



Institut d'Estudis
Espacials de Catalunya

Innovation for Strengthening Disaster Risk Management

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Institute of Space Studies of Catalonia (IEEC)



Established in 1996 to develop activities related to space in Catalonia in the fields of research, innovation, training and knowledge and technology transfer

- *Total members: ~300*
- *Productivity: ~450 peer-review articles per year*

Area for the Promotion of the Space Sector of Catalonia (APEC):

- Support the development of space technologies
- Adoption of space-based services

Catalonia Space 2030 strategy*

Mission 1

Catalonia, a hub of origin and connection for space economy

Mission 2

Contributing to the strengthening of Europe's space technology capabilities

Mission 3

Fostering constellations of talent with Catalan DNA

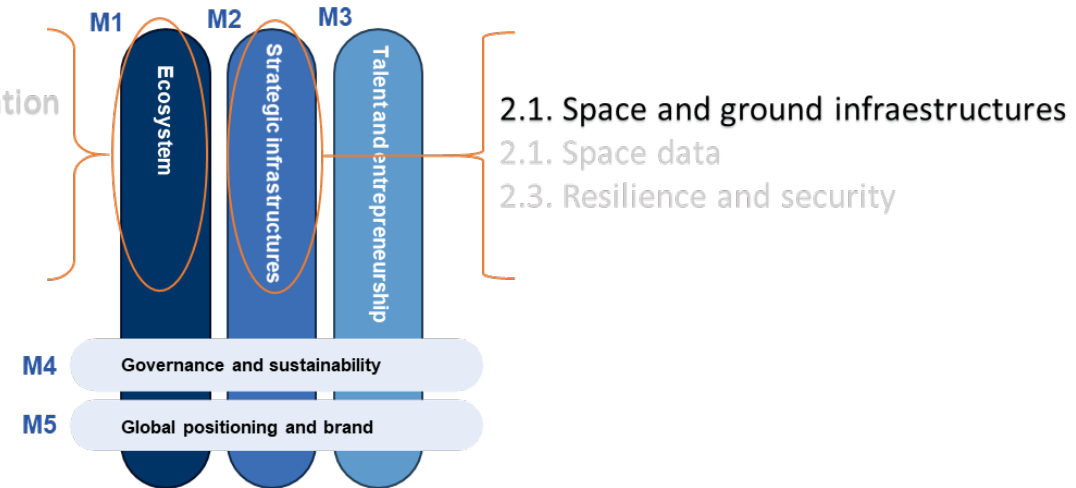
Mission 4

A solid system that drives the sector and the country forward

Mission 5

Catalonia Space 2030: a global brand, a shared pride

1.1. Ecosystem dinamization
1.2. Innovation transfer
1.3. Service adoption



*Space strategy being promoted by the Catalan Government since October 2020



Generalitat de Catalunya
Government of Catalonia

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i2cat^R

ICGC
Institut
Cartogràfic i Geològic
de Catalunya

<https://politiquesdigitals.gencat.cat/ca/economia/espai/>

Infrastructures: Space Assets

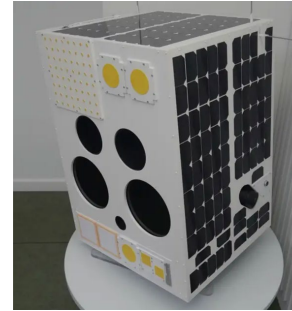
New assets to increase the innovation and competitiveness of the sector.

LEO missions:

- [IEEC] GENIOT-01/Enxaneta – IoT/5G (22 March 2021 - deorbited July 2024)
- [IEEC] **GENEO-01/Menut – EO & IOD** (3 January 2023)
- [I2CAT] GENIOT-02/Minairó – IoT/5G (15 April 2023)
- [IEEC] **GENEO-02 – EO & IOD** (launch Q4-2026)

