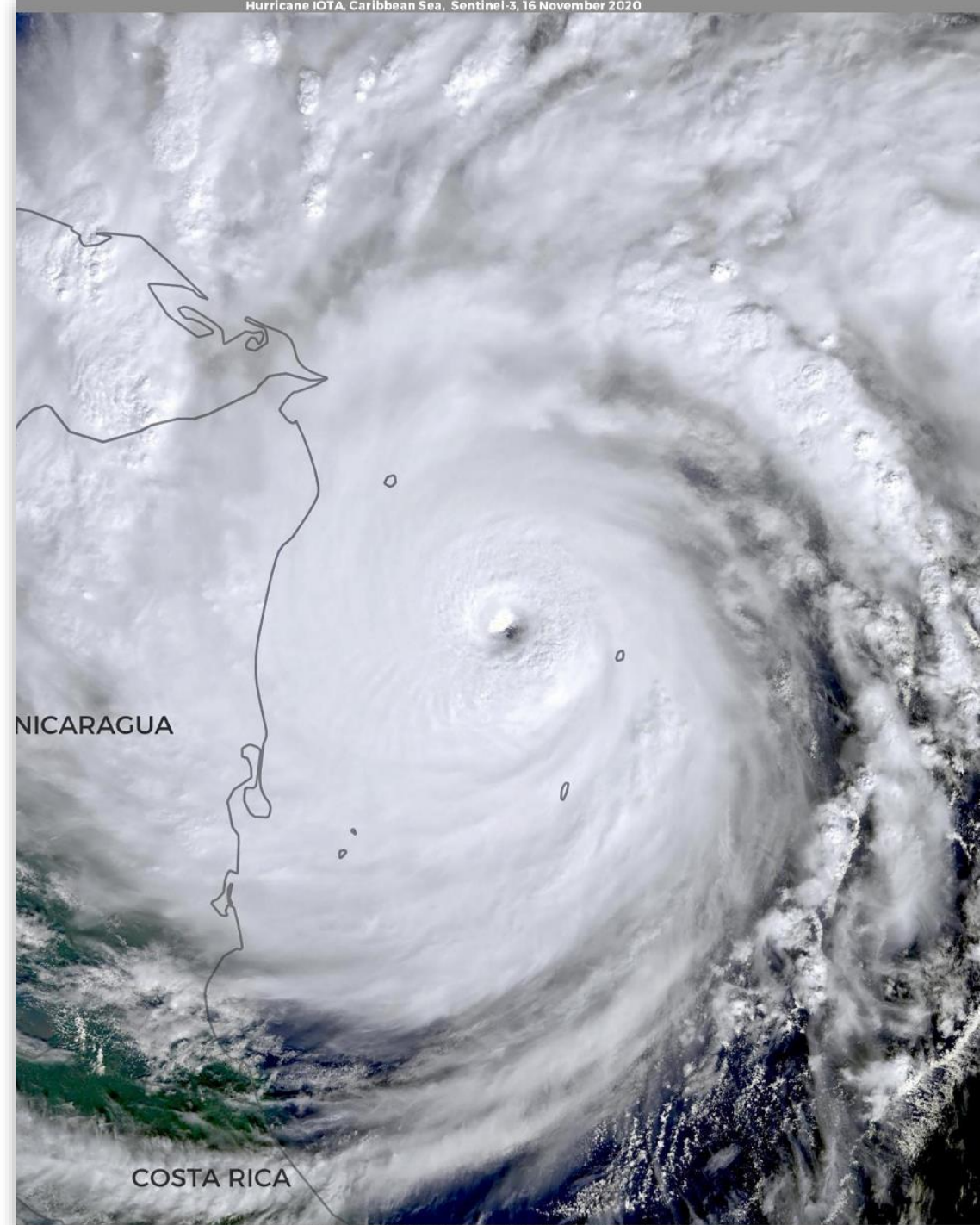
Tracking Oil Spill in Trinidad and Tobago Using Sentinel-1 Imagery

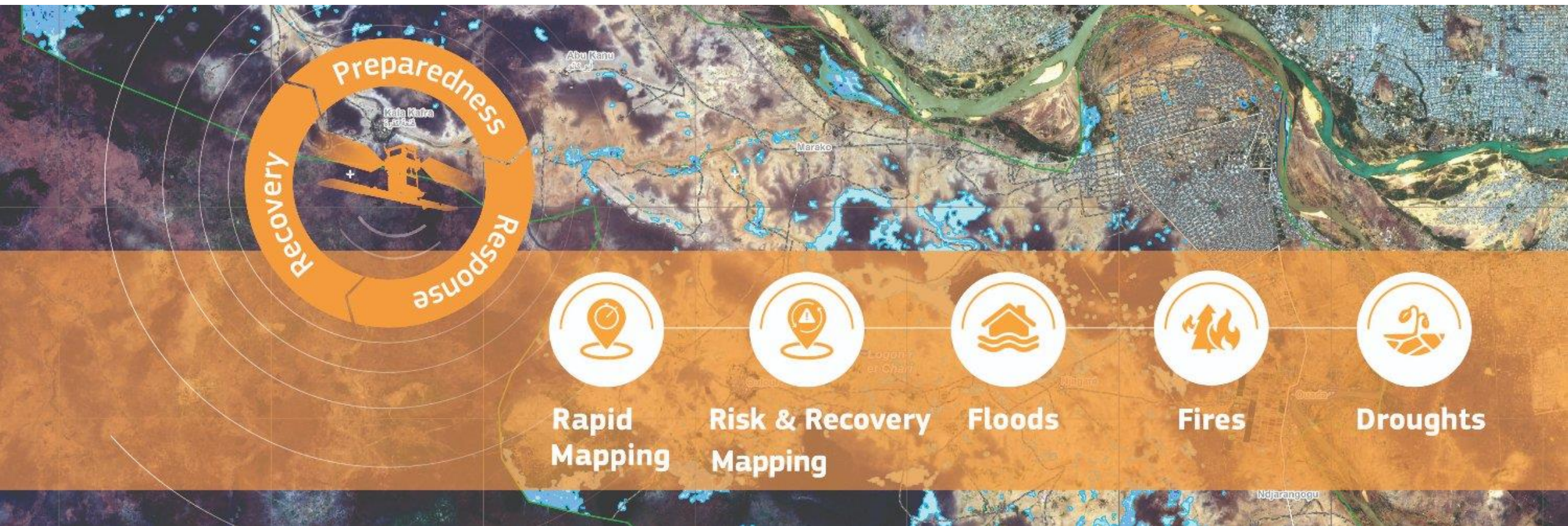
- **Sentinel-1 Satellite imagery shows how leaking oil from a capsized vessel is progressing**
- Imagery shows that the **oil spill has spread more than 160km westward** threatening Venezuela, Grenada and Bonaire
- Supporting disaster response efforts and **sharing information** with local **government of affected areas**



Early warning and Damage assessment with Hurricanes

- **Early warning:** monitoring the hurricane's development, trajectory and intensity
- **Mapping and Damage Assessment:** High resolution imagery to assess the damage to infrastructure in affected areas
- **Environmental Monitoring:** tracking environmental changes (water quality, land cover), after the disaster





Thank you!



EU GLOBAL ACTION ON SPACE





EU GLOBAL ACTION ON SPACE





EU GLOBAL ACTION
ON SPACE

Business opportunities supported by the EU Global Action on Space



***Intza Balenciaga,**
Business Development, Internationalisation
Support, EU Global Action on Space*



EU GLOBAL ACTION
ON SPACE

EU Global Action on Space - Business Coaching Services

Support for the Internationalisation of Space Cooperation between European and Latin America & the Caribbean Entities

Intza Balenciaga, Business Development, Internationalisation Support, EU Global Action on Space

04.04.2024





EU Global Action on Space

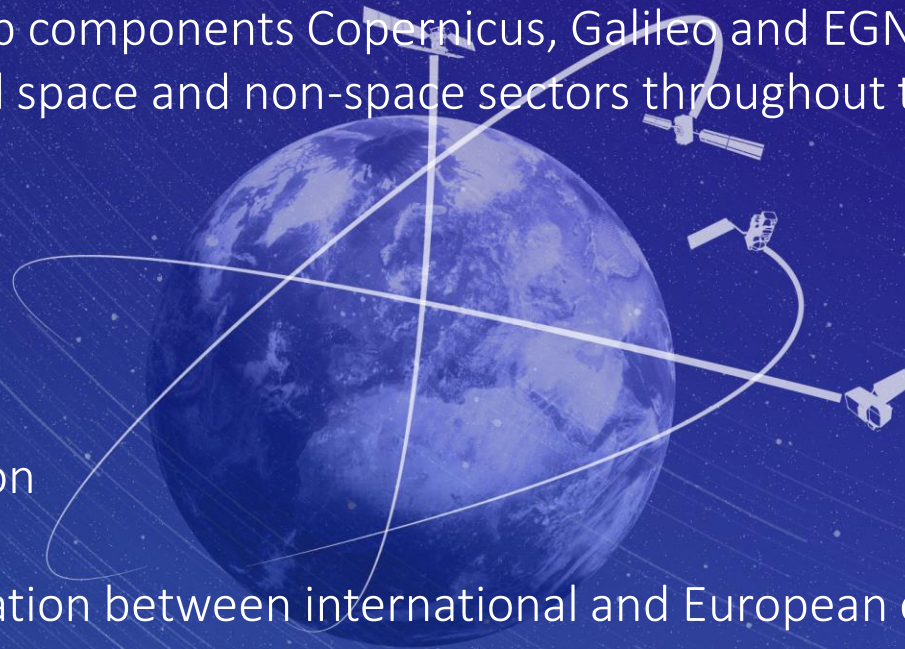
Initiative:

- European Commission - Directorate-General for Defence Industry and Space (DG DEFIS)
- Promote EU Space Programme and its flagship components Copernicus, Galileo and EGNOS worldwide and foster collaboration between the EU and global space and non-space sectors throughout the value chain.

Approach:

- Market Intelligence
- Information on EU space programmes
- Space diplomacy
- Business coaching service / Internationalisation

BC Objective: To facilitate international cooperation between international and European entities by creating opportunities for partnership/collaboration





What cooperations are supported?

NON-EUROPEAN ENTITIES

- Legally established in a eligible country (slide 5)
- Age min. 3 years
- Private or public company, space or non-space entities, space agencies, government institutions, universities...

APPLY NOW

Collaboration: commercial, technological, research, capacity building, initiation of a joint project or a joint proposal



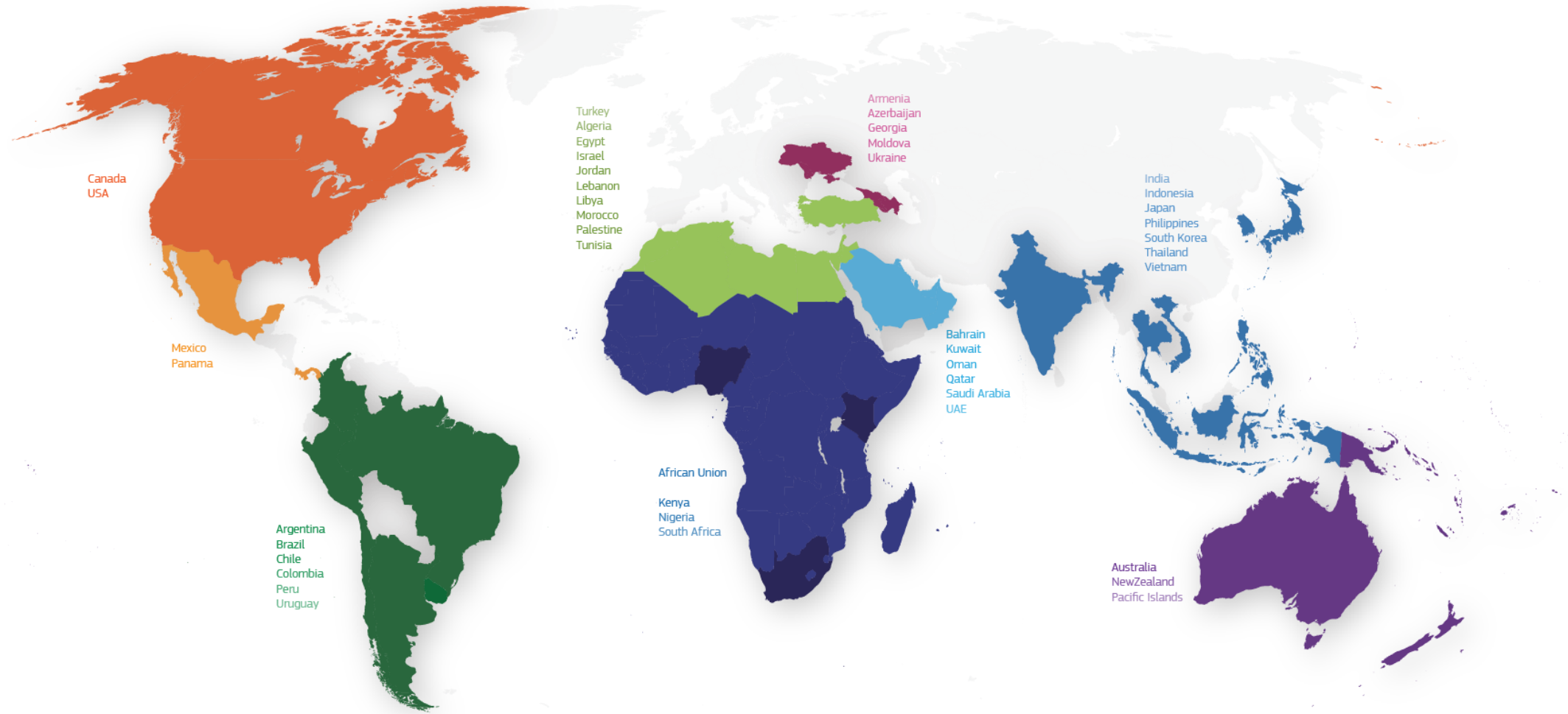
EUROPEAN ENTITIES

- Legally established or based in EU27
- Age min. 3 years
- SMEs using EU space tech: Galileo, Copernicus, EGNOS
- Any topic of space, environment, agriculture, marine and coastal areas, etc.

APPLY NOW

Object: use of spatial data, applications or technology of the EU space programme





Funded by the European Union

Promoting the European Union Space Programme





Supported cooperations: Europe and Latin America

Countries of the European Union:

Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden and Slovakia.



LAC

Mexico, Panama, Argentina, Brazil, Chile, Colombia, Peru Uruguay





How do we facilitate business opportunities?

Space is important for many fields of application
(There is no limitation of sectors or topics!)





How do we facilitate business opportunities?

Benefits in a nutshell:



FIRST-HAND
INSIGHTS INTO
EU SPACE
PROGRAMME



ACCESS TO
EUROPEAN SPACE
ACTORS FROM
INSTITUTIONS TO
INDUSTRY



EXCLUSIVE ACCESS
TO TRAINING



ACCESS TO
INTERNATIONAL
MARKET
INTELLIGENCE



COMPREHENSIVE
SUPPORT FOR
PARTNERSHIPS AND
COMMERCIAL
AGREEMENTS



COOPERATE WITH
KEY INTERNATIONAL
STAKEHOLDERS





Business Coaching process & feedback from participants

EU entities

Open call & selection of high potentials

Deal flow approved EU entities

Make EU entities

"internationalisation ready"

OFFERS

Step 1
General Business COACHING activities for EU entities

Insights from market reports / Onboarding for EU entities / Understanding needs and priorities/ Access and use of the closed platform / Insights and follow up from webinars and events / Coaching from Contractor / Individual guidance and support / Training videos / Communication

Step 2
Pitching, individual coaching and B2B MATCHMAKING for EU entities

Space Diplomacy events and webinars focusing on most targeted countries and topics / Pitching and matchmaking with potential partners and cooperations, individual assessment and coaching to find the right international partner

Feedback from coaching sessions
Individual and collective FEEDBACK by EU entities

Mismatches between the demand and offer from the past / Competitive pool of international companies / conflicting political barriers to reach targeted countries / language and cultural obstacles

FOCUS

Business coaching

Selected ones to many and customized bilateral approach

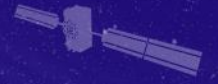
One to one and many to one

Achieve international business cooperation through customised coaching & B2B matchmaking - LOIs





How do we facilitate business opportunities?



Support for internationalization - online events, including matchmaking events

Virtual events to help you find business partners based on country and space related topics: For example, Oman, Qatar, Bahrain, Kuwait, Saudi Arabia, UAE, Israel, Bolivia, Chile, Colombia, Panama, South Africa, Mexico and Australia.



Online day | EU Space Programme benefits and business opportunities for agriculture and emergency response in Latin America

[Read all](#)



Webinar | The Copernicus Programme and its applications for environmental and infrastructure monitoring in the Gulf region

[Read all](#)



Business-to-Business | International cooperation between Gulf countries and the EU

[Read all](#)



Webinar | The Copernicus Programme and its applications for infrastructure and land degradation monitoring in UAE

[Read all](#)



Webinar | EU Space Programme and business opportunities for sustainable mining in Argentina

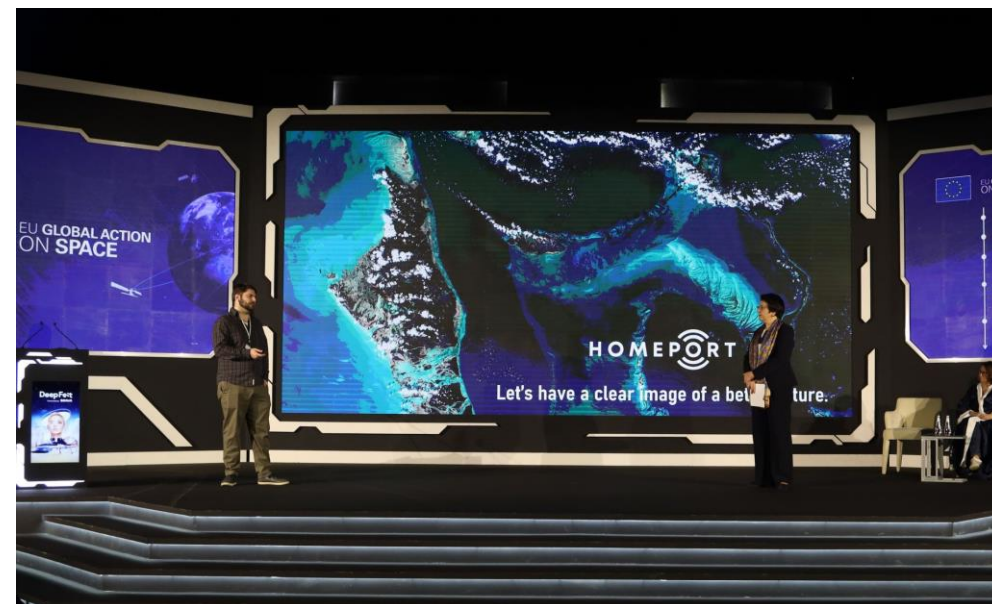
[Read all](#)





Support for internationalisation - Live events

Join us for dedicated EU Global Action Live events to meet new business partners in person: For example, Saudi Arabia, Côte d'Ivoire, Israel, Brazil, Panama, Dakar, Bonaire, etc.





Supporting internationalisation - Dedicated pitching sessions

Individual pitching opportunities: Unique and specific occasion for each country and topic, depending on the needs and priorities of targeted regions

16 MARCH 2023

16 - 17 MARCH 2023
THE SUKOSOL BANGKOK, BANGKOK THAILAND

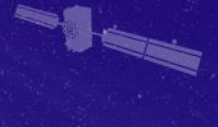
INTERNATIONAL SEMINAR ON THAILAND SPACE PROGRAM:
NEW SPACE ECONOMY THAILAND
A THAILAND SPACE PROGRAM DEFINING THE FUTURE OF THE NEW SPACE ECONOMY.

“EU Global Action in Space: Thailand Business Matching”

AN ONLINE MATCHING SESSION OF EU COMPANIES THAT ARE LOOKING TO COLLABORATE WITH THAI ENTITIES.
11 COMPANIES THAT USE THE EU SPACE PROGRAMME WILL PRESENT THEIR SERVICES APPLICABLE TO SEVERAL FIELDS
SUCH AS AGRICULTURE & FOOD, CLIMATE & ENERGY, BIODIVERSITY & ENVIRONMENTAL PROTECTION, DISASTER MANAGEMENT, ETC.

AgroApps PC, Geocledian spatial architects Geocledian GmbH, CarbonSpace, TerraNIS, SPHEER.AI Spheer.ai, accurate Agcurate B.V., rise Romanian InSpace Engineering SRI, World From Space World from Space s.r.o., SPACE SUR Sur Aerospace Spain SL, Mayday.ai, Randbee Randbee Consultants





Support for internationalization - Matchmaking Closed Platform

Successful participants have access to the EU Global Action on Space platform: this closed platform provides EU and non-EU stakeholders with access to other companies for networking and start a cooperation

The screenshot shows the 'EU SPACE WEBSITE' search interface. It features a search bar at the top with the text 'Search for companies, locations or hashtags'. Below the search bar are four filter dropdown menus: 'Region', 'Country', 'Industry', and 'Hashtags'. The 'Region' dropdown is open, showing a list of options: '--Select Region--', 'European Neighbourhood', 'Africa', 'Asia', 'Central America', 'South America', 'The Gulf Countries', 'North America', 'The Pacific', and 'EU'. A 'FILTER' button is located to the right of the dropdowns. In the background, there is a faint image of a satellite and some text, including 'Ltd' and 'ing A'.

Current data:
 126 EU space companies
 84 non-EU partners

Looking forward to initiating further international cooperation between EU and non-EU entities!

Constantly growing





Support for internationalisation (I) - Support programmes

We are constantly looking for international aid programs and regularly send you up-to-date information on European funding programmes. To obtain this, you need you to apply to the open call and become part of the EU Global Action Programme 😊!



Funded by the European Union

Promoting the European Union Space Programme





How do we facilitate business opportunities?

Apply now! The call is open until April 2024!

Open call until April 2024

Companies approved for the Business Coaching Service will be notified individually and will be provided with access to a closed platform via email

FAQ

EU ENTITIES

APPLY NOW

NON-EU ENTITIES

APPLY NOW

If you are already exploring international cooperation (meaning: you already have a pre-defined target market / market segment / potential partner) please send us an e-mail with the details to businesscoaching@eu-global-space.eu immediately after having registered.





<https://www.eu-global-space.eu/apply-now>

EU GLOBAL ACTION ON SPACE

BUSINESS COACHING

Join the Global Action on Space

Improve your company's visibility within our global professional network. Obtain access to target market insights, and receive tailored support for your company's growth activities. Benefit from access to a pool of experts, and find new partners to boost your business' global profile

APPLY NOW

WHO IS IT FOR
Eligibility

WHAT'S IN IT FOR YOU
Your growth opportunities

HOW DOES IT WORK
Process overview

WHY GLOBAL SPACE
Global action experts pool

Funded by the European Union

Promoting the European Union Space Programme





Thank you!

Let's stay in touch!

Contact: businesscoaching@eu-global-space.eu
Website: www.eu-global-space.eu/business-coaching
Apply now: www.eu-global-space.eu/apply-now





EU GLOBAL ACTION
ON SPACE

Coffee Break

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Promoting the European Union Space Programme





EU GLOBAL ACTION
ON SPACE

Session 1. Emergency Response from Space



Claude M. Cauwe,
Galileo – Satellite
Navigation, DG DEFIS,
European Commission



Juan Escalante,
Focal Point for the Copernicus
Emergency Management Service's
Rapid Mapping, Emergency
Response Coordination Centre, DG
ECHO, European Commission



Tobias Biermann,
DG DEFIS, European
Commission



Renee Babb,
GIS and Remote Sensing
Specialist, Caribbean
Disaster Emergency
Management Agency



A disaster just hit. How do satellite maps provide support?

EU Global Action on Space event Bonaire – 4 April 2024

Juan Escalante
Analyst, Situational Awareness Sector
DG ECHO.A2

SAS Mandate

- Ensuring situational awareness.
- Maintaining and further developing transnational early warning systems.
- Bridging the scientific and operational communities.
- Coordinating DG ECHO's contribution to the Integrated Situational Awareness report (ISAA report).



Can you tell me where we are? We're lost.

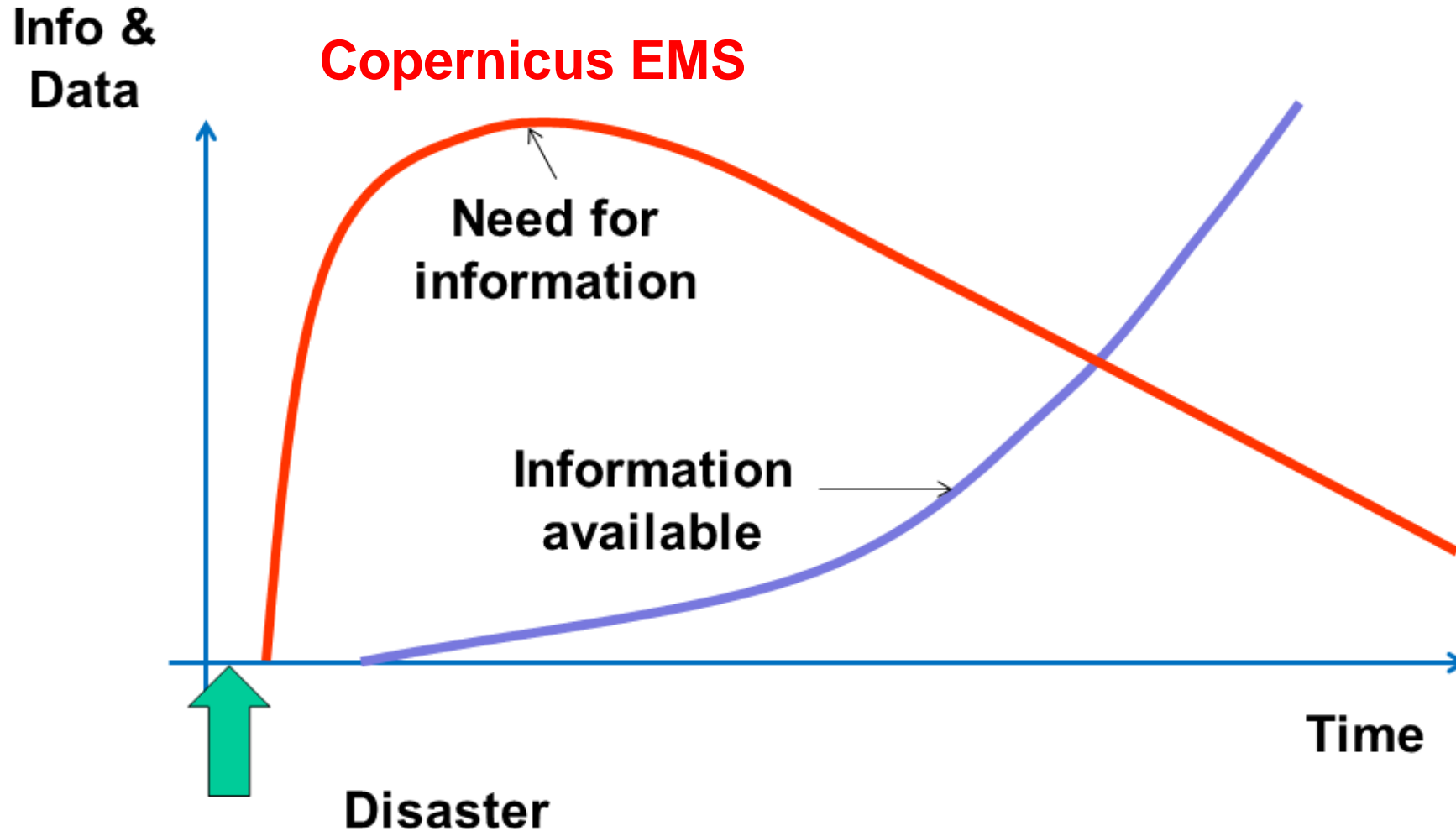
You are at Latitude 50 North and Longitude 4 East, at 100 m above sea level.

You must be a scientist. We asked you a simple question, you gave us too complex information and we're still lost.

And you must be a policymaker. I gave you an accurate answer, but you don't understand and blame me...



Need for information



Source: OCHA

A disaster just hit. How big? How bad?



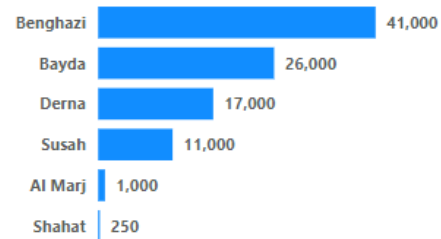
EMERGENCY RESPONSE COORDINATION CENTRE (ERCC)
LIBYA FLOODS IMPACT - COPERNICUS EMS SATELLITE MAPS DATA

City, Location

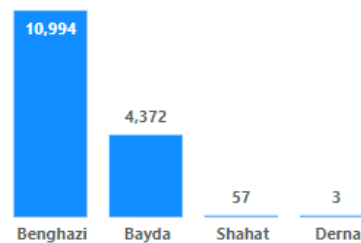
All

6 Areas of Interest **96,250** Population affected **25,851** Residential buildings affected **940** Buildings destroyed **9,485** Buildings damaged **15,426** Buildings potentially damaged

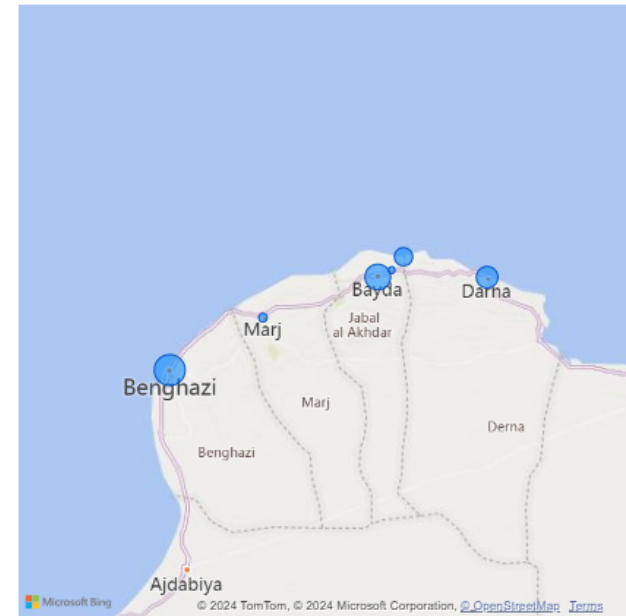
Population affected by City



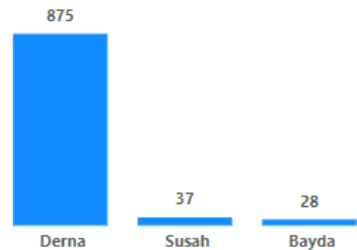
Buildings potentially damaged by City



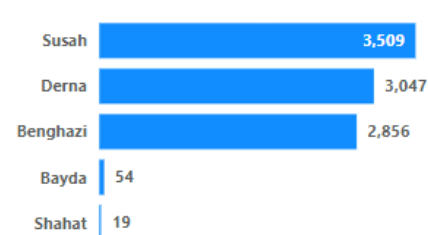
Affected population by city



Buildings destroyed by City



Buildings damaged by City



Base vector layer: OpenStreetMap © OpenStreetMap contributors (2022), Wikimapia.org, Geonames 2016, © OpenStreetMap contributors (2016), edited by the producer Copernicus Global Land Service: Land Cover (2016).
 Population data: Geo-Information and © European Commission, 2009
 Map: Light version: Bing, 2023
 The thematic layer has been derived from post-event satellite images using a
 semi-automatic approach and by means of visual interpretation.



European
 Commission

How we use the products?

- Situation awareness
- ECHO funding decision making
- ECHO field network
- European Civil Protection Teams deployed
- ECHO partners

Who is benefiting from them?



Who is benefiting from them?



President of the European Commission, Ursula von der Leyen, greets an EU liaison officer in Slovenia. © European Union, 2023 (photographer: Dati Bendo)

Who is benefiting from them?



Thank you



© European Union 2020

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Slide xx: **element concerned**, source: e.g. [Fotolia.com](https://www.fotolia.com/); Slide xx: **element concerned**, source: e.g. [iStock.com](https://www.istock.com/)

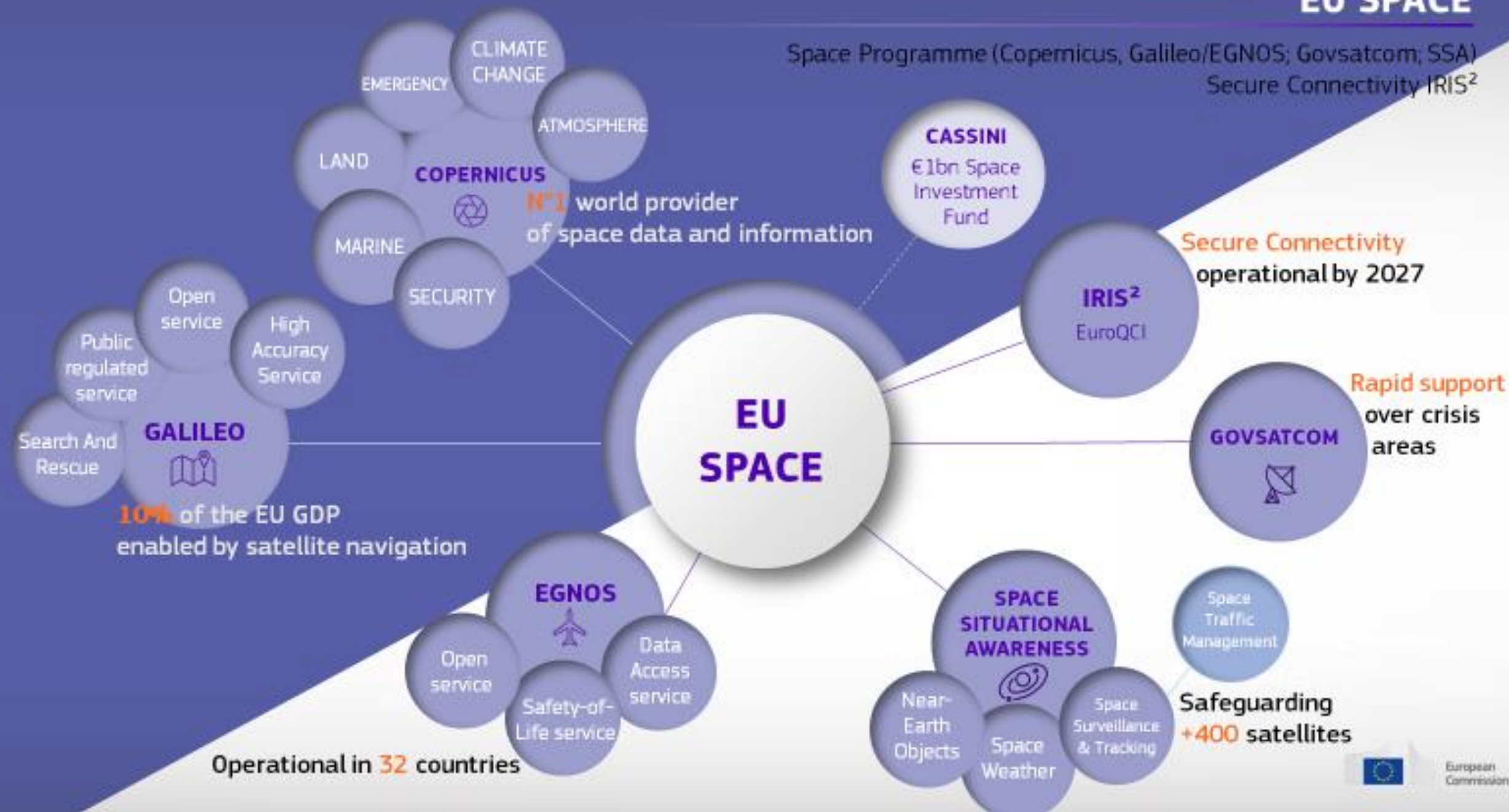




Copernicus Emergency Management Services

EU Global Action on Space event
Bonaire – 4 April 2024

Space Programme (Copernicus, Galileo/EGNOS; Govsatcom; SSA)
Secure Connectivity IRIS²





Emergency Management

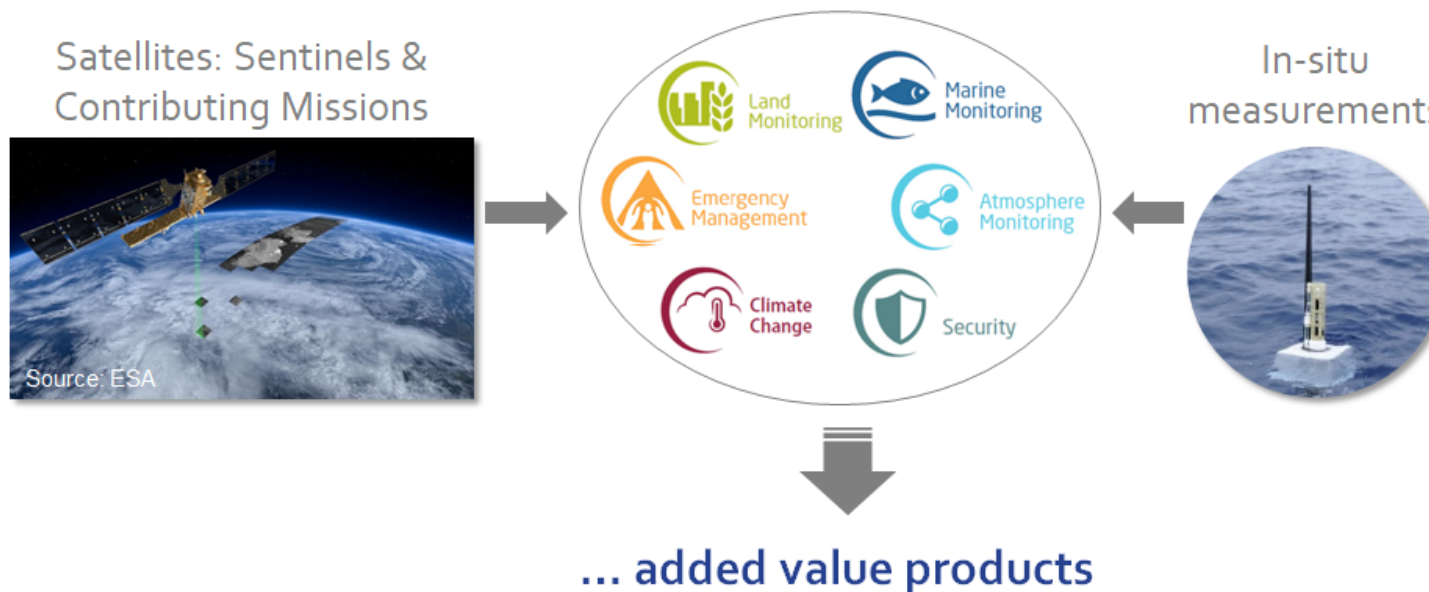


EU's Earth Observation Programmes

- Full, free and open data policy



6 services use Earth Observation data to deliver ...



COPERNICUS IS DRIVEN BY THE USERS





Overview of CEMS – Copernicus Emergency Management Service

It provides **timely and accurate geospatial information** (derived from satellite remote sensing data supplemented by available in situ or model data).

CEMS supports actors involved in the management of **natural and man-made disasters** with **complementary data and products**.

CEMS is managed by the **Joint Research Center** of the European Commission.

CEMS is a **fully operational** service (i.e. 24/7/365).

User-driven development.

It addresses **all phases of the disaster management cycle**:

- **Pre-disaster:**
 - Risk & vulnerability assessments, prevention, mitigation
 - Preparedness and early warning
- **Immediate response**
 - Event mapping and monitoring & Damage assessment
- **Post-disaster**
 - Recovery assessment, reconstruction and monitoring
 - Associated risk assessment

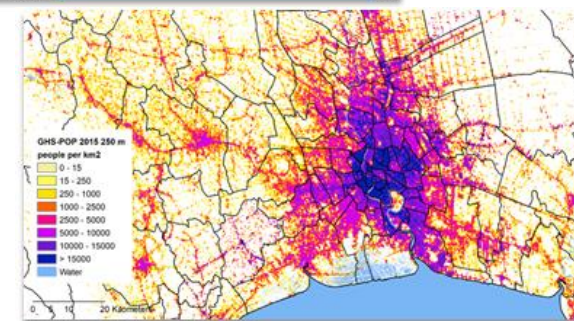
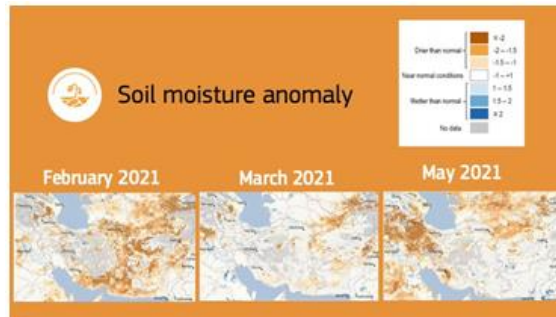
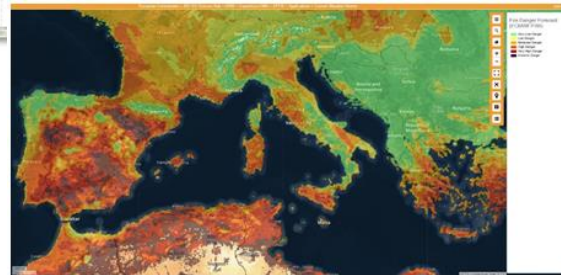
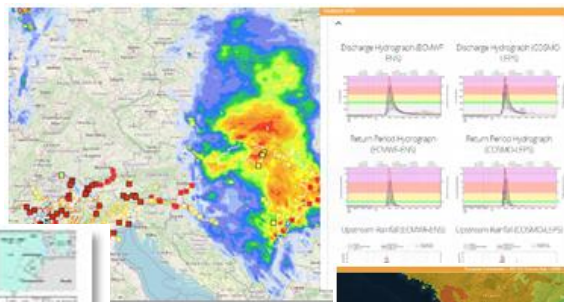
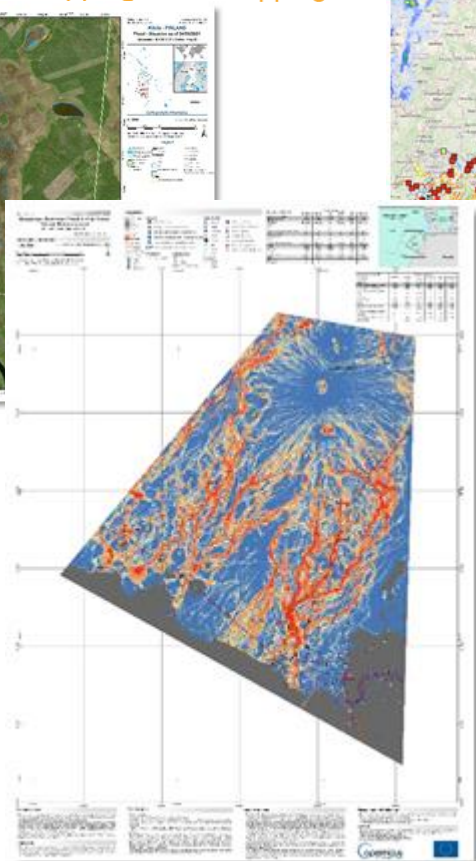




Emergency Management

Overview of CEMS

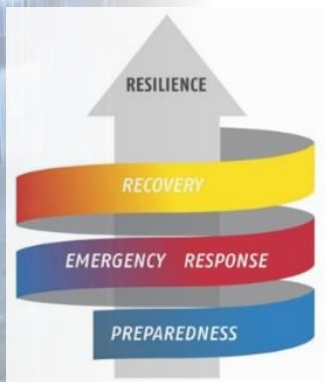
THE COPERNICUS EMERGENCY MANAGEMENT SERVICE





Data Access

CEMS / Service Overview



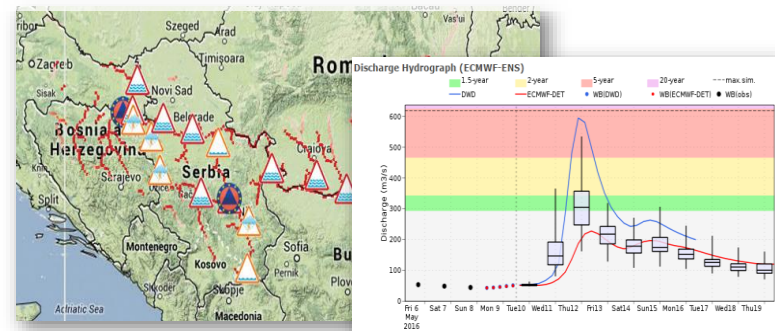
Scope

- Complementary to national efforts
- Supporting the EC's Emergency Response and Coordination Centre (ERCC)
- Focus on Europe but available globally



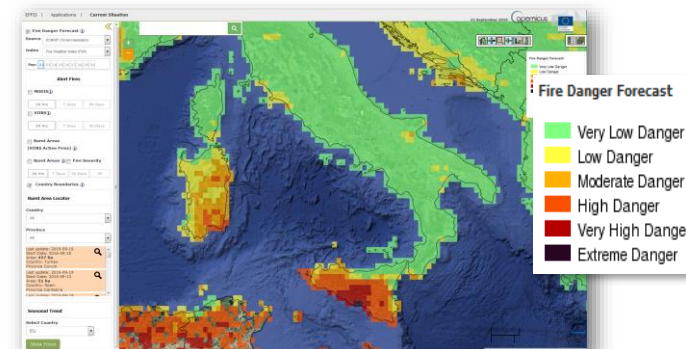
Flood Awareness System (EFAS - GLOFAS)

Flood monitoring and forecasting across Europe and Global



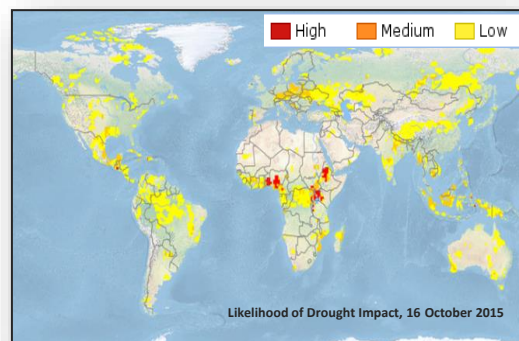
European Forest Fire Information System (EFFIS)

Near real-time & historical information on forest fires in the European, Middle Eastern & N-African regions



Drought Observatory (EDO – GDO)

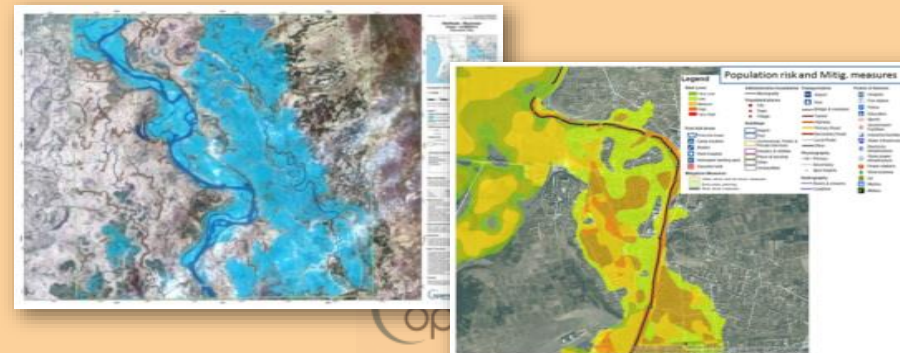
Early warning, monitoring & forecasting of droughts & their impacts



On-demand Mapping

On-demand provision of geospatial information in support of preparedness, emergency response, recovery for any type of disaster
Globally over 800 activations

Any disaster





Emergency
Management

CEMS – On Demand Mapping

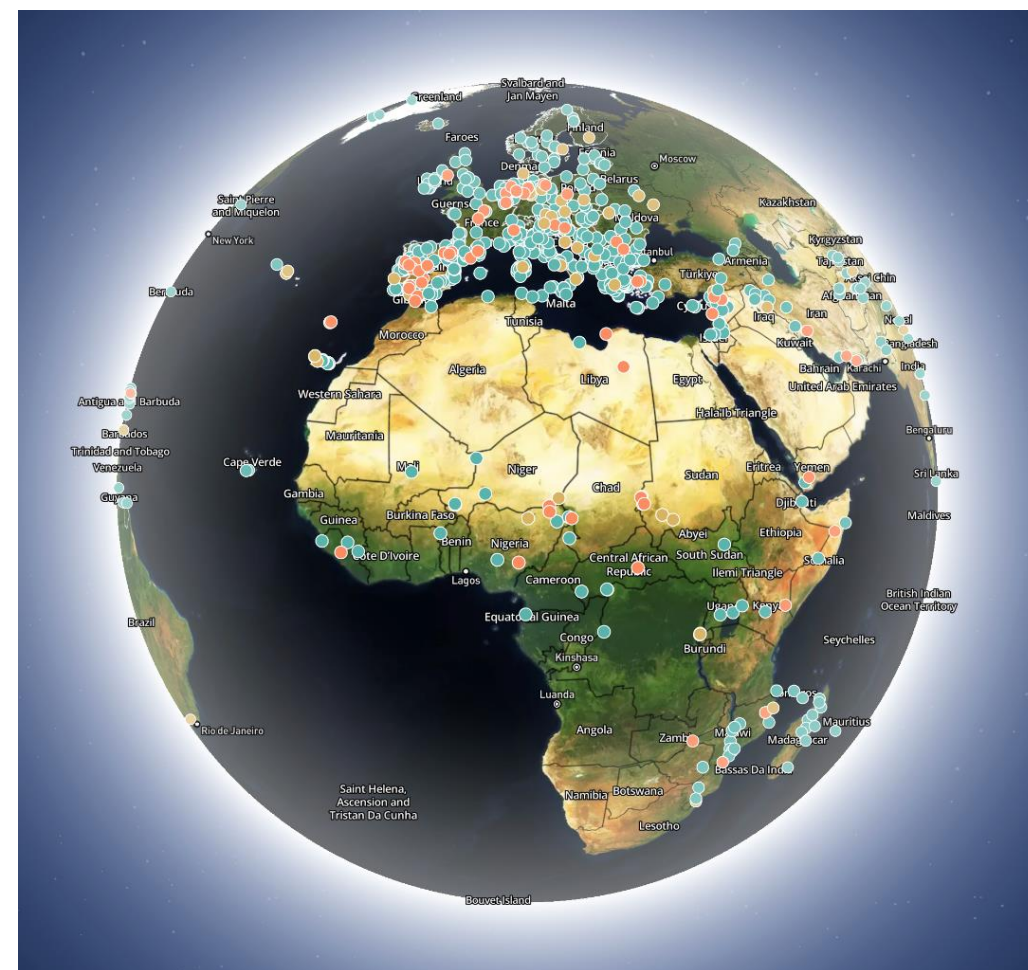
Copernicus Emergency Management Service (CEMS)