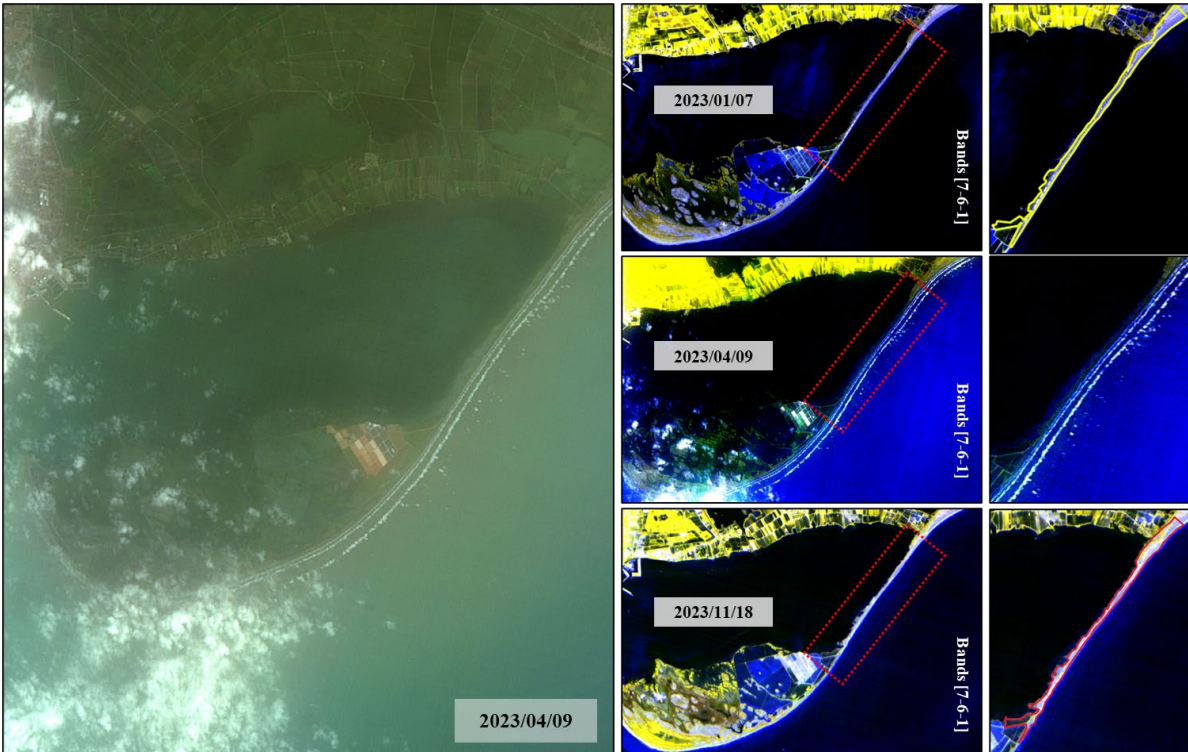
IOD opportunities

- GENE0-01/Menut – Payload for on-board AI processing (C3SATP)
- GENE0-02 – Payload for In-orbit LISA Diagnostics Demonstrator (ILIADA)