On-demand Mapping in the last 11 years

- Over **880 activations**
- More than **8000 products** released
- More than **10000 images** analyzed
- In more than **130 different countries**

2023:

- **Emergency Response:**
 - **69 activations**
- **Preparedness and Recovery:**
 - **38 activations**



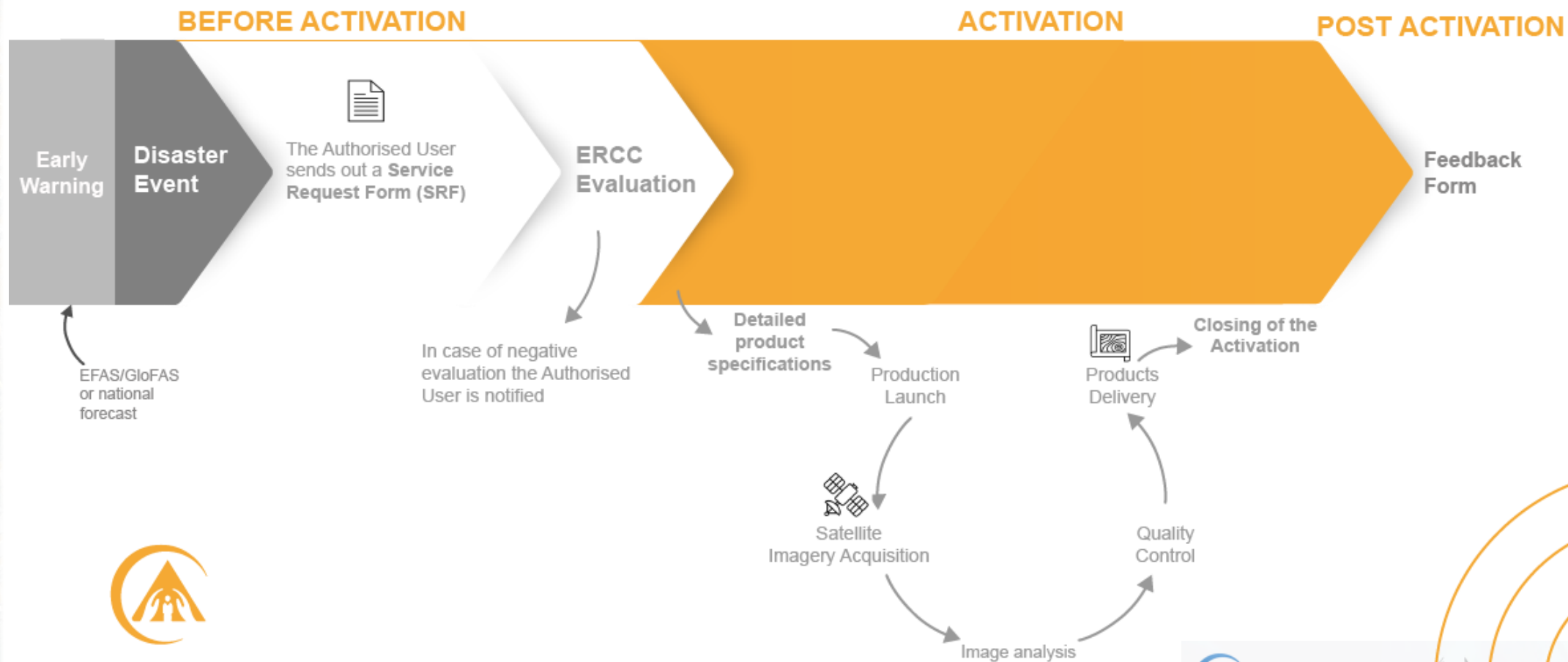


Emergency Management

CEMS – Copernicus Emergency Management Service



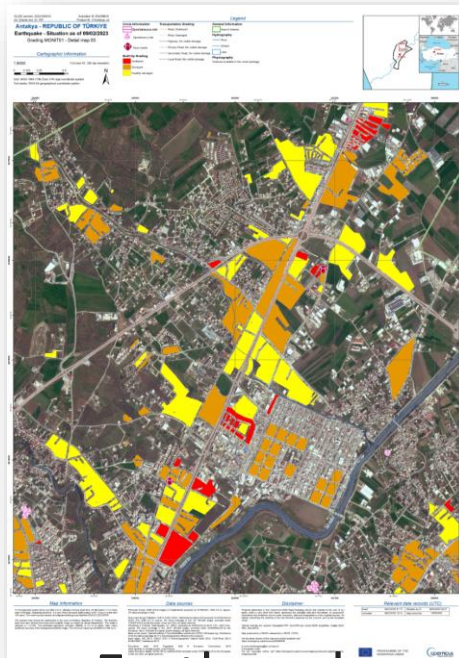
Support for Emergency Response



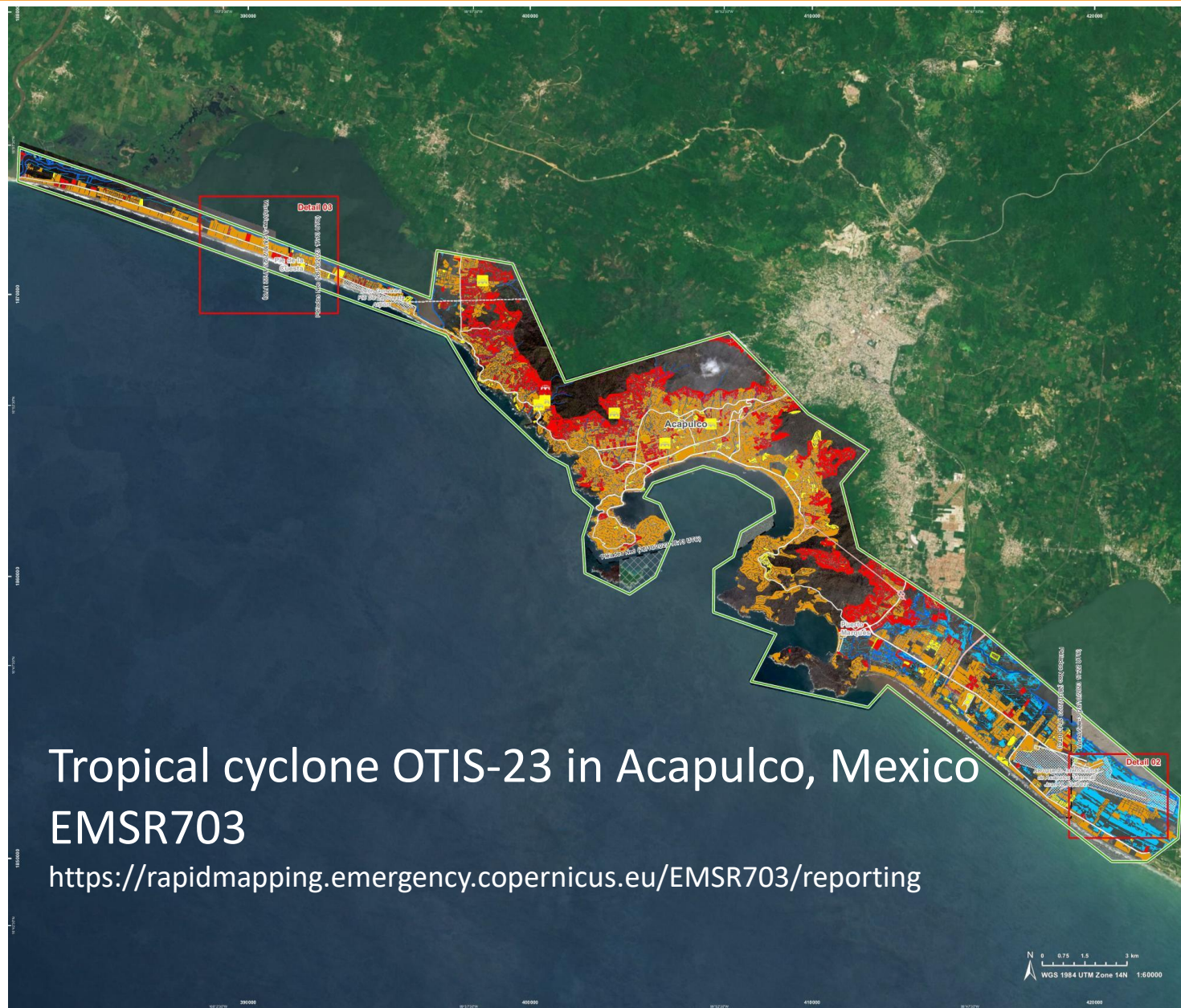
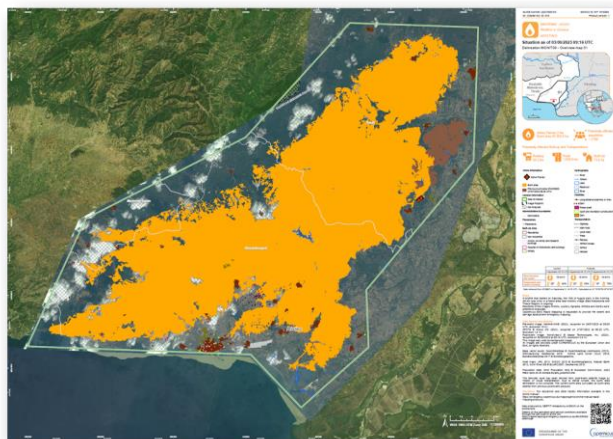


Emergency
Management

CEMS – Copernicus Emergency Management Service - Products



Earthquake
Forest Fire



Tropical cyclone OTIS-23 in Acapulco, Mexico
EMSR703

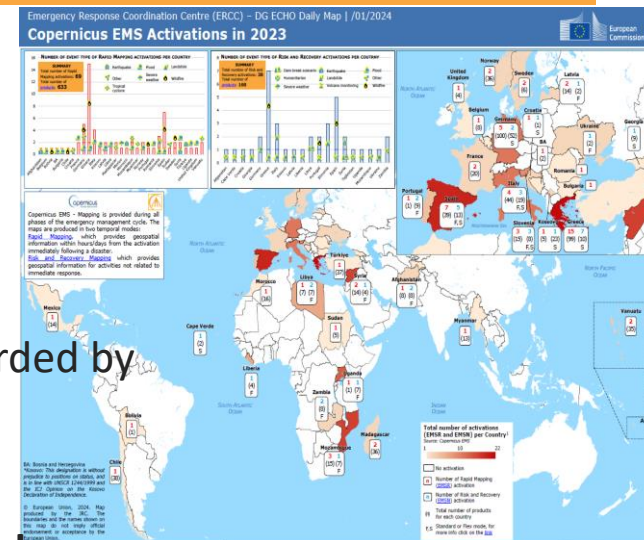
<https://rapidmapping.emergency.copernicus.eu/EMSR703/reporting>



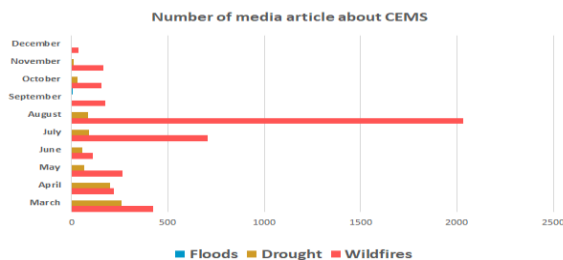
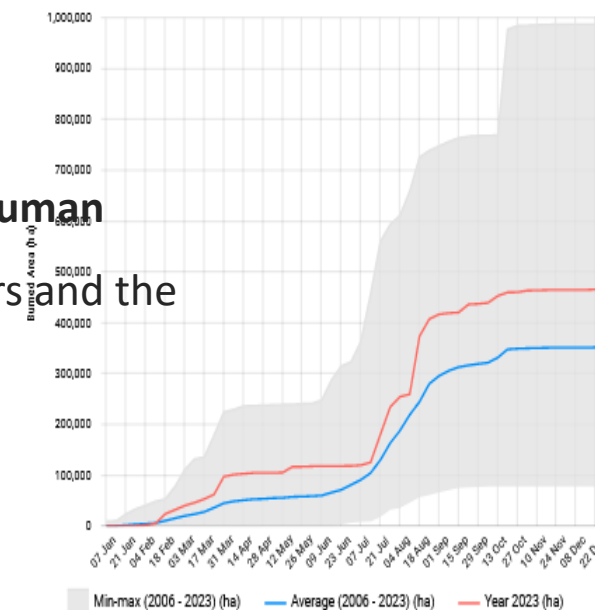
Emergency Management

CEMS – in numbers 2023

- 69 On-Demand mapping activations
- 10 analytical reports on severe droughts in Europe, Africa, and Asia
- 2023 wildfire season in Europe was the 3rd worst since data started being recorded by the CEMS European Forest Fire Information System (EFFIS)
- CEMS Flood Early Warning and Monitoring **evolution with the increase in spatial resolution** for EFAS (v5.0) and GloFAS (v4.0)
- Integration of **aerial component** for the On-Demand Mapping
- Improvement of the exposure mapping in 2023 with a **major release of Global Human Settlement (GHS) data**, including new products such as the built-up volume layers and the building typology layer
- User Uptake & Communication, **increase website visitors +22%**



EFFIS Weekly Cumulative Burnt Areas





Thank you

Copernicus Emergency Management Service

emergency.copernicus.eu

@CopernicusEMS



Fostering Innovation and Cooperation in Space between EU and LAC

4-5 April 2024, Delfins Beach Resort, Bonaire



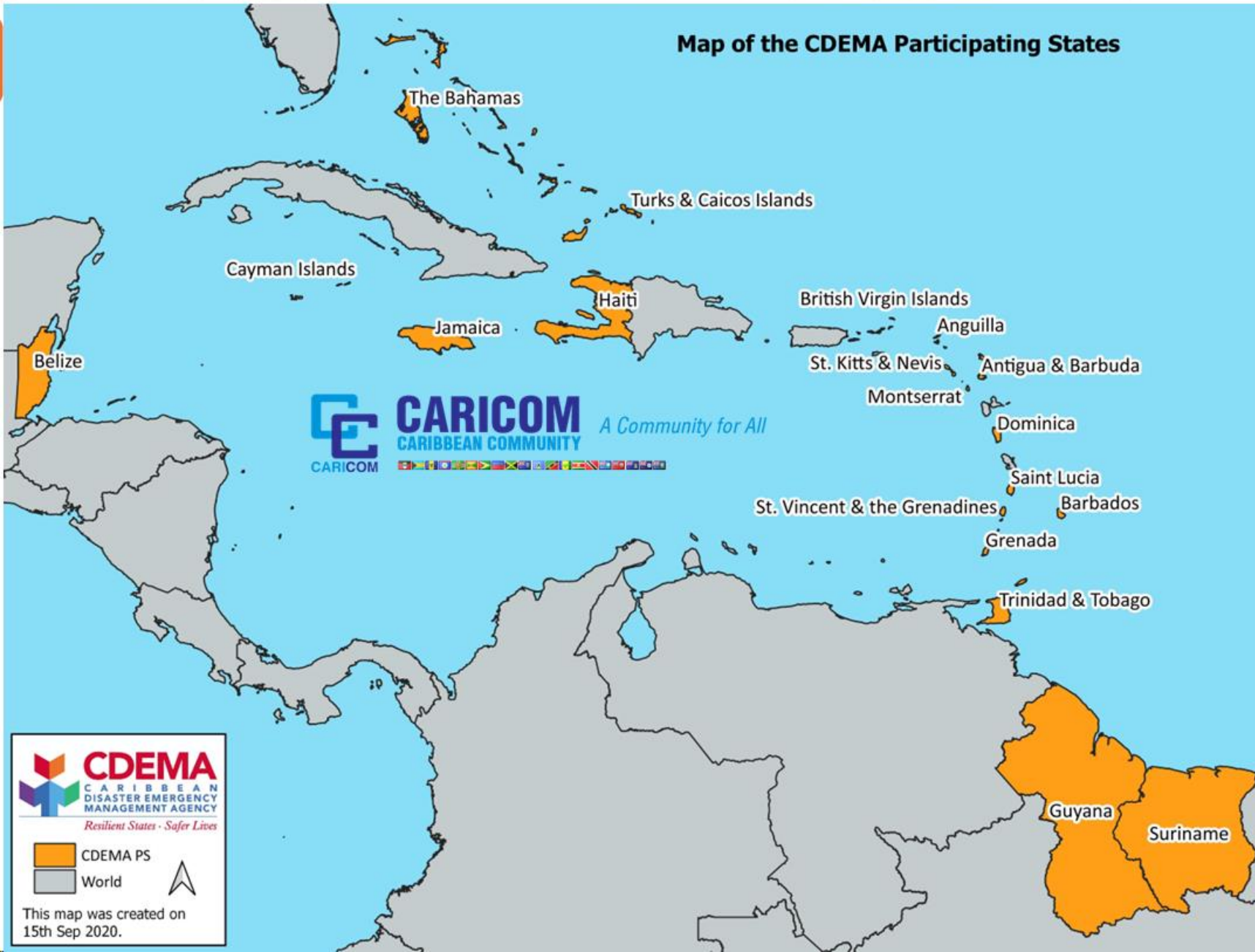


Session 1. Emergency Response from Space





Map of the CDEMA Participating States



Mandate:

- Mobilise and coordinate disaster relief
- Mitigate or eliminate the immediate consequences of disasters
- **Secure, coordinate, and provide reliable and comprehensive information on disasters to Participating States**
- Encourage disaster loss reduction, cooperative arrangements, and mechanisms
- Establish, enhance and maintain adequate emergency disaster response capabilities among the Participating States

CDEMA
CARIBBEAN
DISASTER EMERGENCY
MANAGEMENT AGENCY
Resilient States - Safer Lives

CDEMA PS
 World

This map was created on 15th Sep 2020.



Mechanism for Activating the Copernicus EMS



To be sent to the ERCC (24/365 availability) Email: echo-ercc@ec.europa.eu
Tel: +32-2-29-21112

The service request must be communicated by email AND followed by a phone call to the ERCC

Please provide as much information as you can to ensure efficient processing of your request. The earlier a request form is submitted, the sooner satellites can be tasked for image acquisition.

For more information on the service and a printable/editable version of this form, please refer to <http://emergency.copernicus.eu/mapping/ems/how-use-service>. In case you need help, the ERCC will support you.

To be sent to the ERCC (Mon-Fri 9-17h) Email: echo-ercc@ec.europa.eu
Tel: +32-2-29-21112

Please provide the information requested in the areas marked in blue. For more information on the service and a printable/editable version of this form, please refer to <http://emergency.copernicus.eu>.

Activation details
Activating institution
National



Delegation of The European Union to Barbados, The Eastern Caribbean States, OECS and CARICOM/CARIFORUM



DG ECHO's Emergency Response Coordination Centre (ERCC)



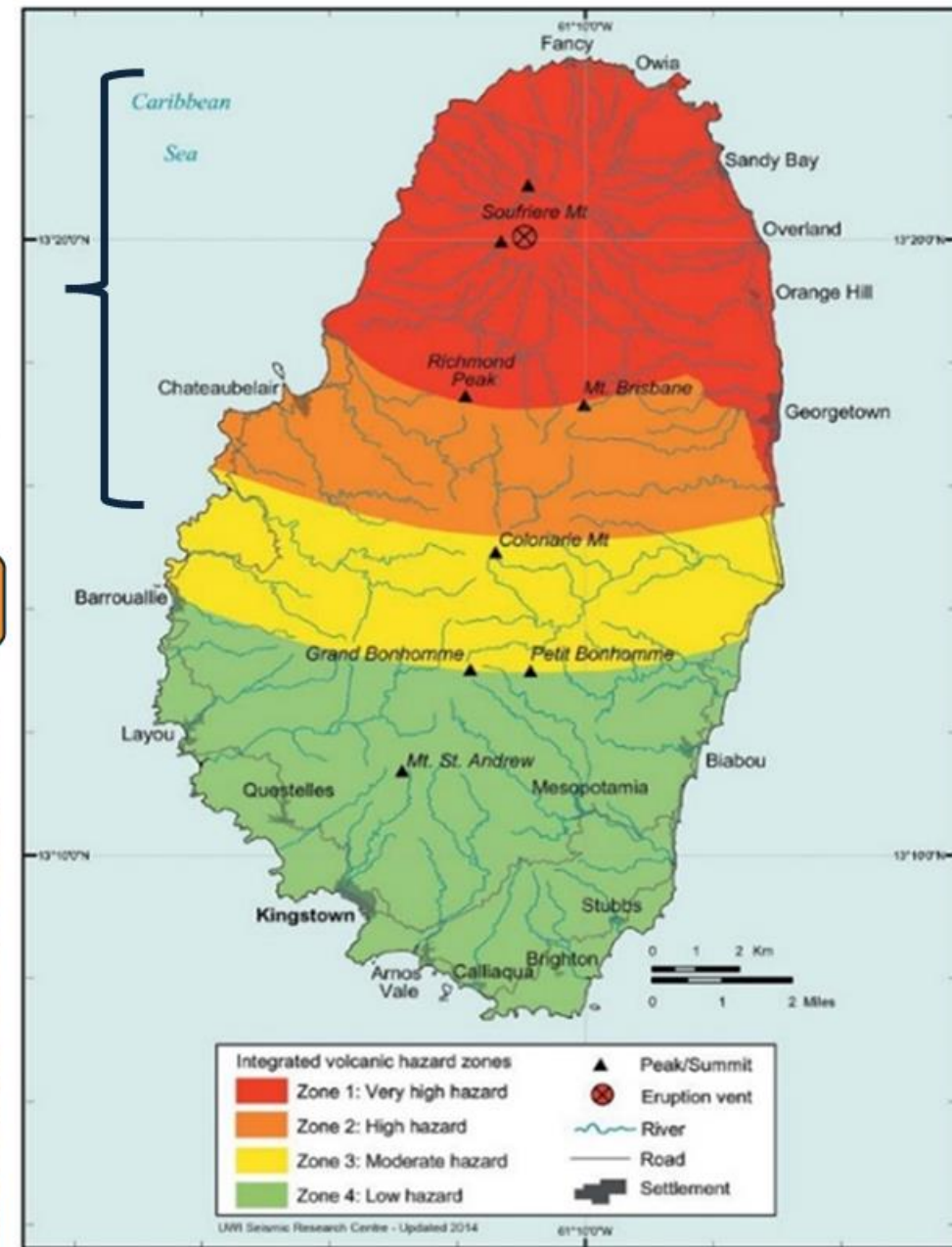
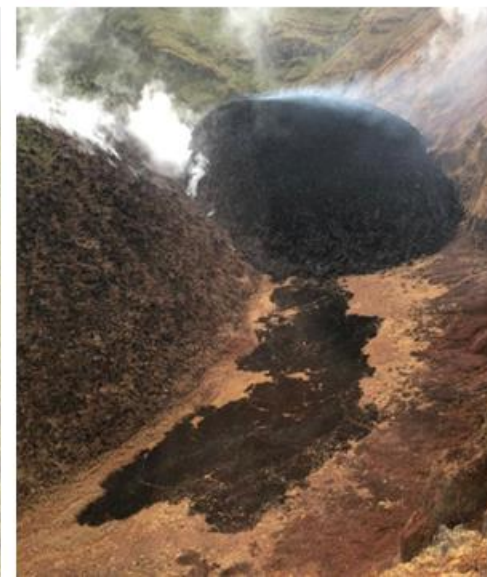
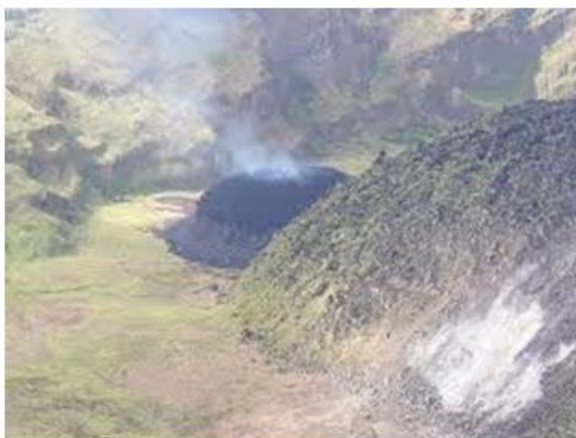


La Soufriere Effusive Eruption – 29 December 2020



Evacuation Planning for ~ 20k persons from **Red and Orange Zones** to **Yellow and Green Zones**

ALERT LEVEL





La Soufriere Volcanic Eruption – 9 April 2021

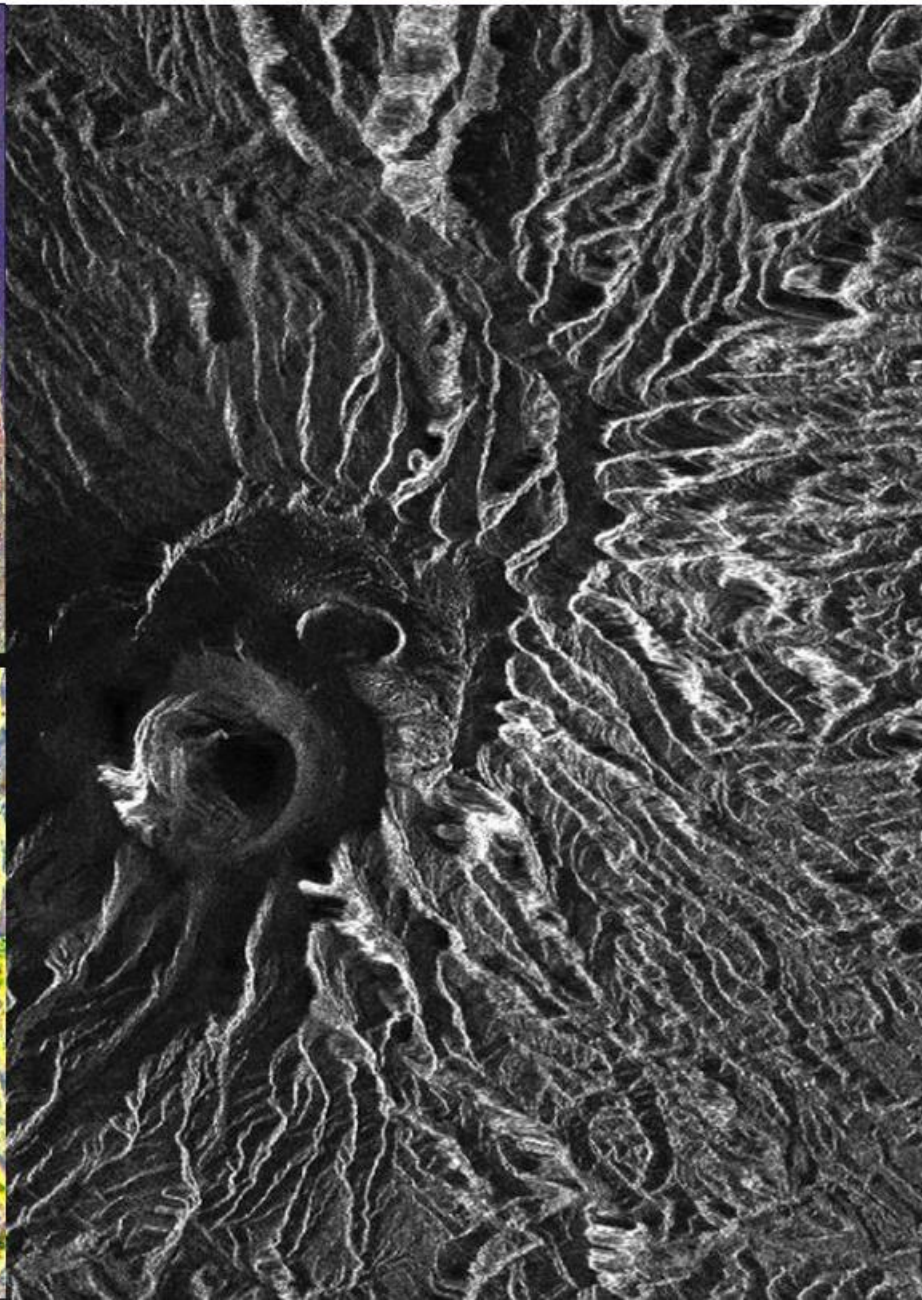
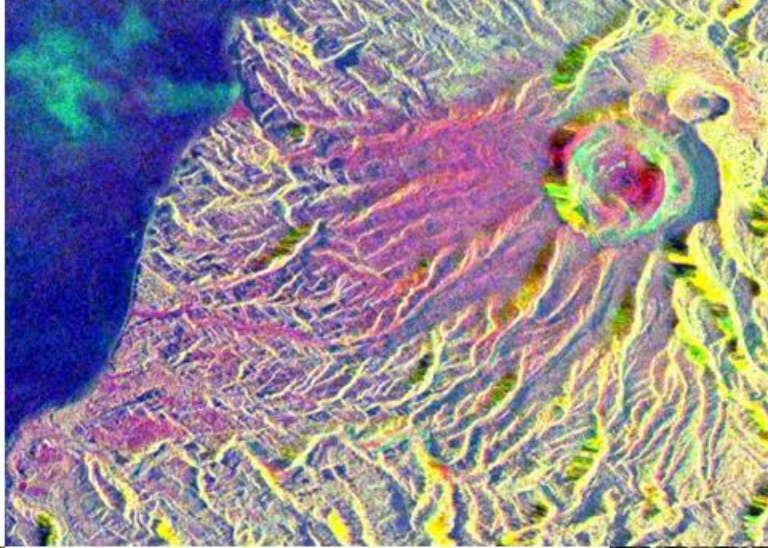




MTC - COSMO-SkyMed on 02/03/2021
and on 15/04/2021 at 21:44 UTC



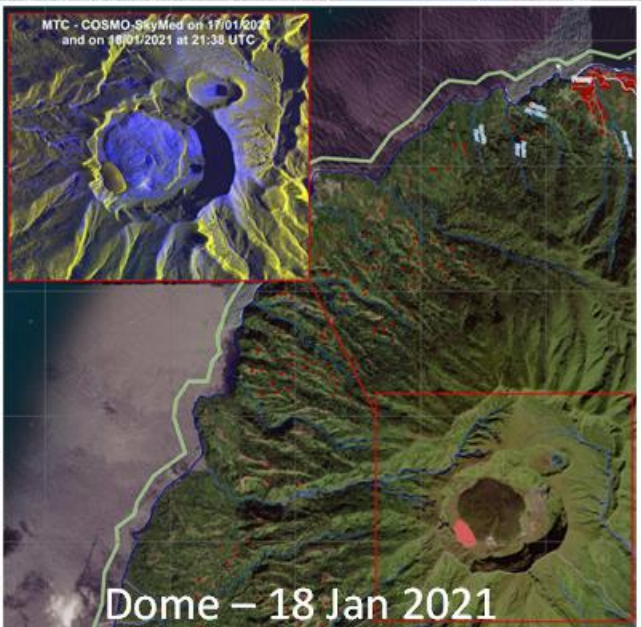
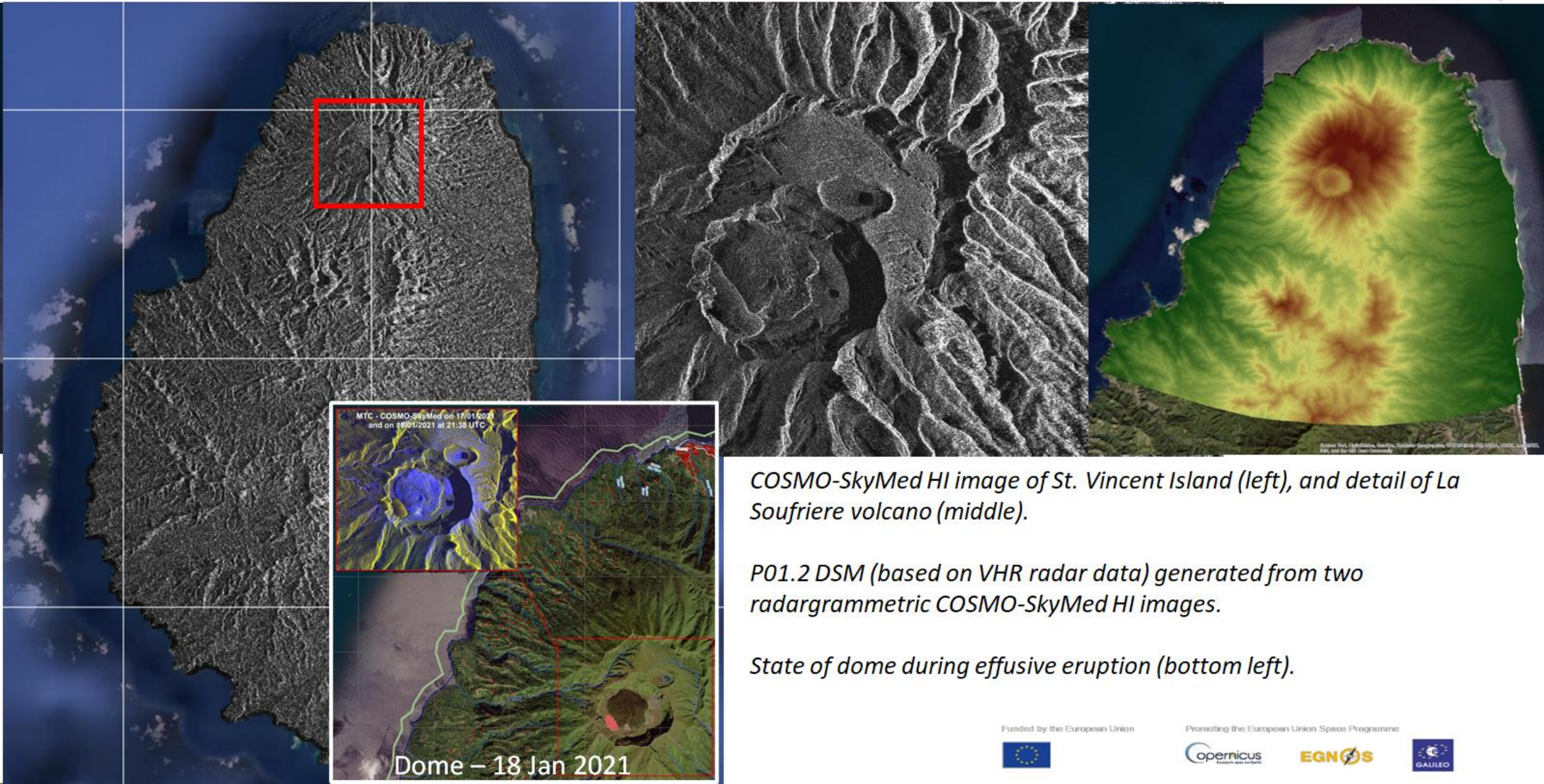
MTC - COSMO-SkyMed on 02/03/2021
and on 11/04/2021 at 21:44 UTC



La Soufriere volcano, situated on the main island of St. Vincent and the Grenadines, began erupting effusively at the end of December 2020. On 9 April 2021 an explosive eruption occurred, forming a plum of volcanic ash, which reached 8 km height. Ash fall has been recorded at the Argyle International Airport. An evacuation order was issued to all residents (16,000) living in the red zones (NE and NW of the island).

In this 15th April 2021 image, ash deposits were detected along the slopes of the volcano to the coast.





COSMO-SkyMed HI image of St. Vincent Island (left), and detail of La Soufriere volcano (middle).

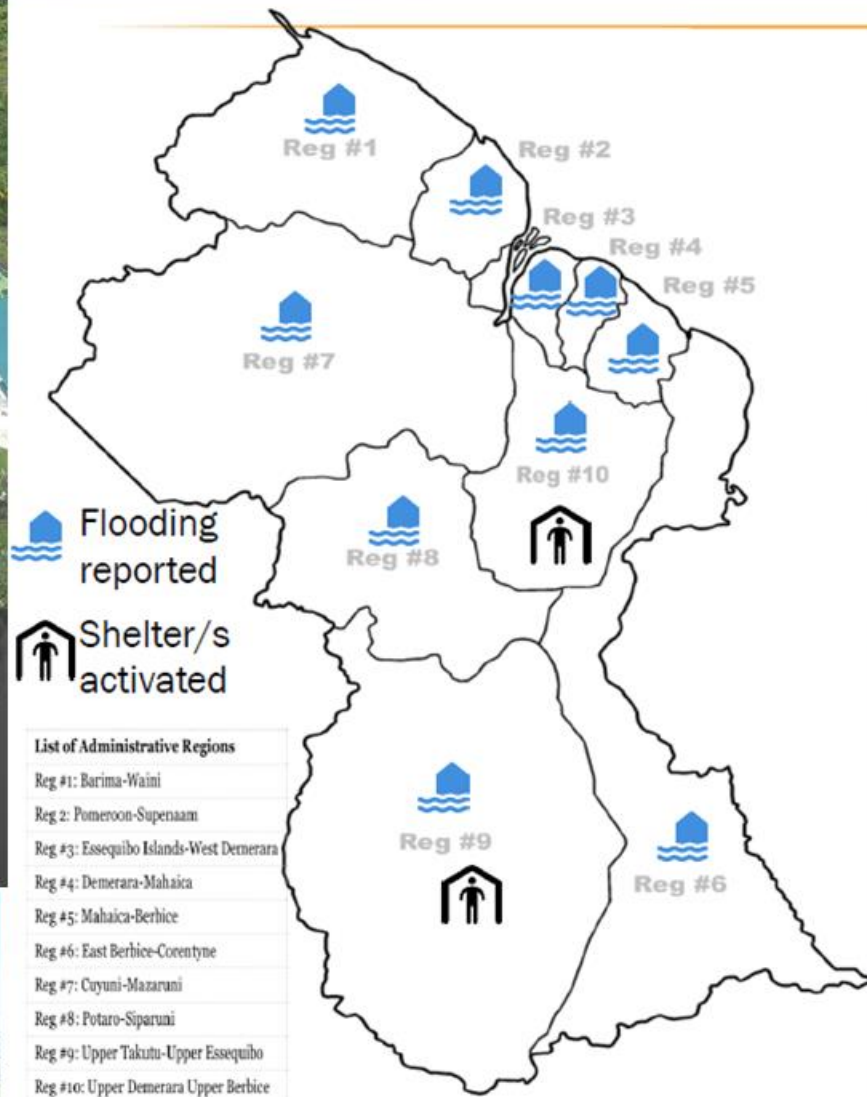
P01.2 DSM (based on VHR radar data) generated from two radargrammetric COSMO-SkyMed HI images.

State of dome during effusive eruption (bottom left).

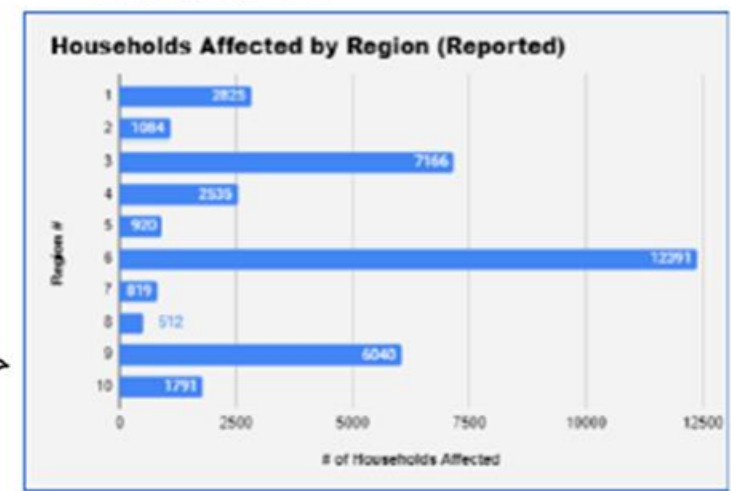
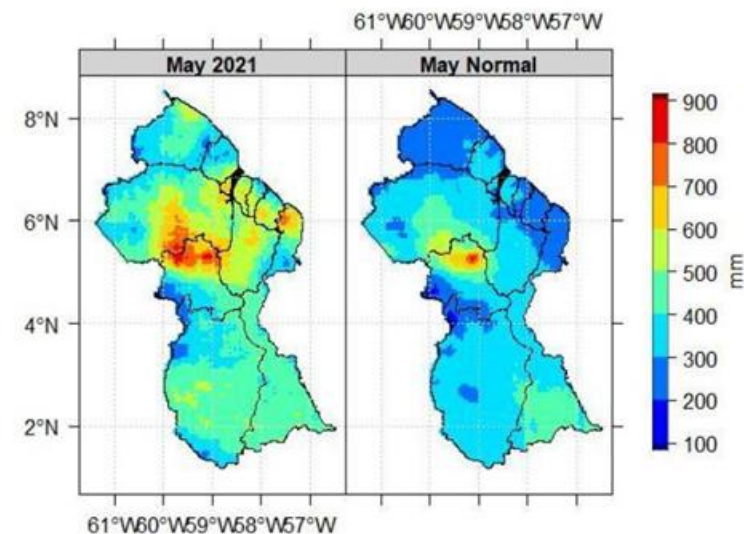




Guyana Floods 2021



May 2021 Rainfall compared to May Normal



GRAND TOTAL (REPORTED) = 36,083





EMSR514: Guyana Flood – April 2021

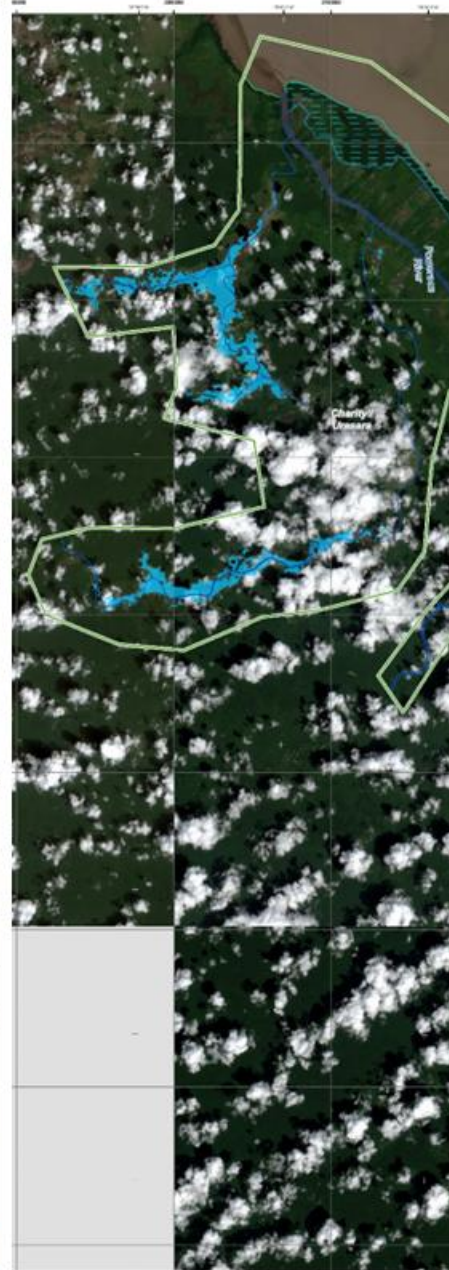


Map Information
This map was created using Copernicus Sentinel-1 SAR data. The map shows the flooded area as of 04/06/2021. The map is based on the Copernicus Sentinel-1 SAR data. The map is based on the Copernicus Sentinel-1 SAR data. The map is based on the Copernicus Sentinel-1 SAR data.

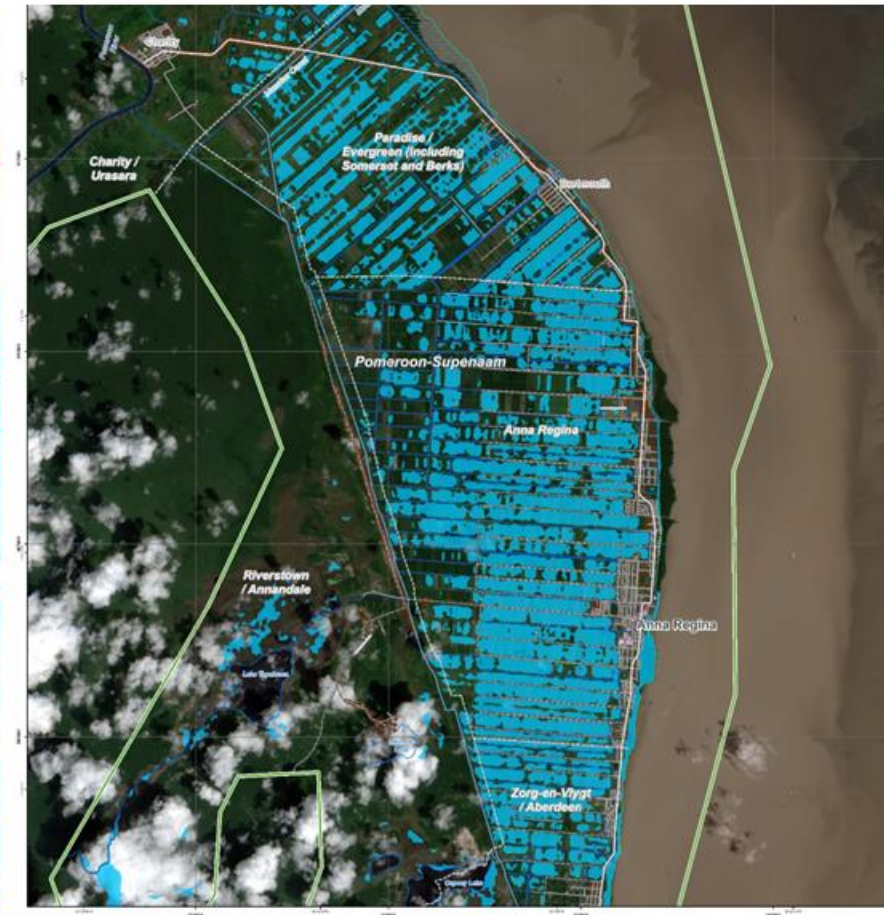
Data sources
Copernicus Sentinel-1 SAR data (ESA)

Disclaimer
The map is based on the Copernicus Sentinel-1 SAR data. The map is based on the Copernicus Sentinel-1 SAR data. The map is based on the Copernicus Sentinel-1 SAR data.

Relevant date records (UTC)



Heavy rainfall during the month of June flooded more than 28000 households in Guyana. The high water registered due to severe rainfalls either destroyed homes, leaving livestock and domestic animals in distress or farmlands inundated, resulting in crop loss and food insecurity.





Resilient States · Safer Lives



Participating States:

Anguilla, Antigua and Barbuda, The Commonwealth of The Bahamas, Barbados, Belize, Cayman Islands, The Commonwealth of Dominica, Grenada, Republic of Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, Republic of Trinidad and Tobago, Turks and Caicos Islands, Virgin Islands (U.K.)





EU GLOBAL ACTION
ON SPACE

Lunch Break

Funded by the European Union



Promoting the European Union Space Programme





EU GLOBAL ACTION
ON SPACE

Demo Session 1: EU space data applications for Emergency Response



Grega Milcinski,
Copernicus Data Space
Ecosystem



Aya Radi,
Business developer & COO,
Global Smart Rescue



Massimiliano Rossi,
CGR S.p.A.



data capture, management and distribution

Our work cover all aspects of land management including geohazard monitoring, crop production, forestry assessment, emergency and Carbon finance.