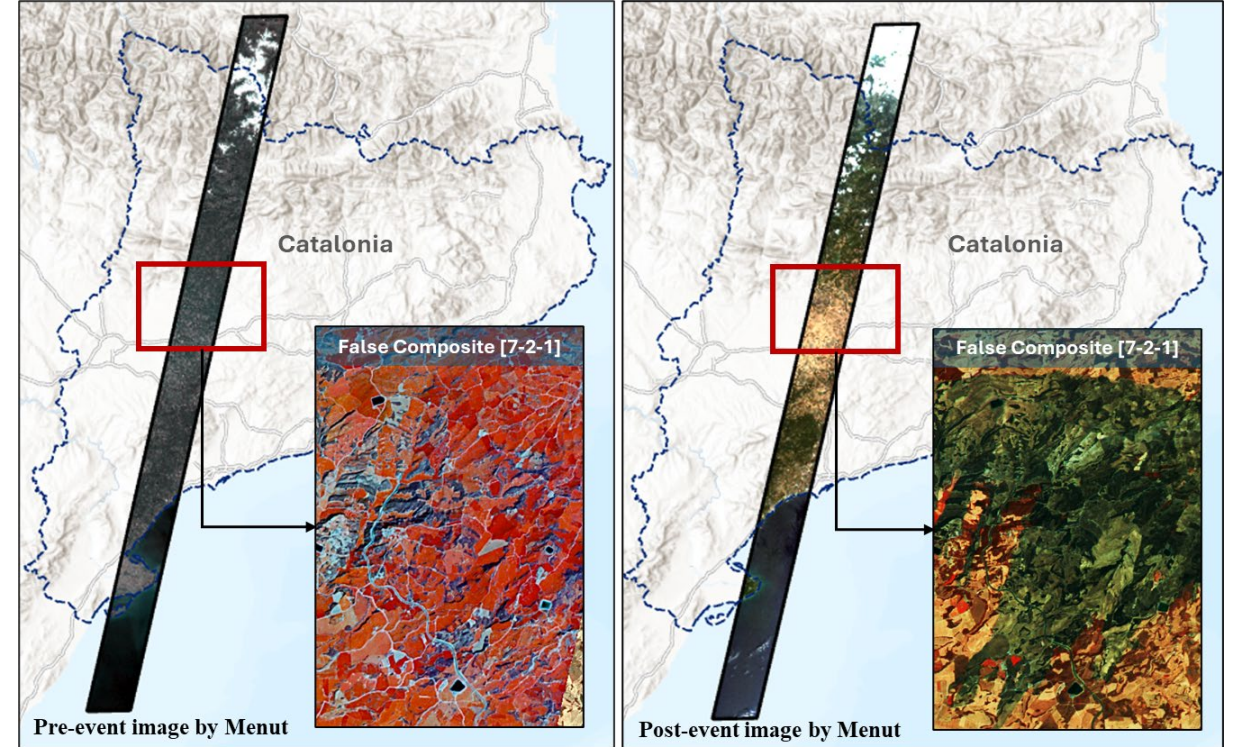


GENEO-01- Menut. Risk management

- Menut is able to offer quick tasking adjustment to target specific areas after an emergency occurs



Coastline monitoring: evaluation of damaged area after a cold drop that caused floods in Delta de l'Ebre - 4th September 2023



Wildfire damage evaluation: Detection of burnt area in the Segarra region 7th July 2025

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Adoption of space-based services

Use cases to promote space-based services; from innovation to service (total budget > 1,2M€, 2022-24):

- Strategy use cases. Pilot projects
- Challenges (3 prizes, 15k€/prize) [+info](#)
- Innovative public procurement (3 contracts, 200k€/contract) [+info](#)
- Open innovation EO services (5 prizes, 50k€/prize [+info](#)) (3 prizes 70k€/prize [+info](#))
- Open innovation IoT-5G services (2 prizes, 50k€/prize) [+info](#)



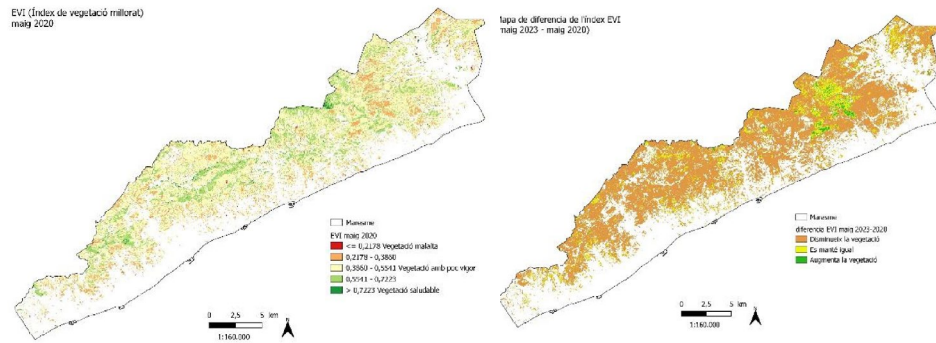
1. Strategy use cases of EO services for public users

Use case: Health monitoring of forests

Provider:



End user: Rural Agents  Generalitat de Catalunya
Government of Catalonia



Objective: Looking for more proactive ways to track the decline in forest vigor and recovery, in a so diverse territory as a decision support tools on climate resilience.

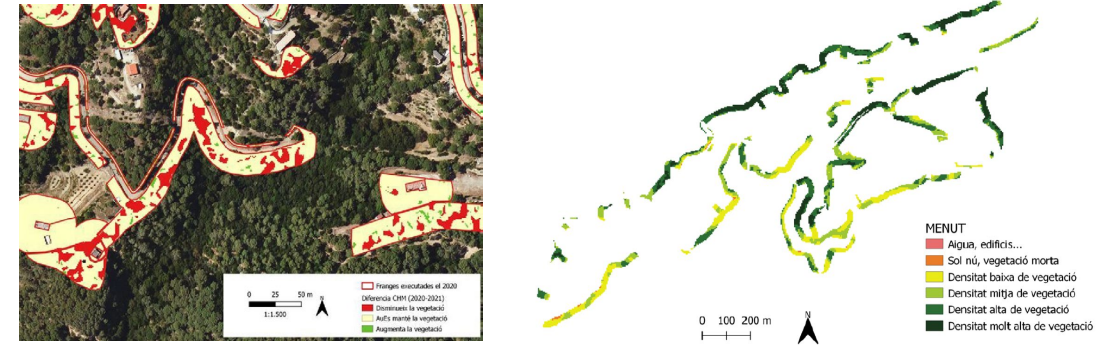
Satellite Technologies: Sentinel-2 and Menut