Technology agnostic

optical, radar and thermal and hyperspectral, in-situ

Platform agnostic

we operate with aircrafts (proprietary fleet, we flew several million of ha in EMEA), drones, and Space borne imagery

Tailored solutions to solve Complex land and climate challenges



Custom sensing solutions





Emergency Management solutions

Data capture supply to the Copernicus EMS

Aerial Component *Manned and unmanned components:

Piloted aerial images acquisition:

CGR leads a consortium of European Companies contributing to acquire very high-resolution aerial data over all Europe in support of emergency operations

Aerial component complements and fills gaps in space borne imagery provision: notoriously resolution, cloud covers, delays due to permanent weather, sensors



How the contract works (Jul 22 - Jul 26):

- Established a Joint venture with all major aerial services providers in Europe
- Unique point of contact and clear protocol for areas among partners
- Shared assets: over 20 photogrammetric sensors,
- 18 LIDAR sensors, 26 aircrafts
- Standard simplified products and deliveries
- Simplified pre-approval and military permissions
- From take-off to data transfer (16-48 hh)



HEXAGON

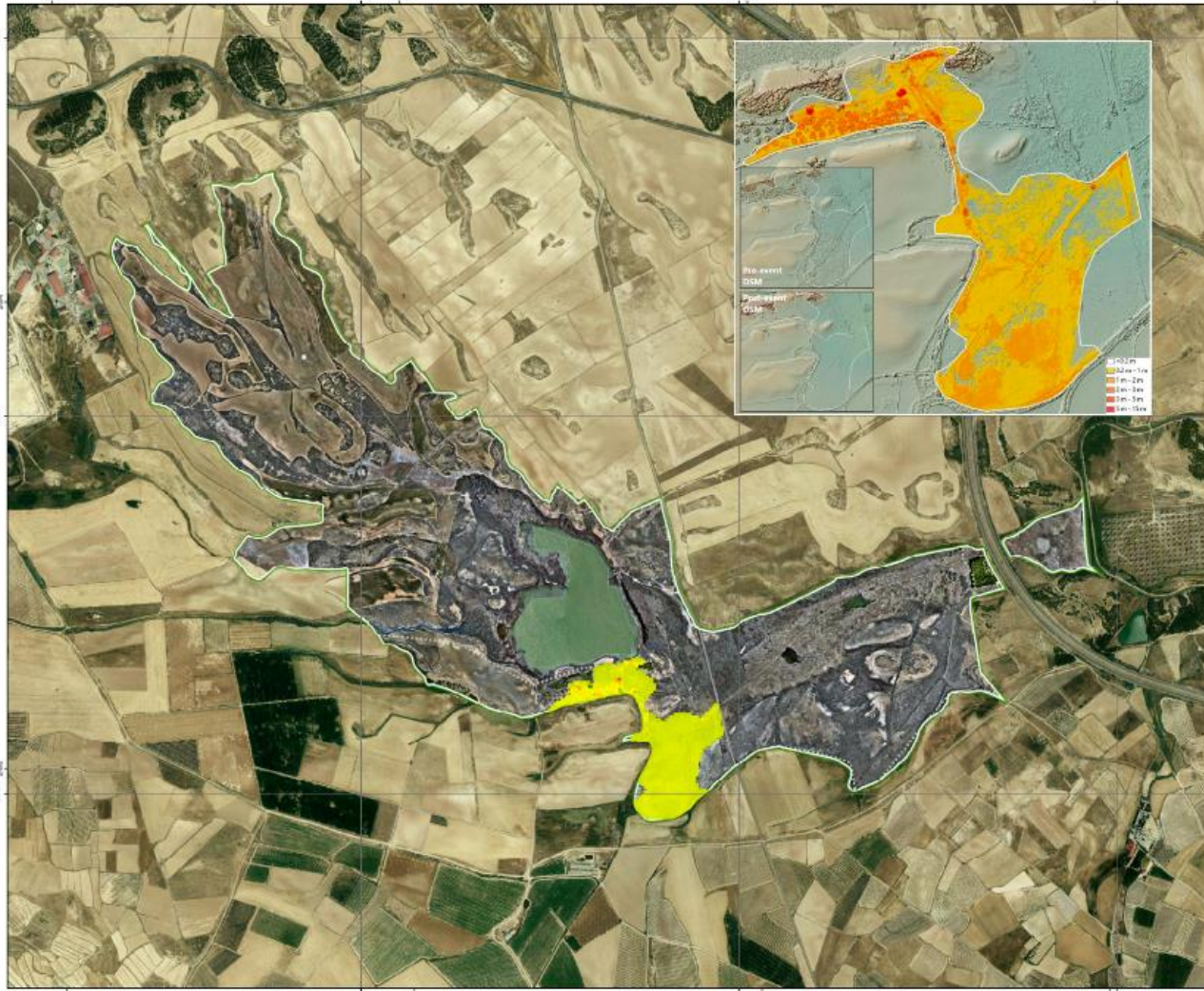




LIST OF ACTIVATIONS AERIAL COMPONENT (MANNED)

Act number	Title	Date
EMSR705	Dams damage assessment, Italy	Aug-23
EMSR445	Riverine Flood LIDAR assessment, Romania	Jul-23
EMSN173, ESMN175	Landslide delineation and monitoring, Slovenia	Jun-23
EMSN156	Emilia-Romagna floods, Italy	May-23
EMSN148	Forest Fire in a Natura 2000 Site, Spain	Mar-23
EMSR643, EMSN142	Mudflow in Ischia, Italy	Nov-22
EMSN149, EMSR618	Forest Fire, Portugal	Aug-22

<https://emergency.copernicus.eu/mapping/ems/information-bulletin-170-introducing-aerial-component-improve-cems-mapping-products>



CLIENT: MINISTERIO DE AGRICULTURA, PESCA Y ALIMENTACIÓN
 PROYECTO: BALSAS DEL PULGUER, ESPAÑA
Balsas del Pulguer - SPAIN
Forest Fire Impact Assessment
 Biomass loss - Overview

Cartographic Information
 Scale: 1:7,000
 Date: 2013-10-15
 Projection: UTM Zone 30N
 Datum: ETRS89
 Spheroid: Everest
 Datum: Everest
 Units: Meter

Legend
 Biomass loss: 0-100%, 100-150%, 150-200%, 200-250%, 250-300%, 300-350%, 350-400%, 400-450%, 450-500%, 500-550%, 550-600%, 600-650%, 650-700%, 700-750%, 750-800%, 800-850%, 850-900%, 900-950%, 950-1000%
 General Information: Forest of Interest
 Administrative boundaries: Municipality, Province
 Hydrography: Canal, Stream, River
 Buildings: Pastoral

Map Information
 This map is a derivative of the biomass loss assessment for the area of Balsas del Pulguer, Spain, conducted by the Copernicus Space Emergency Response Centre (CSERC) as part of the Copernicus Space Emergency Response Centre (CSERC) project. The map is intended for informational purposes only and should not be used for any other purpose. The information contained in this map is derived from the Copernicus Space Emergency Response Centre (CSERC) project. The information contained in this map is derived from the Copernicus Space Emergency Response Centre (CSERC) project.

Map Production
 The project was funded by the Spanish Government through the Copernicus Space Emergency Response Centre (CSERC) project. The project was funded by the Spanish Government through the Copernicus Space Emergency Response Centre (CSERC) project.

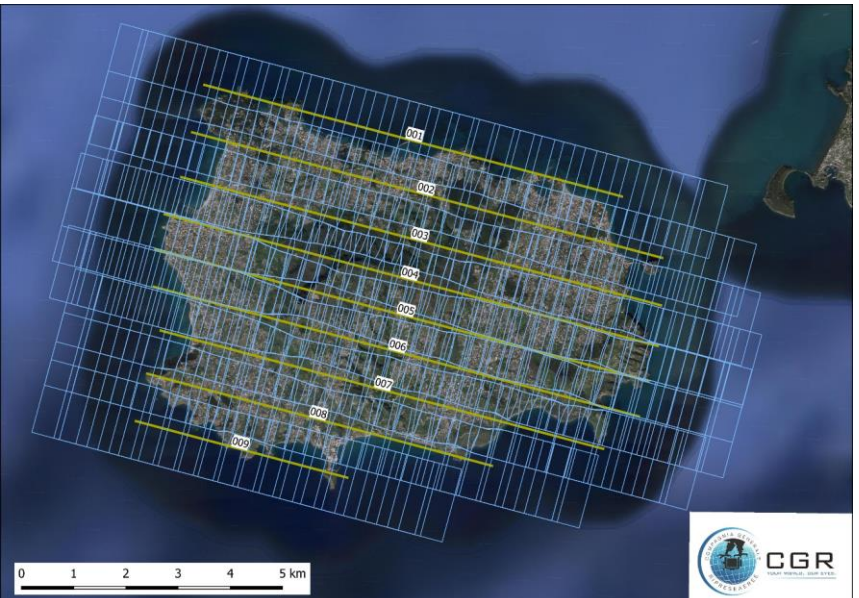
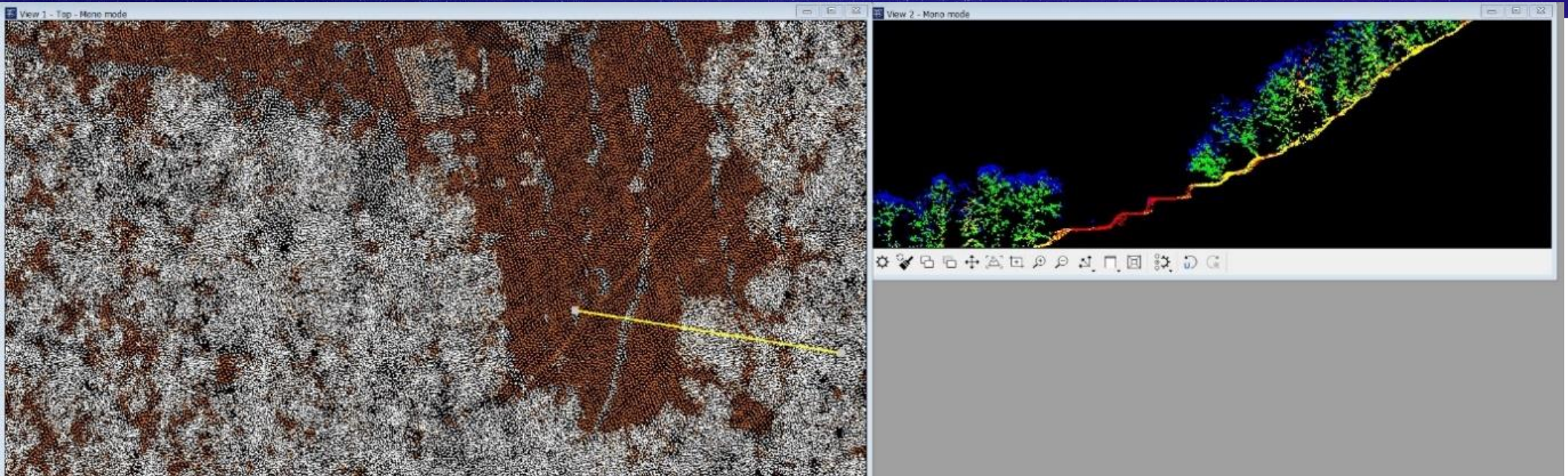
Data Sources
 The main data source is the Copernicus Space Emergency Response Centre (CSERC) project. The main data source is the Copernicus Space Emergency Response Centre (CSERC) project.

Disclaimer
 The information contained in this map is derived from the Copernicus Space Emergency Response Centre (CSERC) project. The information contained in this map is derived from the Copernicus Space Emergency Response Centre (CSERC) project.

Copernicus
 European Union

Example of deliveries

Address future Space-based monitoring systems



FLIGHT PLAN OVER ISCHIA ISLAND - FINAL PRODUCTS DELIVERED

Ortophoto:

- Raw images – Tiff format
- Ortophoto RGBI Tile size 1x1 km - GeoTiff format
- DEM used for rectification – Geotiff format

LiDAR

- Raw data point cloud – Laz 1.4 format
- Classified point cloud - Tile size 1x1 km – ASPRS Laz 1.4 format
- DSM and DEM - Tile size 1x1 km – ESRI ASCII GRID format





EMILIA-ROMAGNA FLOODS, ITALY

IMAGE RGB (SAMPLE)

IMAGE INFRARED (SAMPLE)





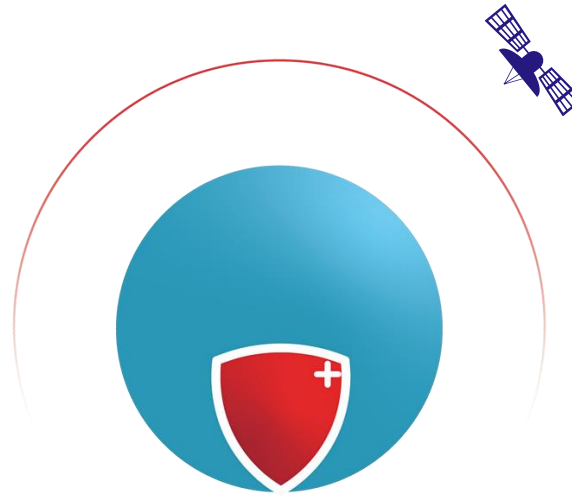
Aerial Component of the Copernicus Emergency Management Service's Mapping modules

Added values:

- Higher accuracy and more detailed assessments: First responders benefits of the timely and very high-resolution delivery
- Reference data: crucial inputs for validation/calibration of space borne products
- Benefiting from increased GNSS signals
- Very flexible and adaptable as compared with satellite observation/collection scenarios
- Current scope underpins Rapid Mapping and Risk and Recovery but the potential goes beyond emergency operations

Challenges that remains to be solved:

- Flight authorizations: permits from local and national aviation authorities remain a barrier for some member states
- Great fit for emergency operations but wide areas require time for pre and post processing and delivery



GLOBAL SMART RESCUE

Making a safer world

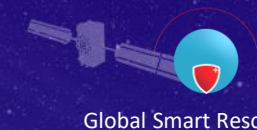
Optimizing Crisis Management





EU GLOBAL ACTION
ON SPACE

Global Smart Rescue's mission



Democratizing New space technologies for crisis management and saving lives.



Intelligent environmental monitoring



Resilient communications



In situ sensors to help rescue teams



Modular & interoperable Hardware &
Software



Our Solutions

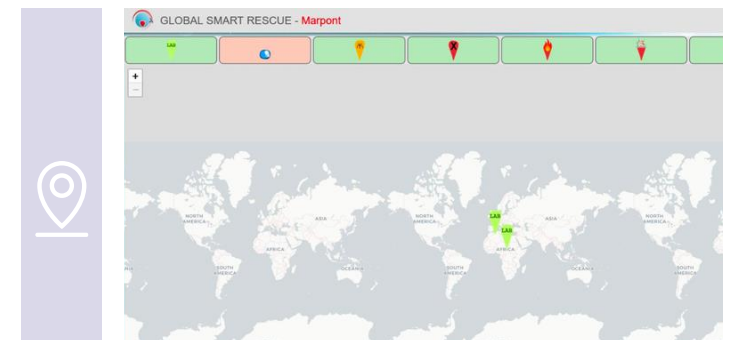
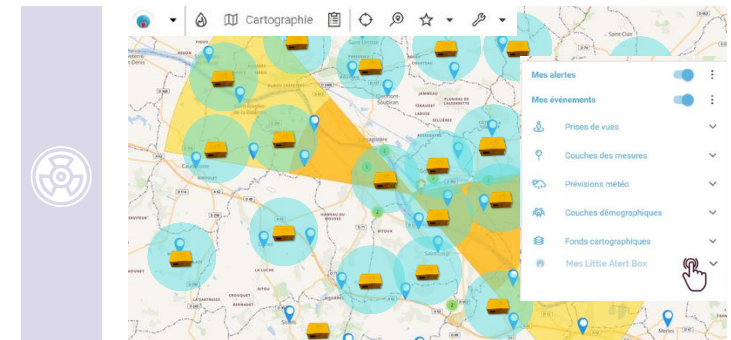
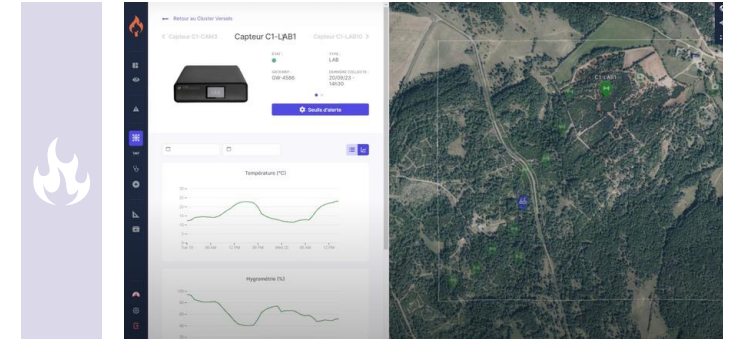


Combining ground-level intelligence from LAB™ with space-level insights from satellites.

Ensures more accurate data interpretation and quicker detection times.

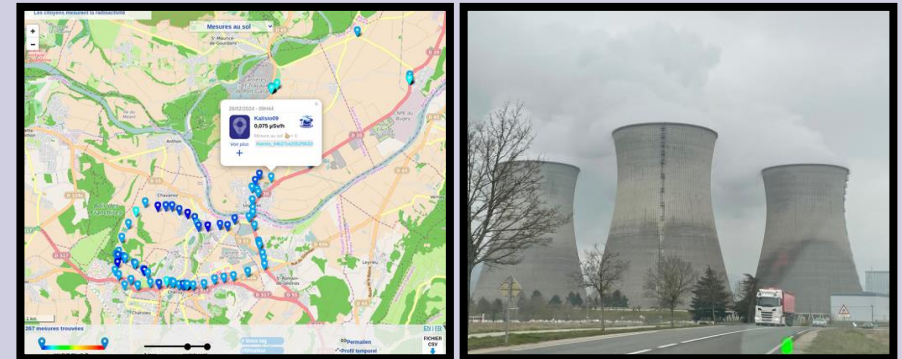
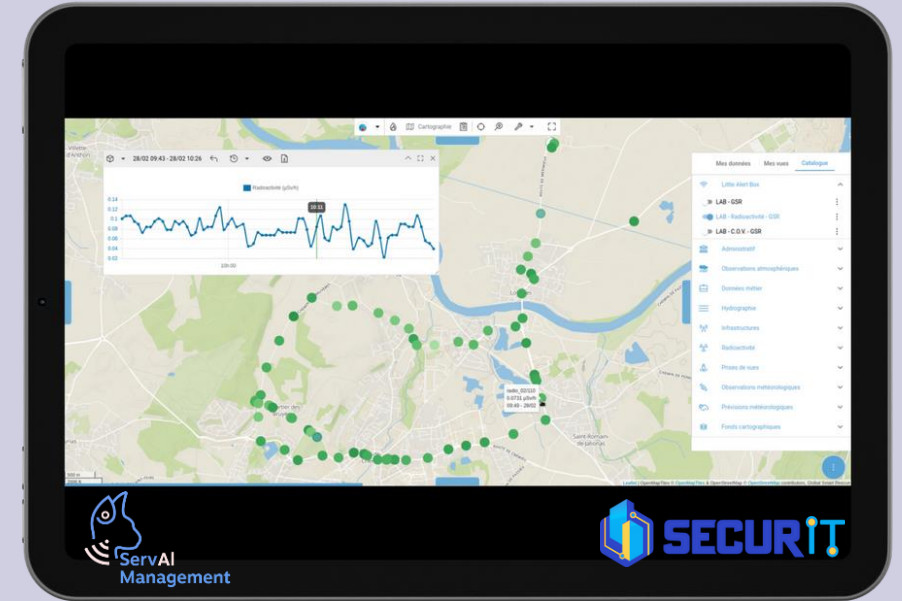
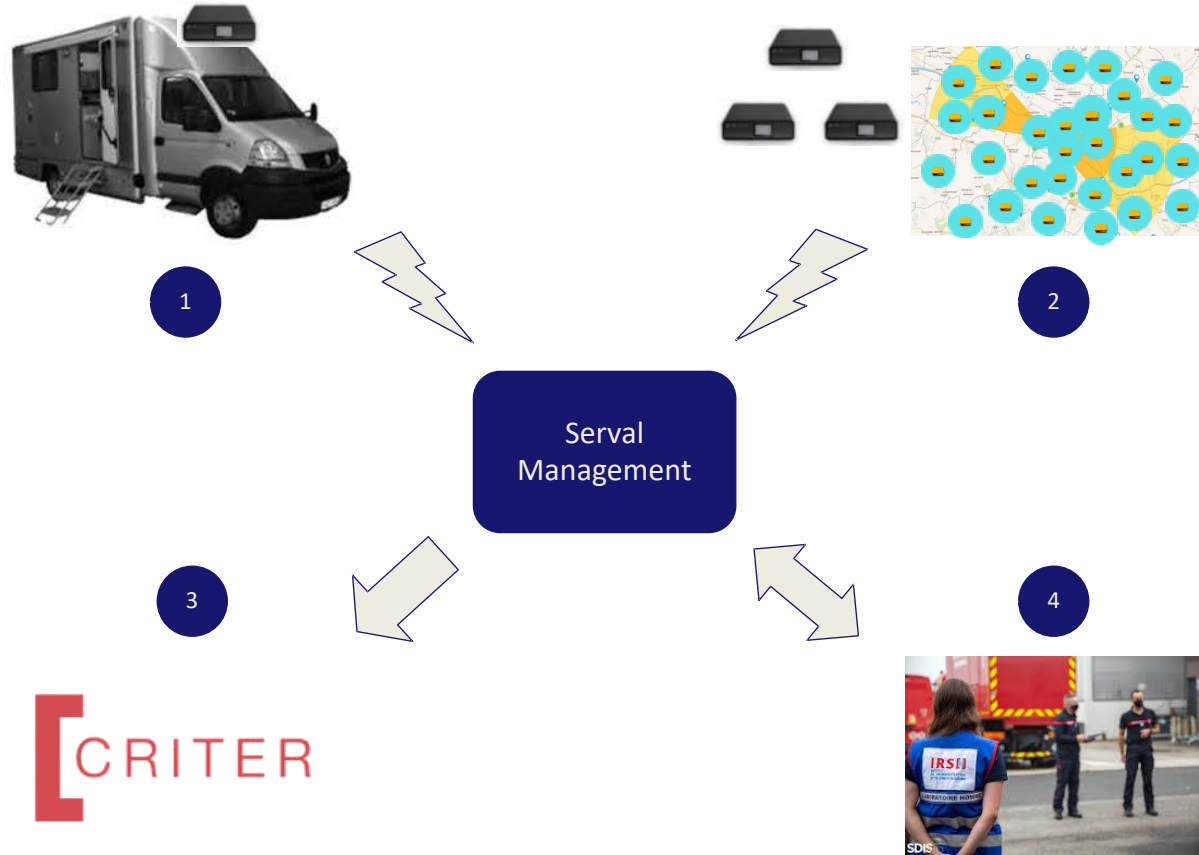


Data collection	Local Analysis	IoT Satcom
Galileo positioning	Satellite Imagery integration	Data Fusion





Innovative step in solving the challenge





Surveillance and Rapid Response

Preventive Planning

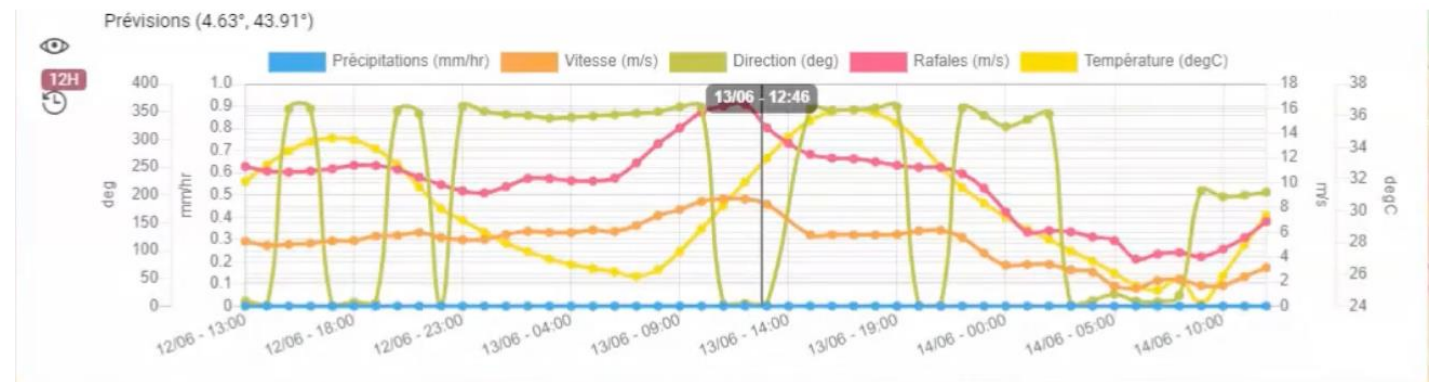
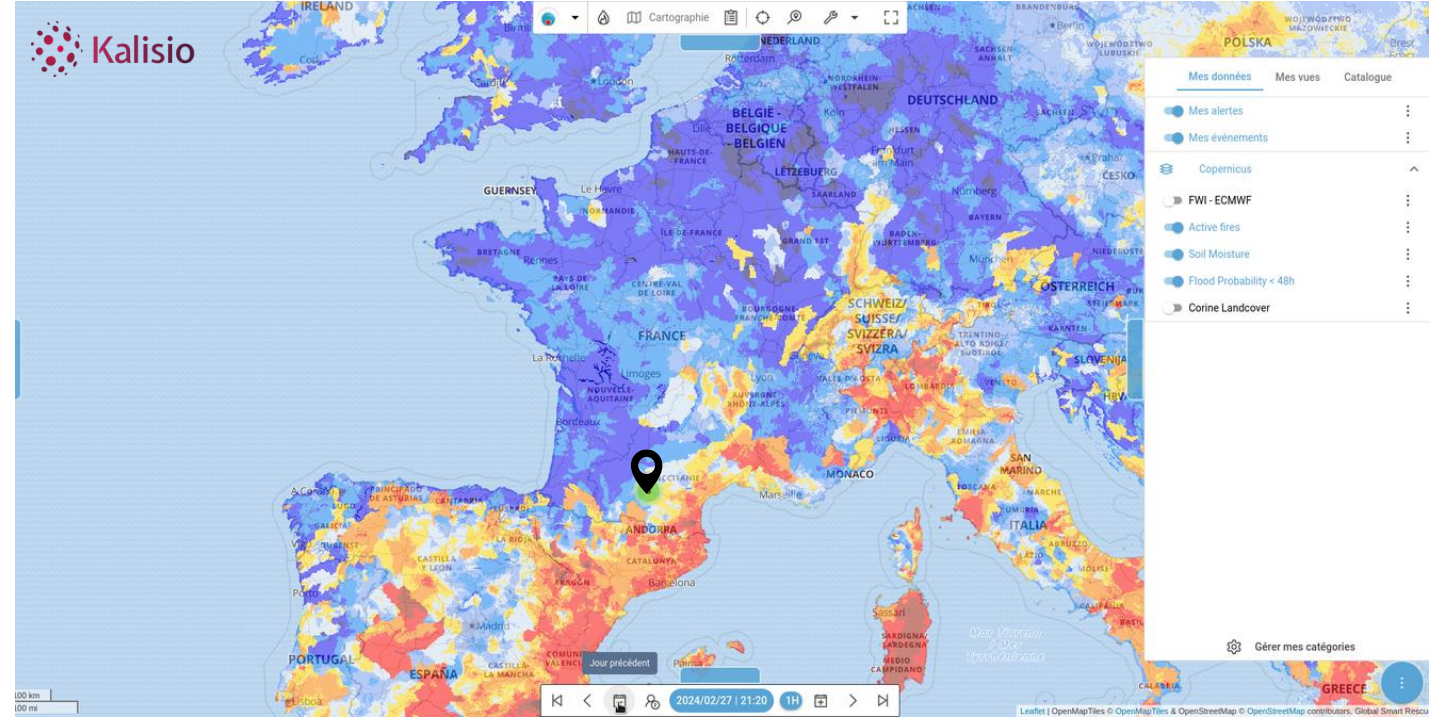
Resource Management

Decision Support and Coordination

Rehabilitation Monitoring

Education and Awareness

Climate Change Adaptation





EU GLOBAL ACTION
ON SPACE



Global Smart Rescue

Thank you for your attention!