Use case: Monitoring of sensitive areas

Provider:



End user: Fire Department  Generalitat de Catalunya
Government of Catalonia



Objective: To access information remotely about the state and morphology of vegetation near urbanizations, to establish priorities for action during the emergency and to optimize maintenance protocols against wildfires.

Satellite Technologies: Sentinel-2 and Menut

2. Open innovation challenges of **EO** services for private users

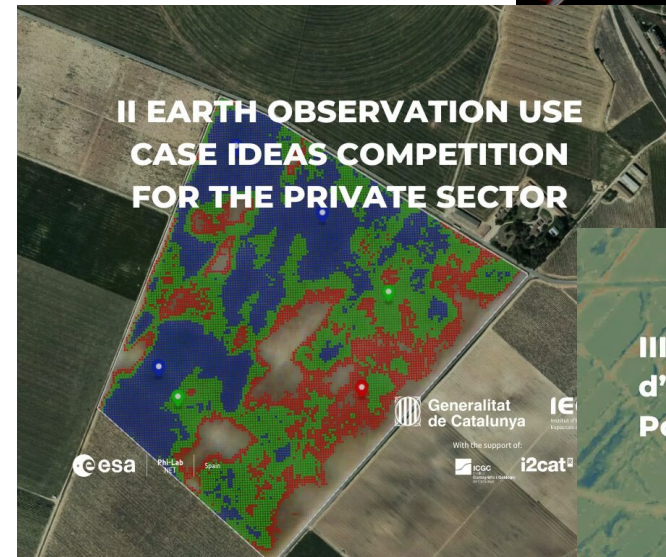
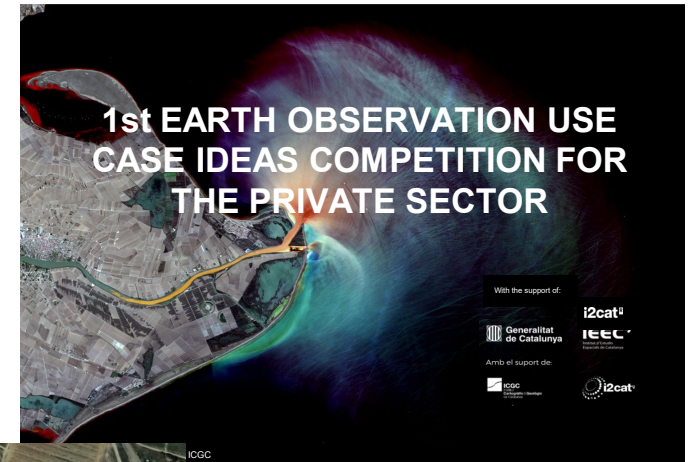
Funding:

First and second edition: 5 use cases awarded with a financial prize of 2,500€ are eligible for a subsequent service contract of **47,500€** each.

Third edition: 3 use cases awarded with a financial prize of 2,500€ are eligible for a subsequent service contract of **67,500** euros each.

Main Participation Requirements:

- Innovation
- Based on **Earth Observation** satellite data
- Use cases targeted at the private sector
- Include active participation from the end user



2. Open innovation challenges of EO services for private users

Use case: Advanced fire danger indicator

Provider: Lobelia.

Coordination: **IEEC^R**

collaboration of

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End user: Energy transfer operator



Objective: The SAPIC system addresses the challenge of detecting points that could start a fire by using Earth observation technologies combined with high-resolution climate data adapted to each specific location.