Contact Details:

www.globalsmartrescue.com

Aya RADI
aya.radi@globalsmartrescue.com
+33783417132



**EU GLOBAL ACTION
ON SPACE**

Session 2. EU Space Programme's benefits for the transport sector: a focus on aviation



Reinhard Blasi,
*European Union Agency for the Space
Programme (EUSPA)*



Ana Boderó Alonso,
*Head of the Satellite Navigation
Department, ENAIRE*



Álvaro Morillo,
Business Development Manager, ESSP

Benefits of GNSS for Aviation

The view of the Spanish Air Navigation Service Provider



Fostering Innovation and Cooperation in Space between the EU and LAC

Bonaire - 04/04/2024

ENAIRE

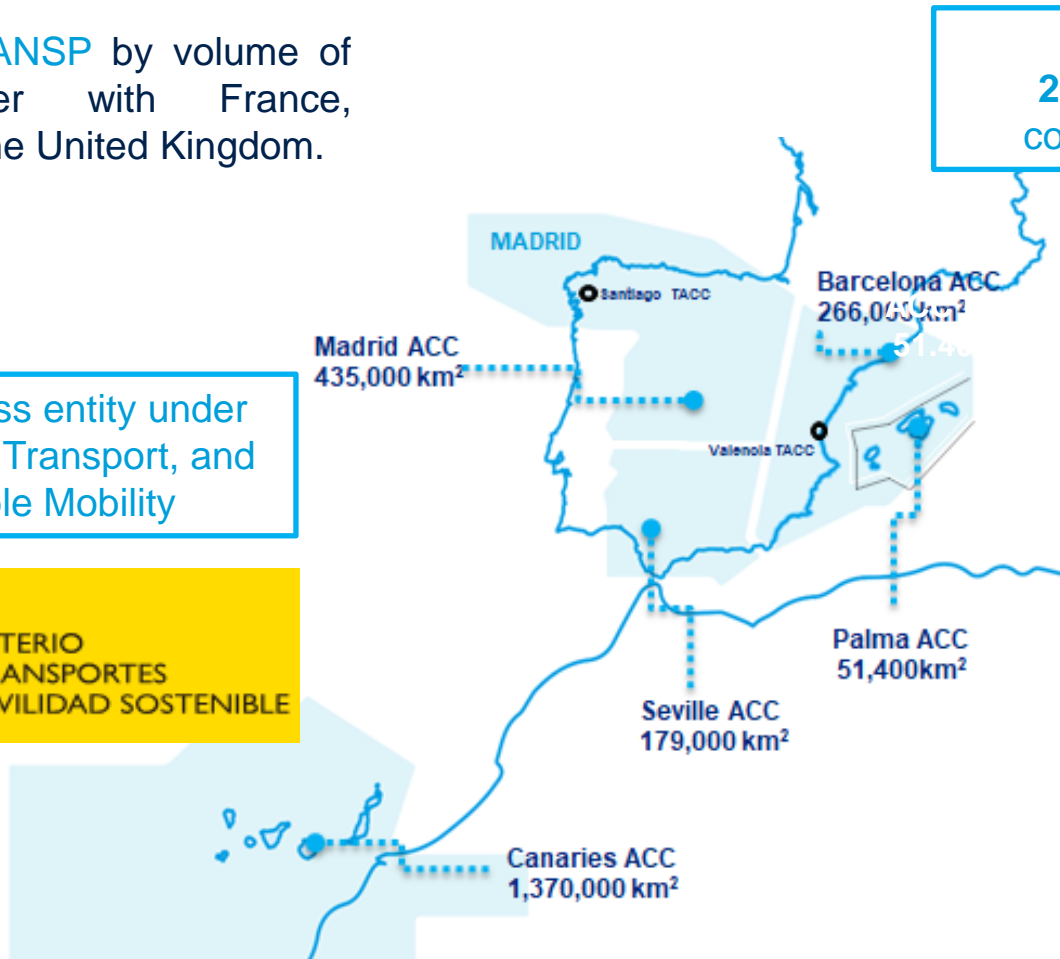
For ENAIRE, GNSS is a Strategic Sector to improve the quality of air navigation in Spain, for the benefit of our users, and to provide new value-added services that allow to increase investments in infrastructures, systems and engineering.



4th European ANSP by volume of traffic together with France, Germany and the United Kingdom.

We manage **2,190,000 km²** of controlled airspace

Public Business entity under the Ministry of Transport, and Sustainable Mobility



- Spanish airspace is divided into **3 Flight Information Regions (FIR)** that ENAIRE manages through **5 Air Navigation Regional Directorates**.
- ENAIRE provides **communications, navigation and surveillance (CNS)** services across the whole Spanish airspace.
- Around **4.200 employees** (50% controllers, 50% engineering, operations, etc.).

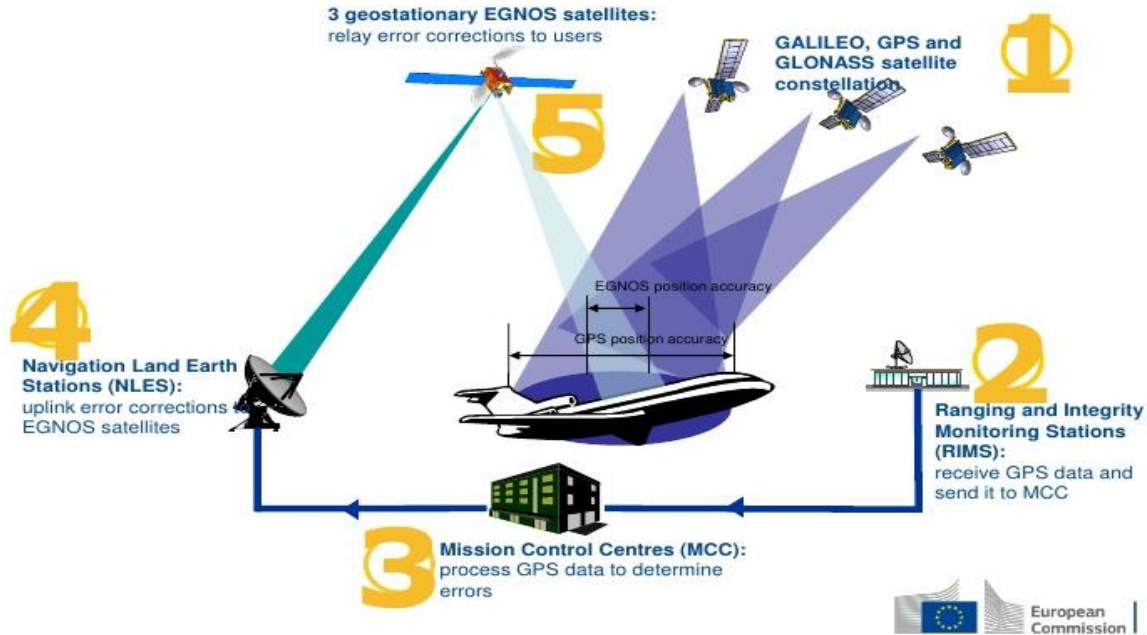
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ACC: Area Control Center

EGNOS – The European SBAS

SBAS in the World - Compatible and Interoperable

EGNOS improves GPS over Europe

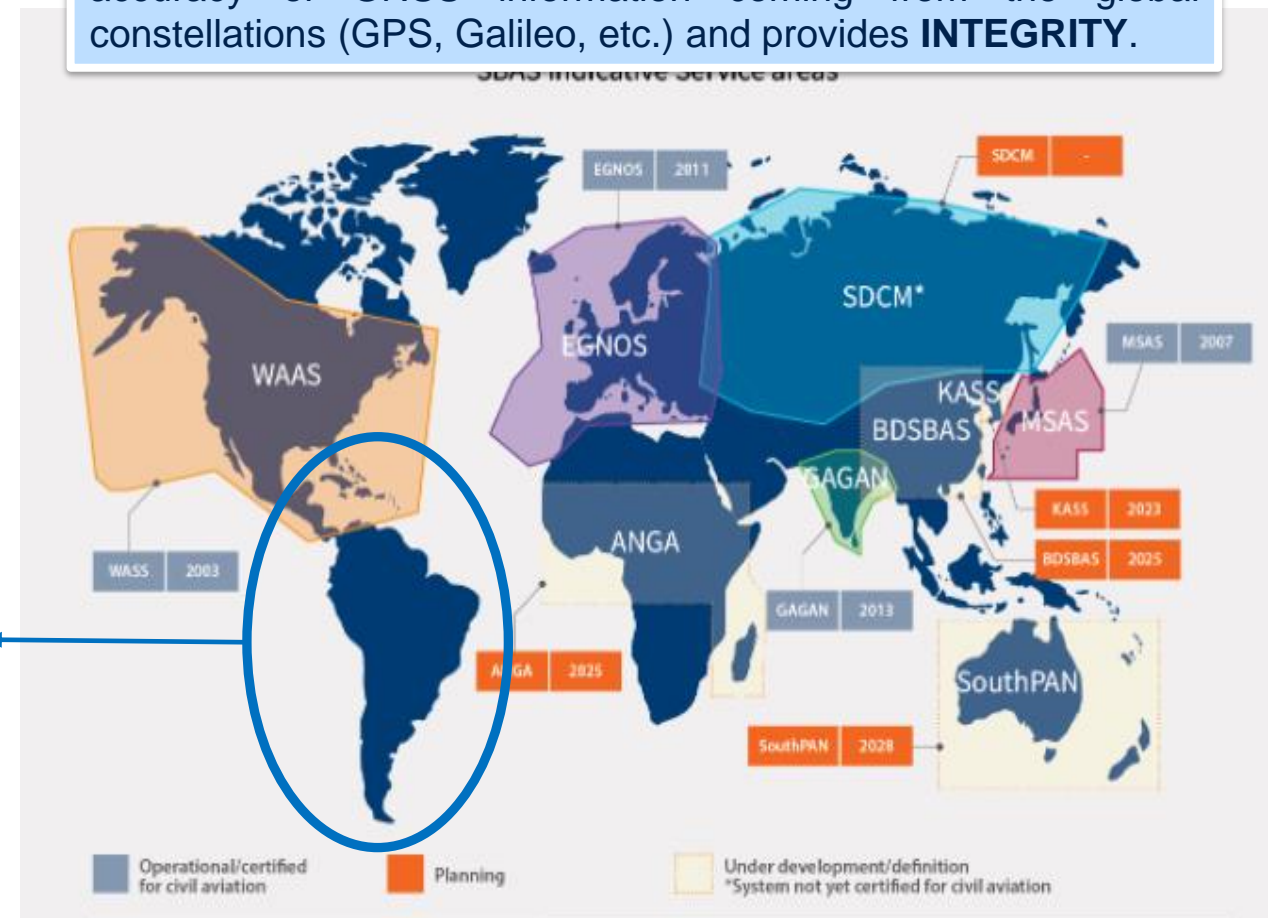


- Opportunity to improve the safety and resilience of the transport system.
- Environmental improvements.
- Deployment of infrastructure and operation of the system, generating high value-added jobs.
- Rationalization of land infrastructure -> costs reduction.

EGNOS



SBAS (Satellite Based Augmentation System) improves the accuracy of GNSS information coming from the global constellations (GPS, Galileo, etc.) and provides **INTEGRITY**.



Galileo – The Europe’s Global Navigation Satellite System

Galileo Services



Galileo use in civil aviation must be done in combination with appropriate augmentation systems and airborne equipment, and all of them must be covered by and meet appropriate standards (requirements).

Galileo OS FOC Full Operational Capability is foreseen for 2025.



EGNOS in Spain

- Spain is the country that hosts more EGNOS infrastructure in its territory.
- ENAIRES, as ESSP shareholder, performs operation and deployment tasks as subcontractors of the EGNOS service provider.
- EGNOS operational for aviation (SoL) since 2011. ENAIRES first EGNOS flight procedure implemented in 2013.
- PBN Regulation mandates to implement EGNOS procedures in all European instrumental runways before 2024 (more than 40 airports in Spain).
- Current limitations of performances in Canary Islands (effect of the solar peak).
- Important benefits:
 - Backup of current conventional nav aids like ILS.
 - Operational improvements for Airlines.
 - More direct, flexible and efficient routes -> Decarbonization, noise reduction and cost efficiency.



Examples of EGNOS benefits in Spanish airports

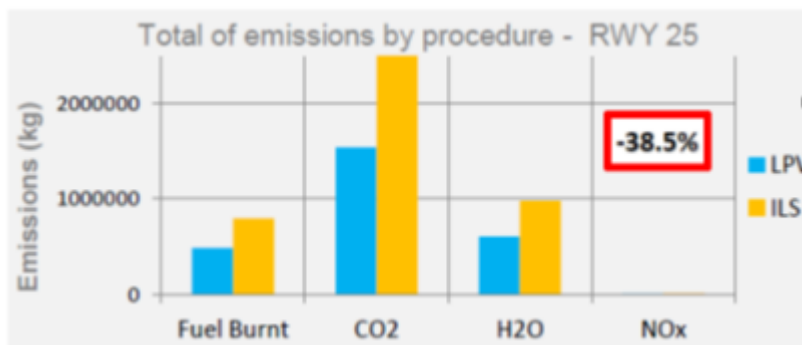
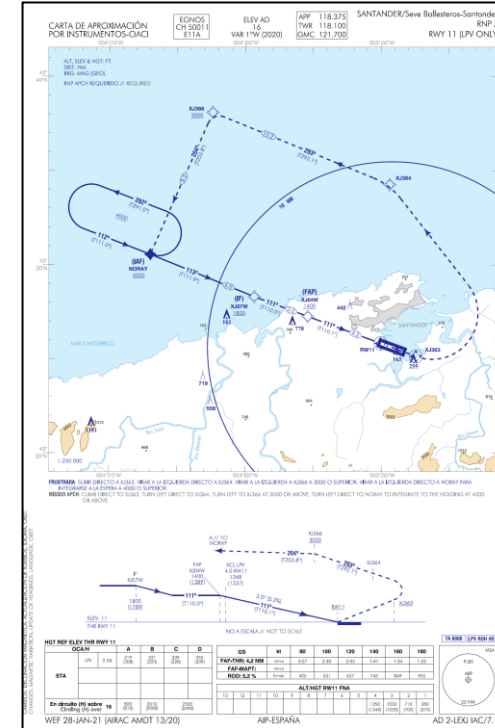
Lower approach minima:

- Santander (LEXJ) RWY 11:
 - NDB OCH = 1390 ft [MDH]
 - VOR OCH = 750 ft [MDH]
 - LNAV (GPS) OCH = 680 ft [MDH]
 - LNAV/VNAV (GPS) OCH = 680 ft [DH]
 - LPV (EGNOS) OCH = **328 ft** [DH]

<https://aip.enaire.es/AIP/#LEXJ>

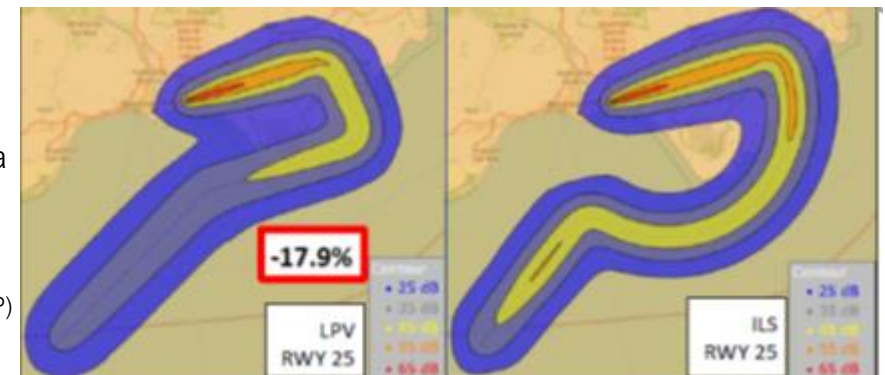
Reduction of environmental impact (noise, fuel burnt):

- LEAM (Almeria, Spain).



enaire.es

Noise area
 Emissions
 (source: EUSPA, ESSP)



What the Different Actors Say



Air Traffic Controllers:

“We, controllers, are confident about the fact that there is an ideal alternative to conventional procedures. It opens an opportunity to improve”.



Pilots:

“Once you practice it, the EGNOS flight procedure is very simple. You feel that the flight path is smoother than flying conventional systems”.

GBAS – Ground Based Augmentation System

- GBAS is the navigation solution for **future precision approach** in CAT II/III (low visibility procedures).
- ENAIRE strongly supports the GBAS programme.
- The airport of Málaga was the **second in Europe** in having GBAS flight procedures in operation (2014).
- The GBAS community working in the **inclusion of EGNSS** in future GBAS systems together with EC and EUSPA.
- First GBAS prototype using Galileo in Barcelona's airport.
- Another prototype in Canary Islands used for the development of an ionospheric model valid in low latitudes.



Performances and Interferences Assessment



ENAIRE has its own network of receivers (RECNET) located at airports and Control Centres, as well as portable equipment for data collection and a laboratory with various tools for evaluating performances and interferences of the GNSS systems used by aviation in Spain (GPS, GBAS and EGNOS, plus Galileo).



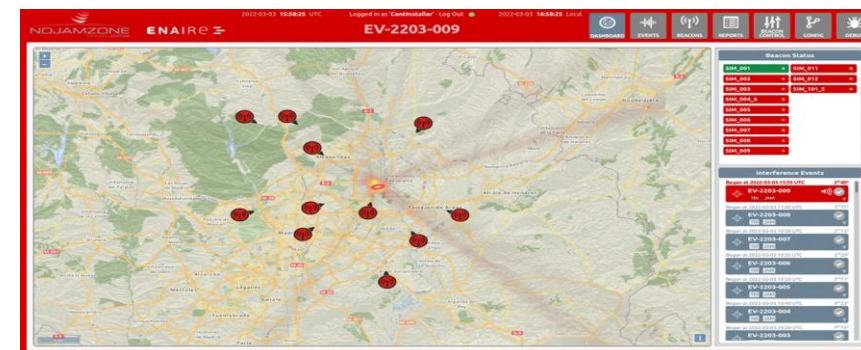
DYLEMA: ENAIRE solution for the detection and geo-localization of jammers and spoofers in Madrid area (20 km around Madrid Airport).



Objectives: detect and localize asap GPS L1/L5 signal interference sources (jamming/spoofing) and proceed to notify to the telecommunication authority for shutdown.



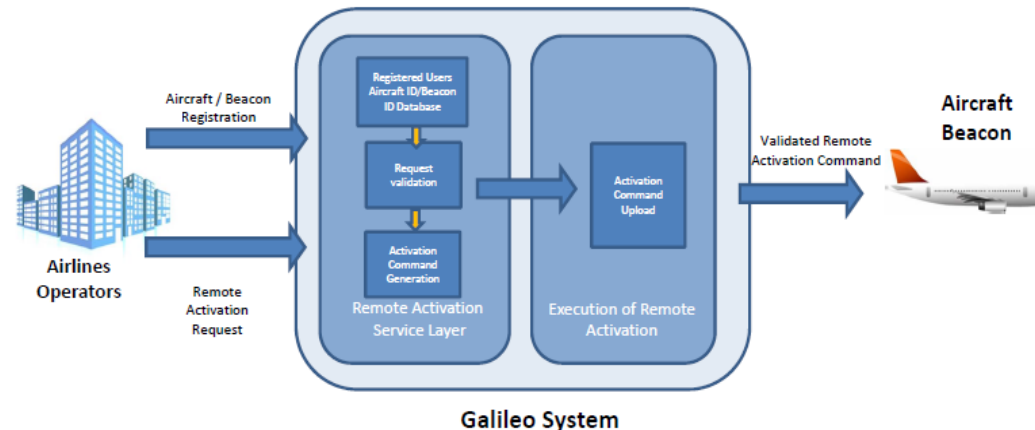
Next deployment in Palma de Mallorca and Barcelona with improved jamming and spoofing detection & localization capabilities.



What's next in Aviation?



- ✎ Evolution from GPS L1 to DFMC (**Dual Frequency Multi Constellation**):
 - ✎ GPS L1/L5, GALILEO E1/E5,...
- ✎ Important improvements in terms of **robustness and coverage**:
 - ✎ Ionospheric free measurements, additional satellites and constellations.
 - ✎ Enhanced performance (free of ionospheric errors, better satellite geometry).
 - ✎ Larger service area (without the burden to monitor and provide corrections for ionosphere delay).
- ✎ Improvements in **security**: authenticated signals (increased robustness against jamming/spoofing).
- ✎ **New users** that will benefit from new signals: drones, aero-taxis, supersonic/hypersonic high-altitude vehicles, High Altitude Platform Systems (HAPS), etc.
- ✎ New Galileo services like the remote activation of SAR beacons, that will provide better integration between ATC and SAR.



Thank you! ¡Gracias!

Ana Bodero – abodero@enaire.es





EU GLOBAL ACTION
ON SPACE

Demo Session 2: EU Space data applications for the transport sector



Marion Singer,
International Tender Assistant, SINAY SAS



Candela Sancho,
CEO & Co-founder, Detektia



EU GLOBAL ACTION
ON SPACE

SINAY 

SINAY Maritime big data platform

Marion SINGER





+ 15,000 days at sea

For collection of maritime data

+ 60 Algorithms

To create key indicators

+ 50 maritime experts

Biologists, AI engineers, UX designers, project managers...

We love Ocean, We love Data, We connect both

Giving maritime industries the **power to master their data** so they can **reduce their environmental impact** while **improving business efficiency**

Some of our major clients





3 COMMON CHALLENGES



Operational Inefficiency



Environmental Regulation



Cybersecurity Concerns

which could be addressed with a better usability of data





Main usage of EU Space Data for maritime transportation



- Galileo



- SatCom



- Copernicus



- Galileo
- SatCom
- Copernicus





Containers & Vessels visibility thanks to AIS data

Sinay offers container & vessel tracking solutions

- Location of the container or vessel
- ETA of all events (future and past)
- Status of the container or vessel

Benefits

- More visibility on all shipments
- Improvement of supply chain efficiency by reducing costs and improving delivery times.
- Control on D&D costs
- Access to real-time information & predictions

Solutions for

- Logistics companies
- Software providers
- Shippers & Beneficial Cargo Owners





Metocean Data Analysis to plan offshore operations

Rapid and informed decision-making for offshore projects based on a large catalogue of ocean currents, wave and wind datasets.

Worldwide coverage

- Analyze wind, wave, ocean currents, tidal currents, water height, salinity and temperature, at a global level.

Flexible choice of analysis

- Define and choose the average conditions, the extreme value, the data validation, and create specific reports.

Weather downtime

- Thanks to unlimited scenarios, analyze the data to know the weather downtime for all complex operations.





Improve offshore signal transmission



Transmit key environmental data in real-time between buoys, vessels and shore.

Benefits

- Real time alerts
- Route optimization
- Oil spill detection

Solutions for

- Offshore construction vessels
- Shipping lines
- Cruise Boats





Bioship: scoring software for transforming global maritime transportation



Why?

- Stringent regulations and growing environmental consciousness among stakeholders and consumers
- Demand for worldwide data to monitor maritime traffic's impact on the environment

How?

- Pioneering software suite designed to score ships' environmental and operational indicators globally and in real-time
- Diverse indicators such as GHG emissions, underwater noise, biodiversity impact, ETA, congestion, and more
- Amalgamating multiple data sources and leveraging advanced data science and AI algorithms





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Afternoon Wrap-up



***Tomas Dimitrov,**
EU Global Action on Space*



***Rosalia Jefferson,**
Eagle Eye Media*



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Networking Cocktail

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Fostering Innovation and Cooperation in Space between the EU and LAC

4 – 5 April 2024
Delfins Beach Resort, Bonaire

Funded by the European Union



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Introduction



***Tomas Dimitrov,**
EU Global Action on Space*



***Rosalia Jefferson,**
Eagle Eye Media*



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Session 3. Protecting the Earth from Space: EU Space Data for Environmental Protection



Michel Massart,
*Policy Officer, Sustainable Resources -
Nature Conservation and Observations
(JRC.D.6), Joint Research Centre,
European Commission*



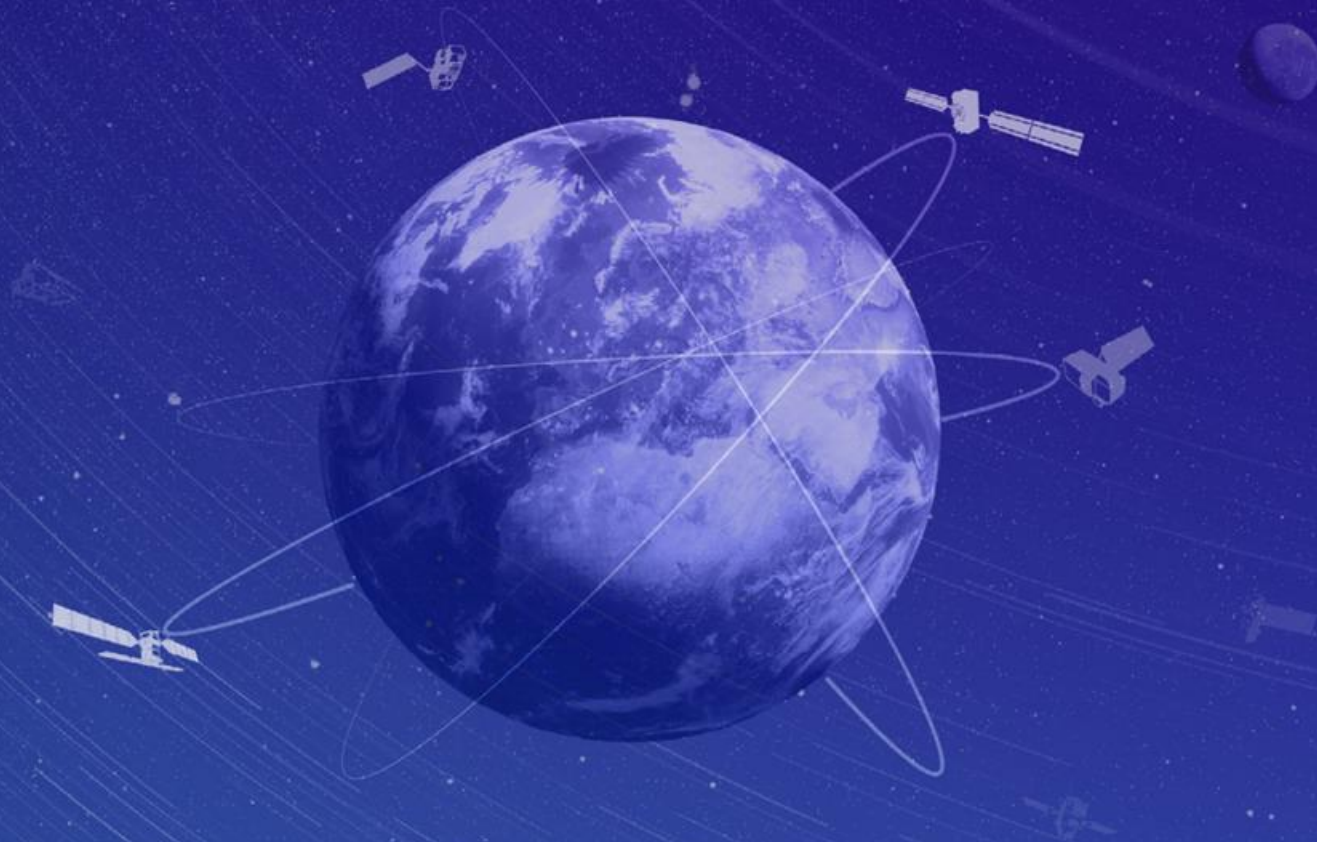
Corinne Derval,
*Portfolio and Market Intelligence
Manager, Mercator Ocean
International*



Erik Houtepen,
*Head Consultancy Department,
Caribbean Marine Biological Institute
(CARMABI)*



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The Copernicus Marine Service

Corinne Derval

Head of User & Stakeholder Engagement division,

Mercator Ocean International (MOi)

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1

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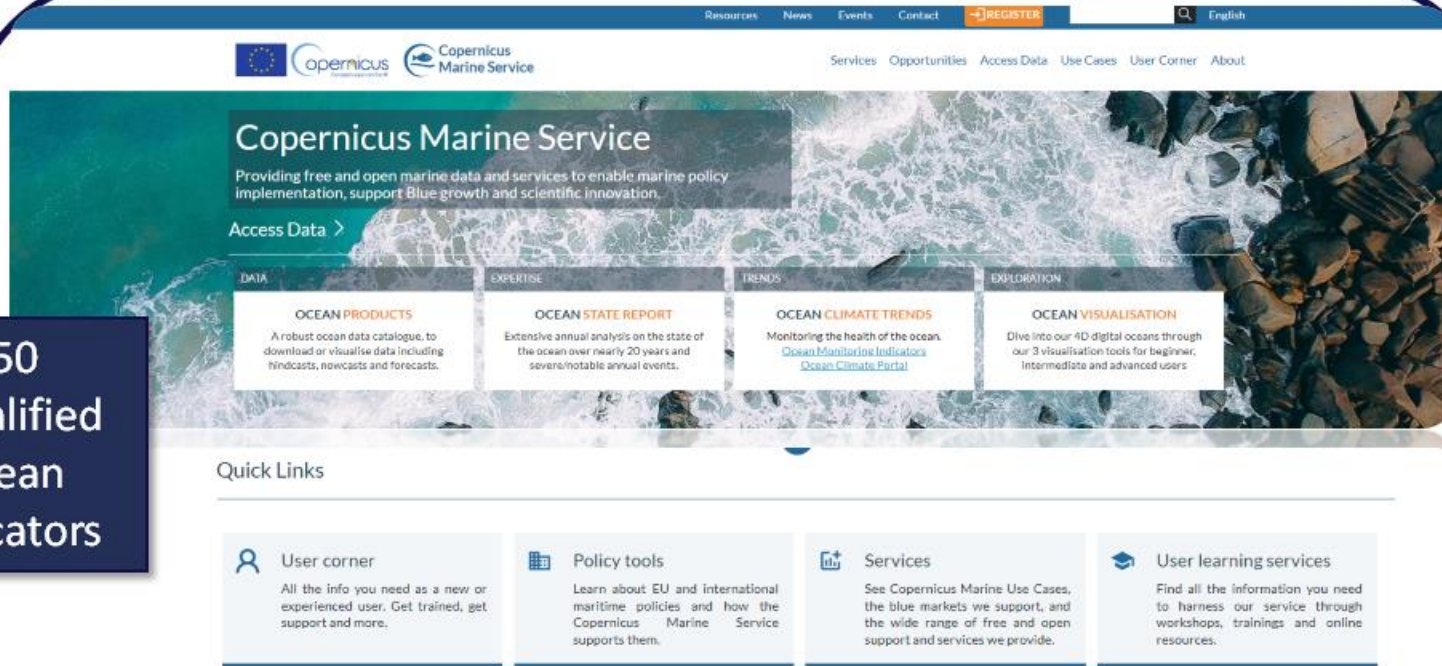


FULL, FREE AND OPEN
ACCESS TO DATA



-  ATMOSPHERE MONITORING
-  MARINE ENVIRONMENT MONITORING
-  LAND MONITORING
-  CLIMATE CHANGE
-  EMERGENCY MANAGEMENT
-  SECURITY

 **opernicus**
Europe's eyes on Earth



More than 250 scientifically qualified products & ocean monitoring indicators

Online catalogue – Single Access Point
<https://marine.copernicus.eu/>

User driven

Common format (NetCDF)

Open and Free

>65k Subscribers



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DATA IN A NUTSHELL



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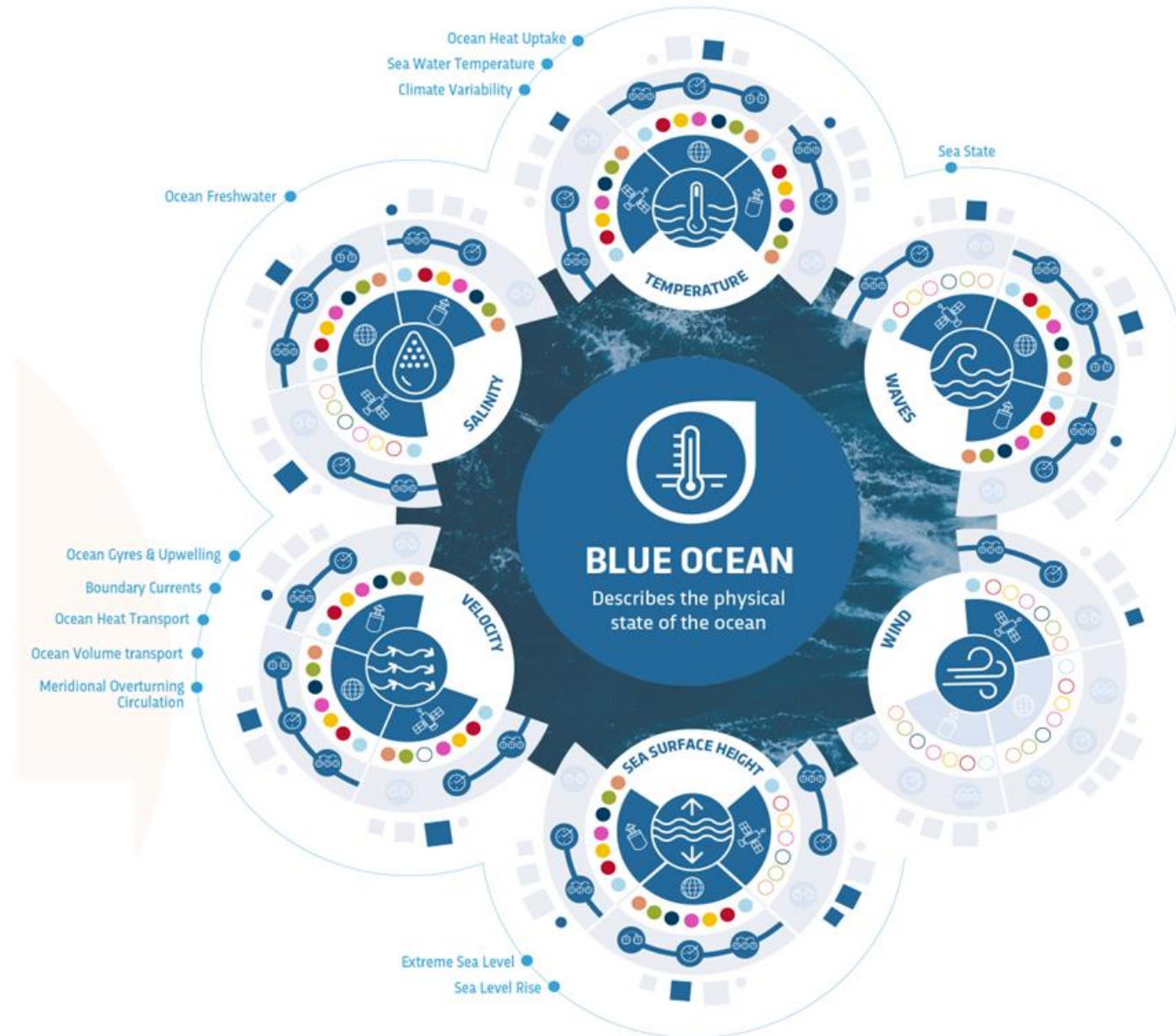
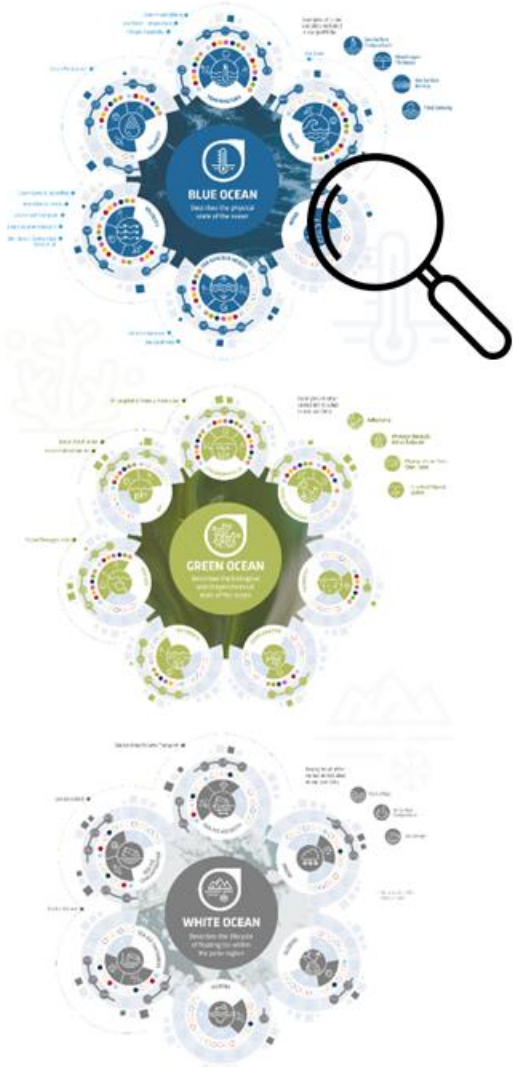


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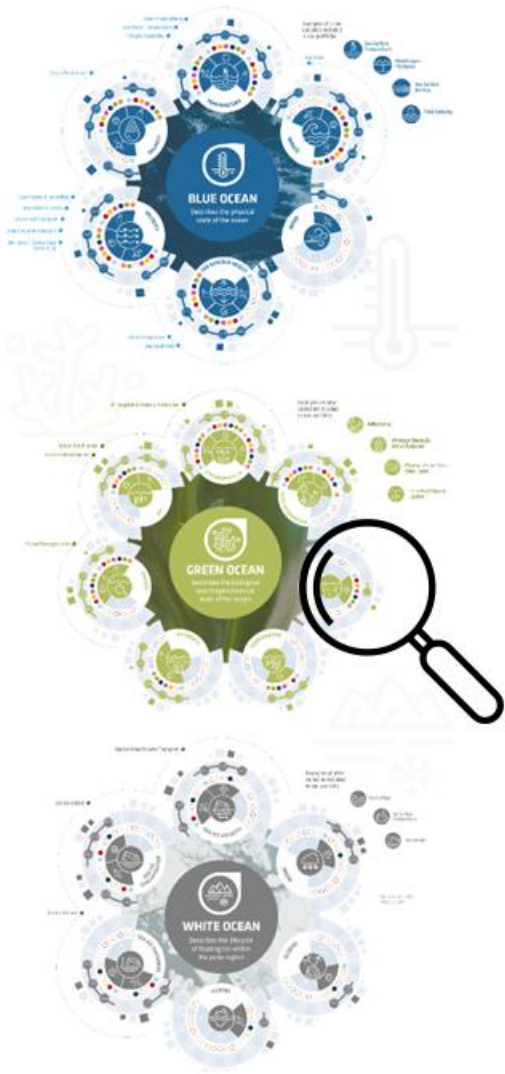


DATA IN A NUTSHELL-BLUE OCEAN



EXAMPLES OF OTHER VARIABLES INCLUDED IN OUR PORTFOLIO:

- SEA SURFACE TEMPERATURE
- MIXED LAYER THICKNESS
- SEA SURFACE DENSITY
- TIDAL VELOCITY

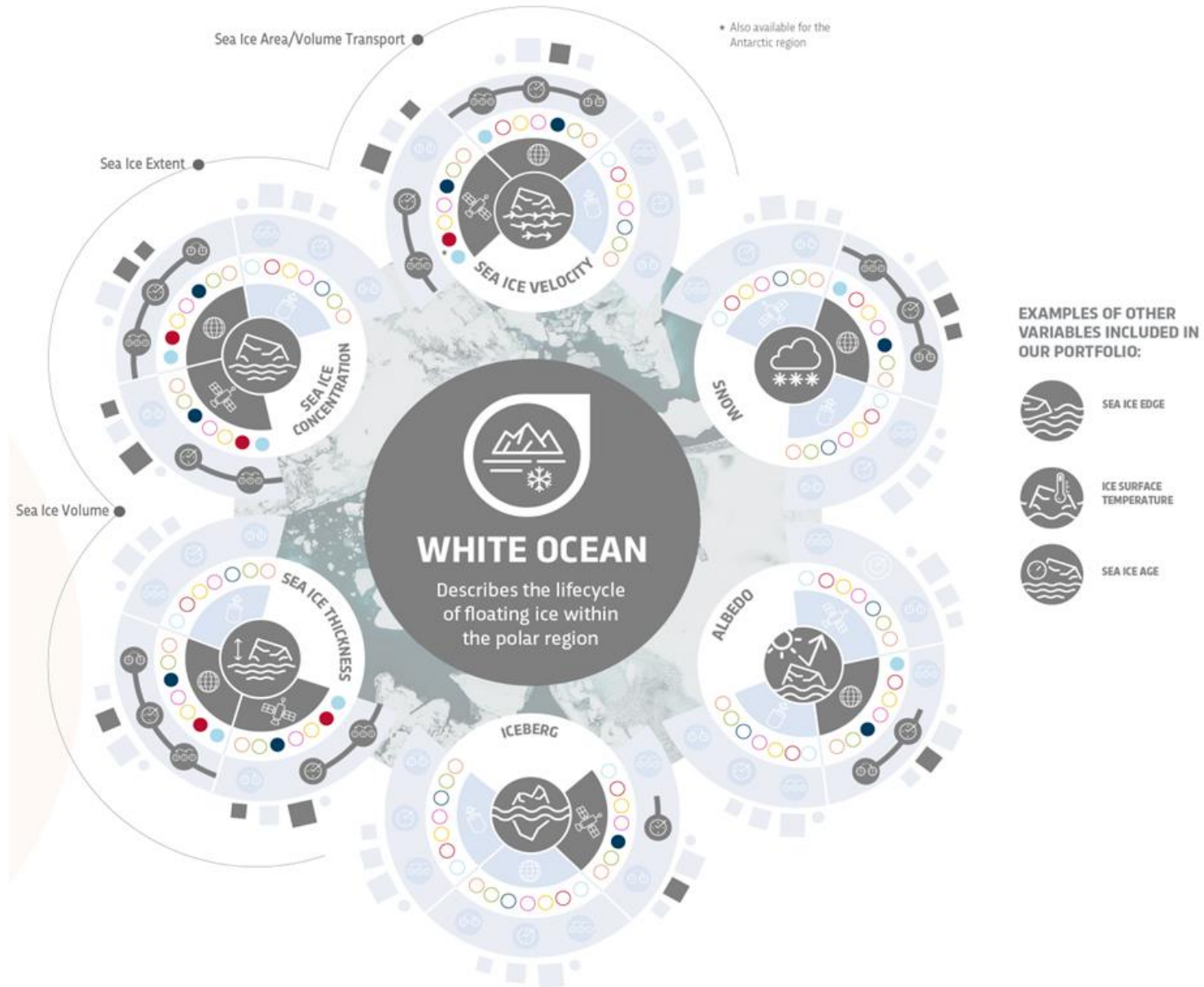
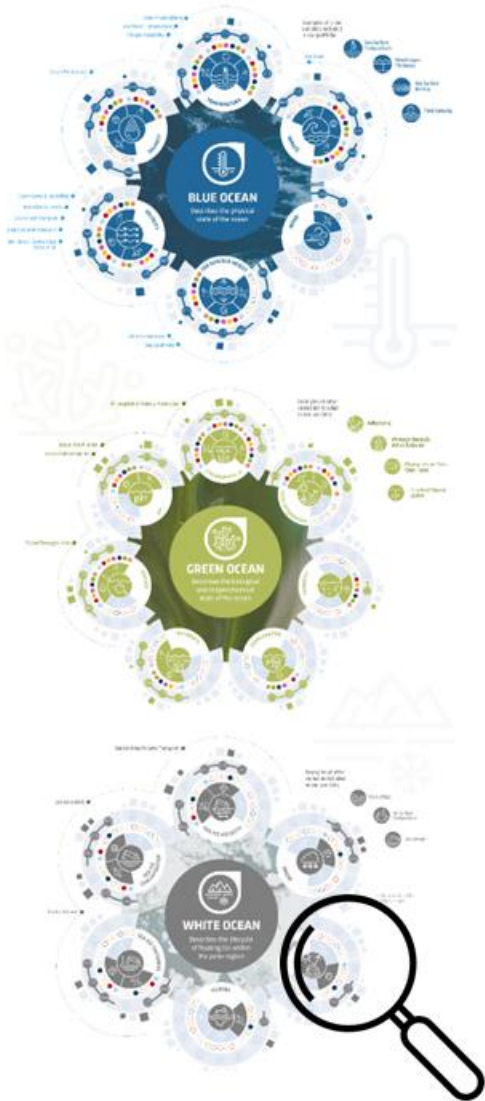


EXAMPLES OF OTHER VARIABLES INCLUDED IN OUR PORTFOLIO:

- REFLECTANCE
- PHOTOSYNTHETICALLY ACTIVE RADIATION
- PHYTOPLANKTON SIZES CLASS TYPES
- DISSOLVED ORGANIC CARBON

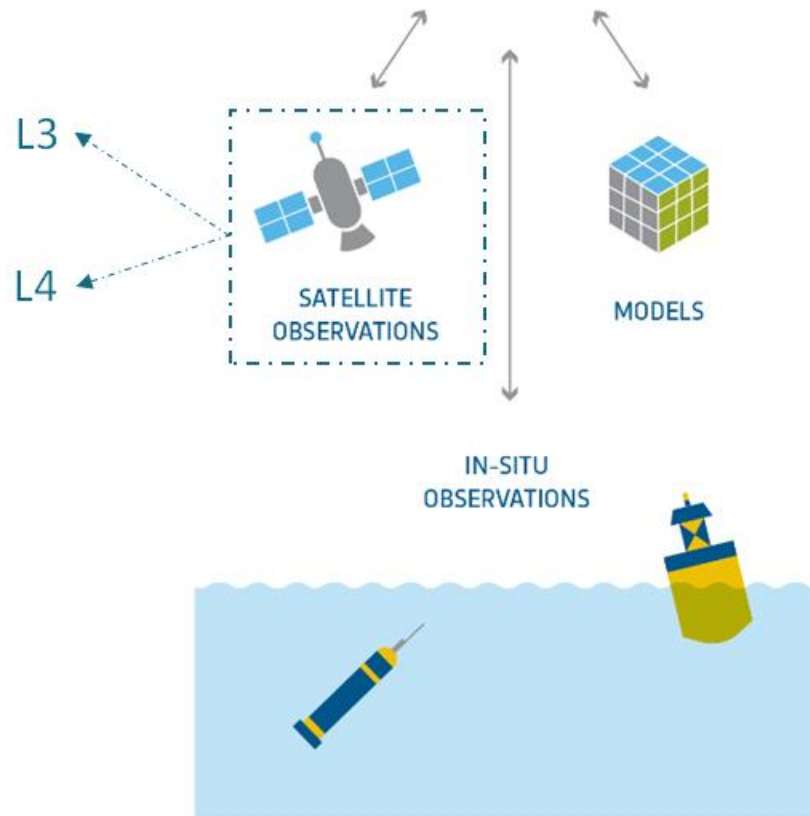


DATA IN A NUTSHELL – WHITE OCEAN

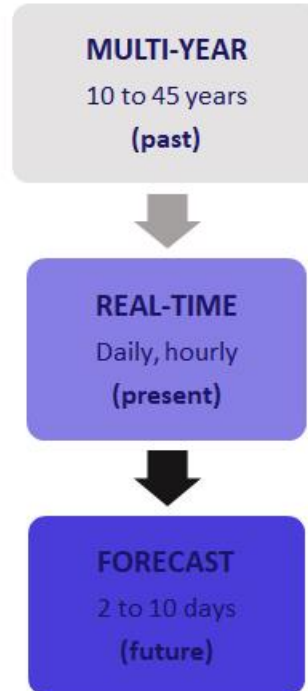




DATA SOURCES



TEMPORAL COVERAGE



GEOGRAPHICAL COVERAGE

COPERNICUS MARINE REGIONAL OCEAN PRODUCT DIVISIONS

- ① Global Ocean
- ② Arctic Ocean
- ③ Baltic Sea
- ④ European North West Shelf Seas
- ⑤ Iberian Biscay Ireland Seas
- ⑥ Mediterranean Sea
- ⑦ Black Sea





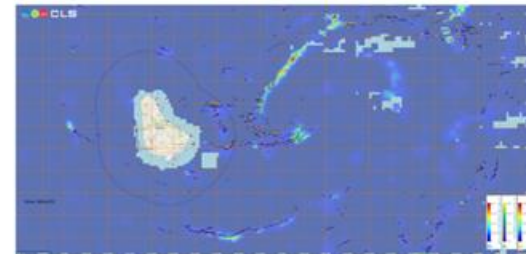
Sargassum Invasion: Combating the Seaweed Crisis with Copernicus Marine Data



Ecological and **economic** problems due to its rapid growth and spread

CLS is responsible for developing the algorithms which use data retrieved by the **MODIS** and **Copernicus Sentinel-2 and -3 satellites**, while Hygeos is responsible for developing the **algorithms** for processing the data from GOES-16 satellites (from NASA/NOAA).