Satellite Technologies: Sentinel-2, SMOS and Menut

Use case: Monitoring risk in critical infrastructures

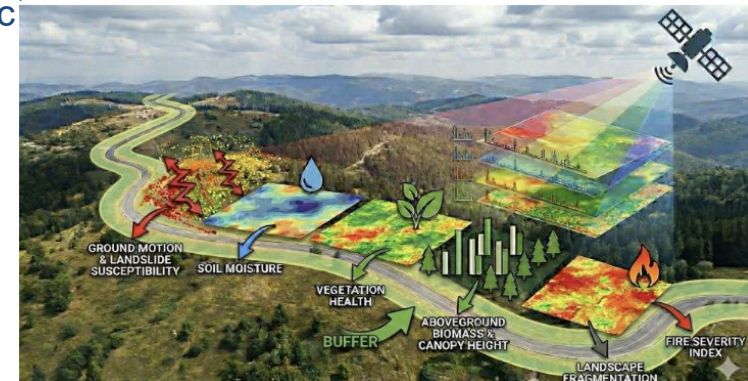
Provider: Lobelia.

Coordination: **IEEC^R**

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with the collaboration of

End user: Construction, **Romero Polo**, and operation of civil infrastructure



Objective: Use of EO satellite data to monitor risk in critical infrastructure, facilitating targeted strategies that optimize investments and proactively protect infrastructure and society.

Satellite Technologies: Sentinel-1 (inSAR), SMAP/SMOS, Sentinel-2, Menut, GEDI

ESA Phi-Lab Spain: Pioneering climate resilience

ESA Phi-Lab Spain aims to drive **innovation** in the space sector by supporting disruptive projects and fostering the transfer of **space technologies** to address **climate resilience** and accelerate their market application.



Image "Earth from Space The Ebro Delta" contains modified Copernicus Sentinel data (2024), processed by ESA, licensed by ESA Standard Licence.

WAVESS

WATERBODY ASSESSMENT AND VERIFICATION FUSING EARTH OBSERVATION AND SEABOT SURVEYING



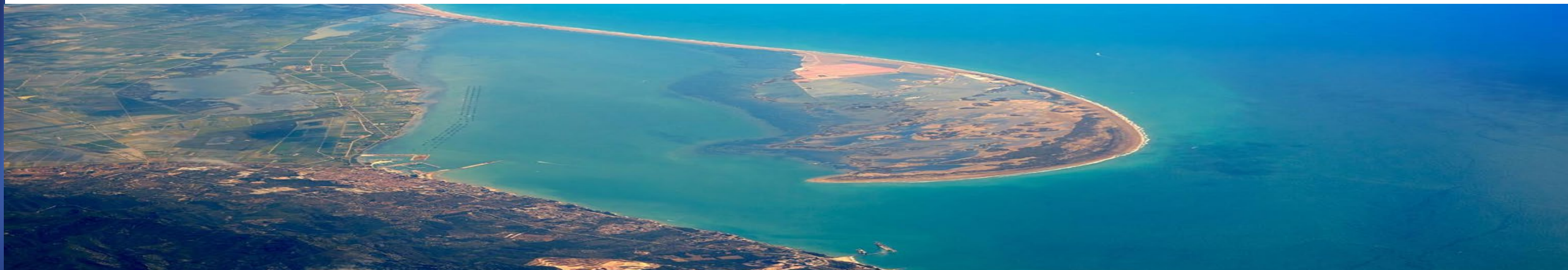
WAVESS improves how we **map and monitor Mediterranean shores** and other **water bodies** by combining satellite data with real-time measurements from Unmanned surface vehicles. This approach delivers accurate, bathymetric and environmental maps at low cost.



RESCAT

RESILIENCE AND ENVIRONMENTAL SATELLITE MONITORING FOR CLIMATE ACTION AND TRANSFORMATION

RESCAT develops a **platform** to monitor the environmental status of the **Ebro Delta** and strengthen its **resilience to climate change** using satellite and in-situ data. It will track key variables such as coastal erosion, saltwater intrusion, and biodiversity loss.



Conclusions

- The **maturation pipeline** from pilot to service is critical, particularly for early-stage innovation projects far from becoming an operational service.
- **User-centric approach**, including collaboration with frontline responders is key.
- Essential to **bridge the gap** between technological capabilities and user needs.
- **Knowledge exchange**, showcasing best practices and fostering partnerships to advance the use of satellite-based services in disaster risk management.
- Leverage **live demonstrations**: Hands-on, practical demonstrations are a powerful tool for showcasing the value of new technologies and fostering adoption.
- Importance of developing new capabilities as technology evolves.
- Importance of the international, national and regional **cooperation**. Regional strategies provide innovative and scalable frameworks for piloting and validating space-based solutions.
- Maintaining **continuous data availability** to support robust and reliable services.



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Thank you

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