👁️ Sargassum are visible in the red and yellow spectrum, cloud cover in grey, and ocean in dark blue.



SODA (SARGASSUM OPERATIONAL DETECTION ALGORITHMS)

- The objectives of SODA are to:
- Review and improve the detection algorithms on all the operational sensors (OLCI, MODIS, MSI, ABI)
 - Propose an extension to the CMEMS catalogue by adding new sargassum products



The end goal is to provide **reliable** and **accurate data** to stakeholders, ensuring that they have the information needed to make informed decisions for sargassum management and mitigation efforts:





THANK YOU



Copernicus
Marine Service



Copernicus
European eye on Earth



Implemented by
**MERCATOR
OCEAN**
INTERNATIONAL



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Coffee Break

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Demo Session 3: EU Space Data Applications for Environmental Protection



*Jakko de Jong,
Co-Founder, Spheer.ai*



*Yohan Runhaar,
CTO, Reef Support*



*Ervin Csőke,
Business Development Manager,
World from Space*

Spheer.ai

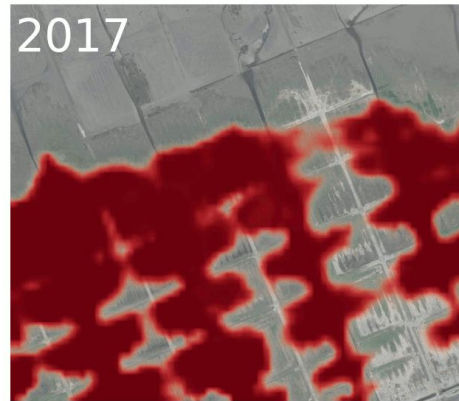


Use satellite-AI to monitor your nature, water and agriculture

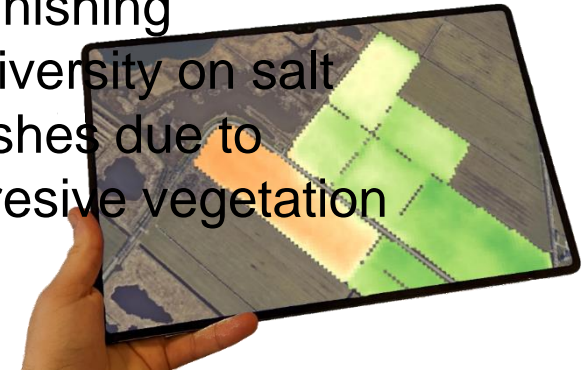
We turn satellite data into maps and trends about nature



Grasses in heather areas indicate nitrogen problems

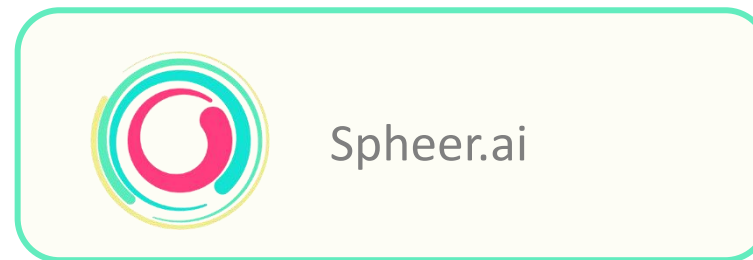


Diminishing biodiversity on salt marshes due to aggressive vegetation



Appraisal of crop damage

In-house developed AI platform to capture patterns in satellite timeseries

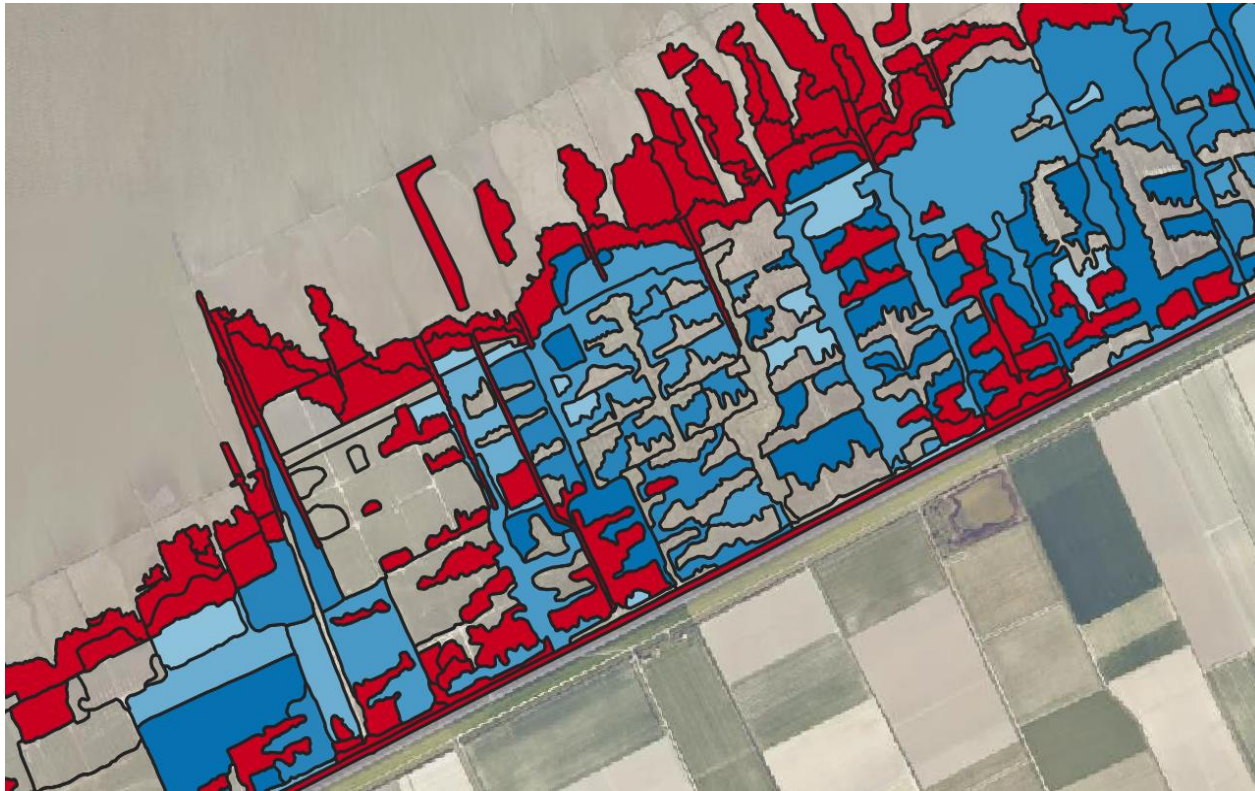


Source: Sentinel-2 by ESA

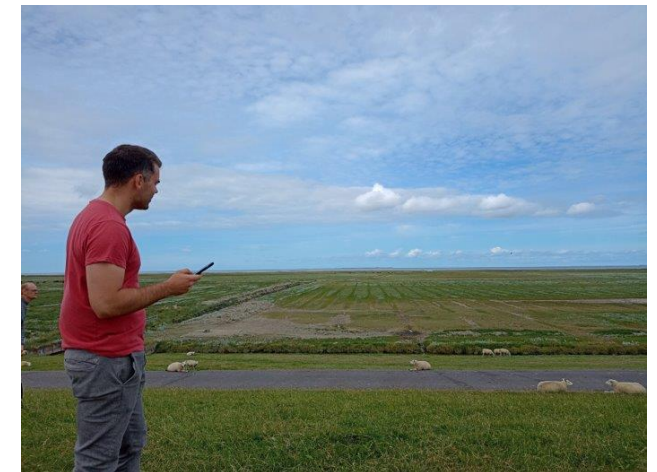
Expensive expert (ground) survey data is needed to train specific monitoring



either extracted / processed from existing datasets ...

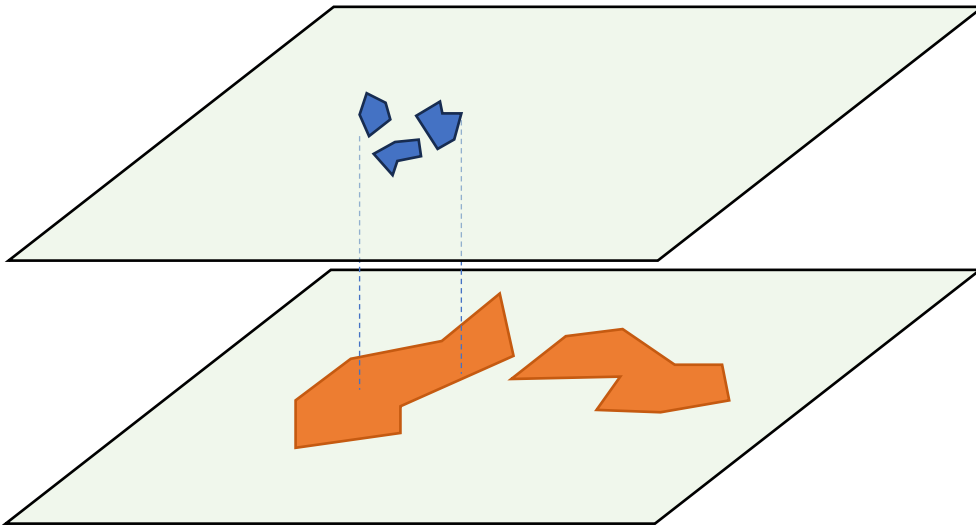


or gathered in the field



The old world: Supervised Learning

Typically: hundreds of hectares = weeks of work



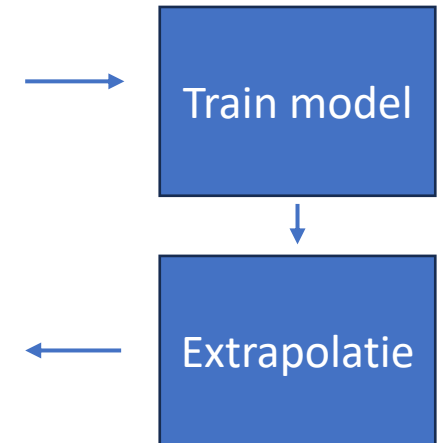
Expert label data

Eg. Ground survey data on healthy mangrove patches on Bonaire

Area-of-Interest

Eg. all Mangrove forest in the Caribbean

Typically: Several hours



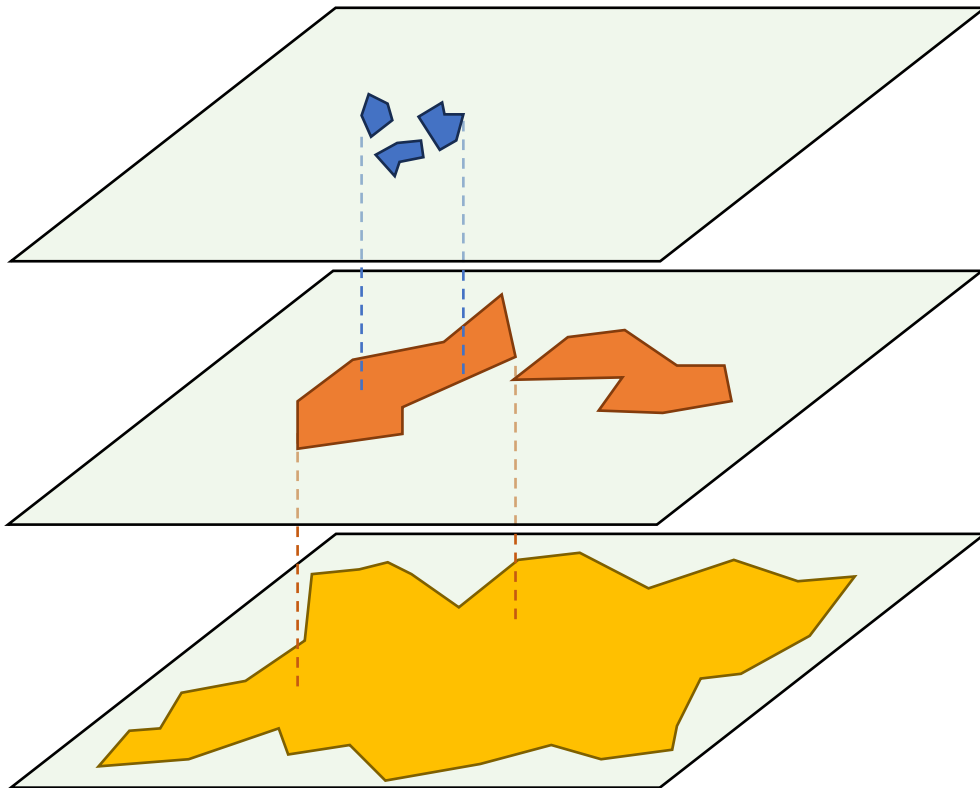
A landscape photograph featuring a field of tall, golden-brown grass in the foreground. A single, large, green pine tree stands on the left side. In the background, a line of trees is visible under a blue sky with scattered white and grey clouds. The text is overlaid in the center of the image.

Our new app carto:

**a.i. becomes
assistant-ecologist**

The new world: Foundation models

1 hectare instead of hundreds



Expert label data

Eg. Ground survey data on healthy mangrove patches on Bonaire

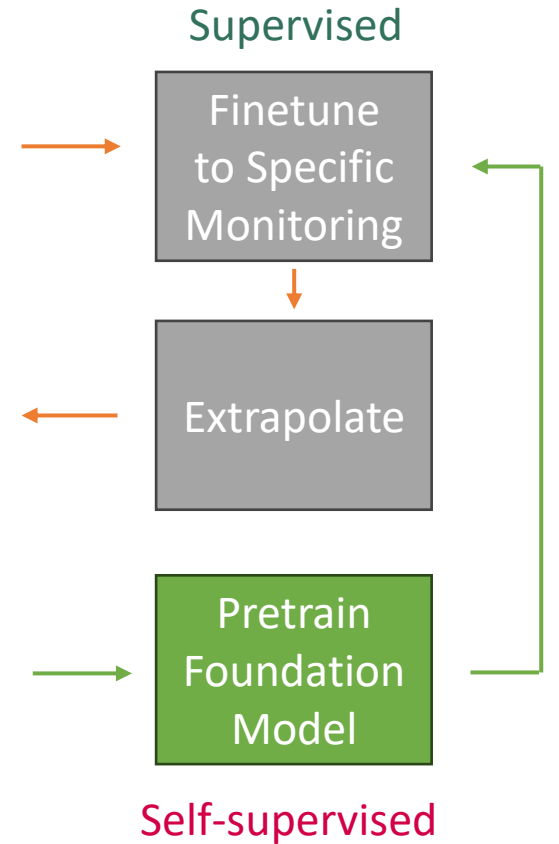
Area-of-Interest

Eg. all Mangrove forest in the Caribbean

All relevant nature

Eg. all Mangrove forest in the Caribbean

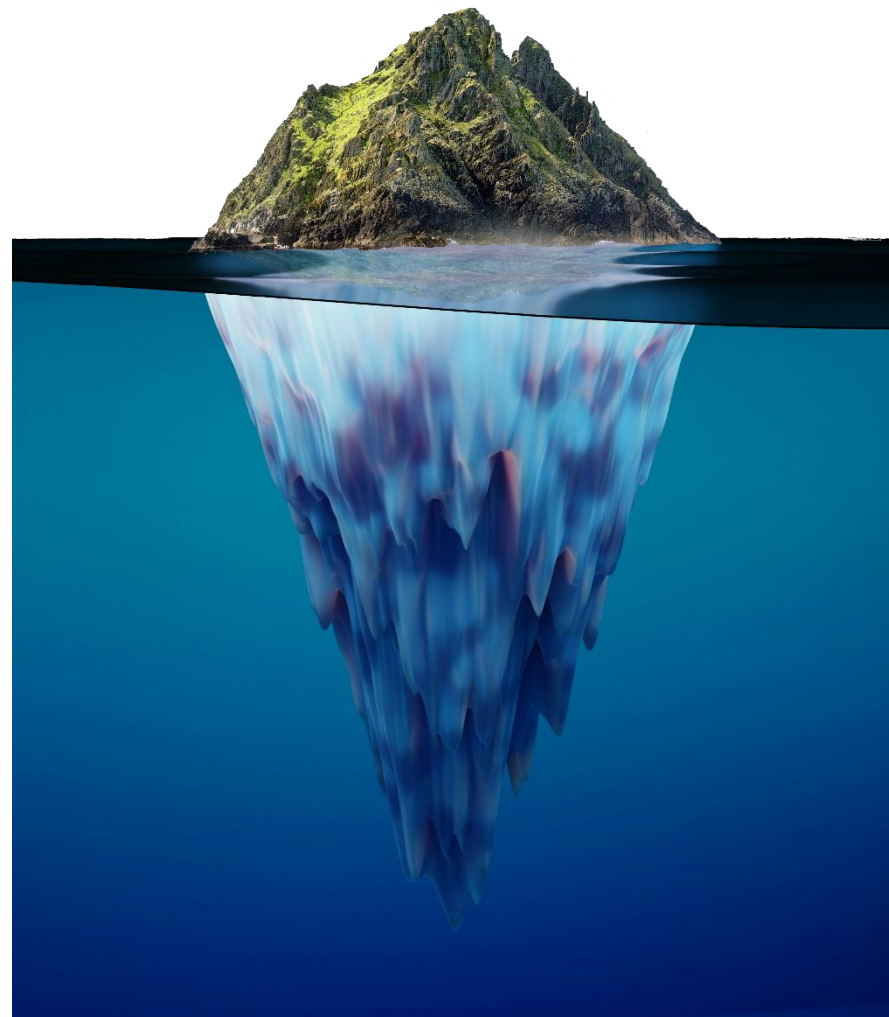
Seconds instead of hours



demo Carto



How can this work so well?



Spheer.ai



Interested in our services?

Want to try our new app carto?

Contact us via

contact@spheer.ai



How space shapes farming?



**WORLD
FROM
SPACE**





Challenges in agriculture

- Consumption growths
- Climate change adaptation
- Soil degradation
- Unstable prices/markets
- Sustainable farming
- Labor shortage
- Technology adoption





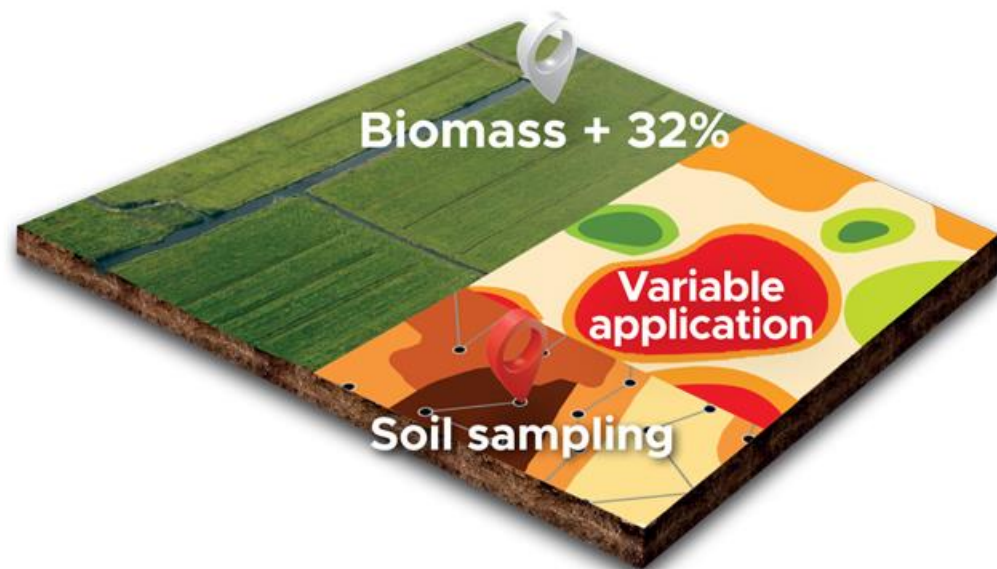
- By optimizing the timing of field operations and resource utilization on 3 million hectares, considering an average of 100 kg of fertilizer and 5 l of pesticide per ha
- Savings of 45,000 to 60,000 t of fertilizers and 2,250,000 to 3,000,000 l of pesticides
- Precision can lead to an estimated reduction of 1.35 million to 1.8 million tons of CO₂





**DYNA
CROP
SPACE**

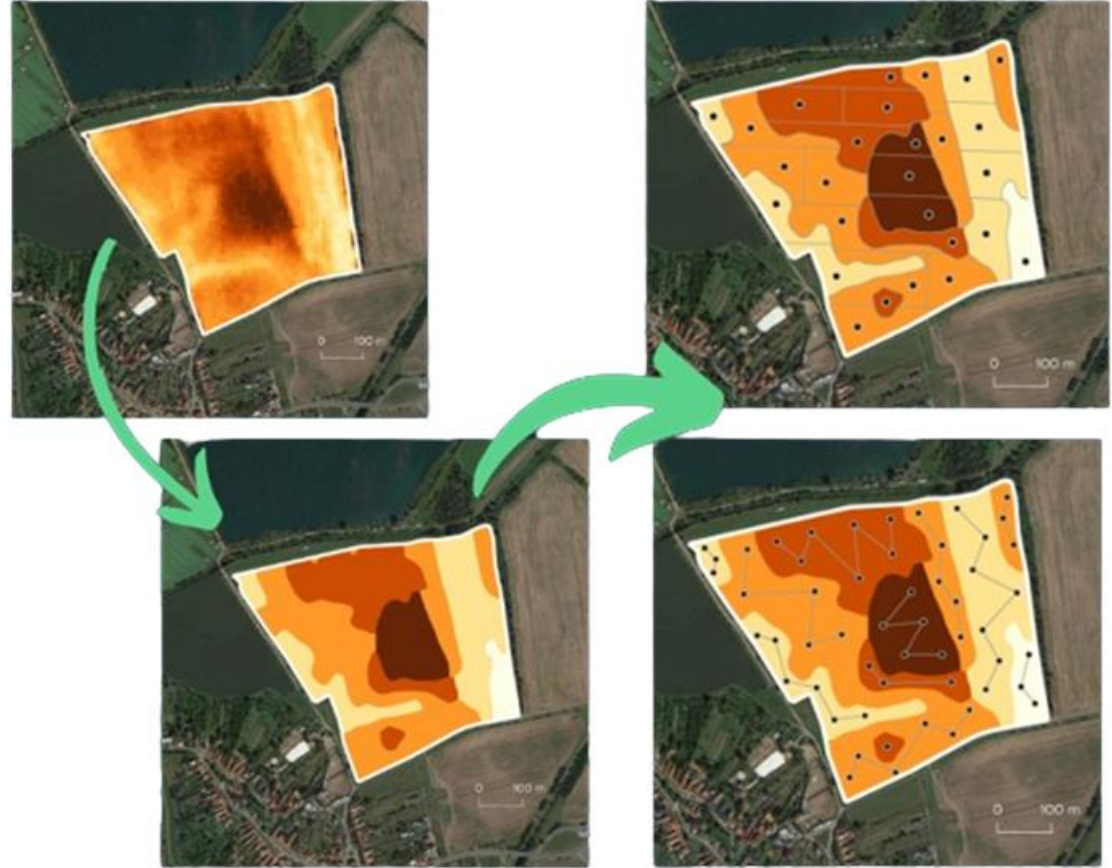
- Power of integration
- Optimized operations
- Precision boosts production
- Mainstreaming variable rate technology





Soil sampling optimization

- Blood work of the field
- Significant savings
- Higher accuracy



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Long term yield potential

- Variable rate fertilizing
- Variable rate seeding



- 25% less fertilizer
- 5% higher yields

Results?

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DYNA
CROP
SPACE

Thank you for your attention!



Mendelova
univerzita
v Brně



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EU GLOBAL ACTION
ON SPACE

Closing Remarks



*Mr E.E. Edison Rijna,
Special Envoy for the Caribbean
Netherlands for EU funds, UN funds and
economic relations with Latin America*



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Lunch Break

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