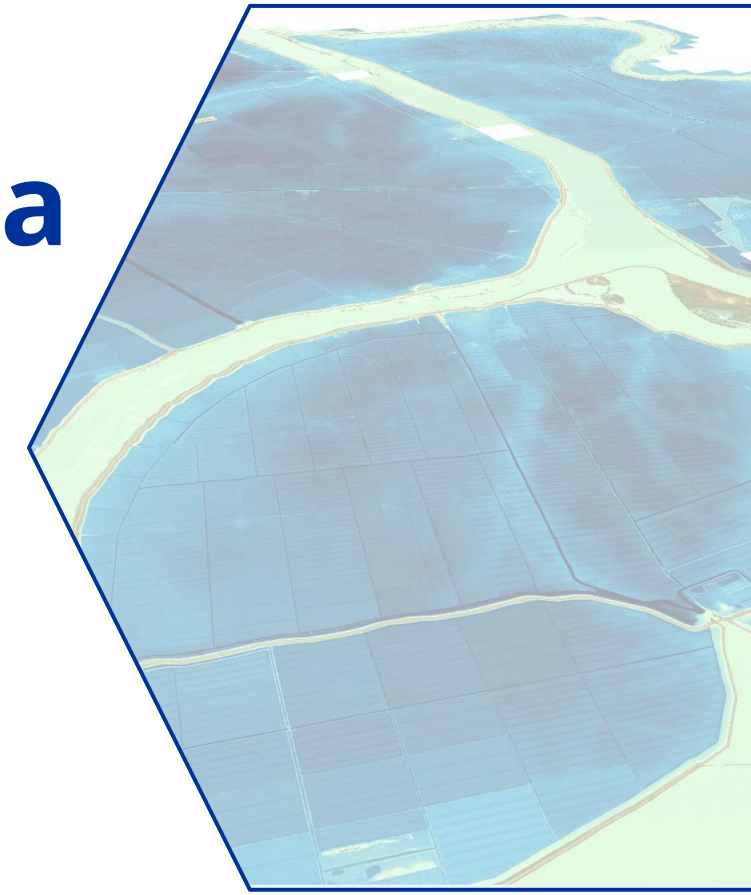
Interreg Europe

Co-funded by the European Union

SATSDIFACTION

nereus
network of european regions using space technologies

The integration of satellite data into the regional ecosystems



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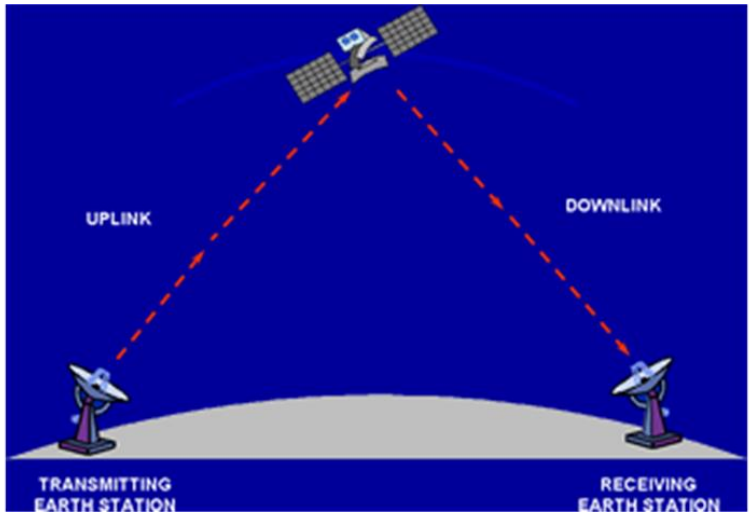
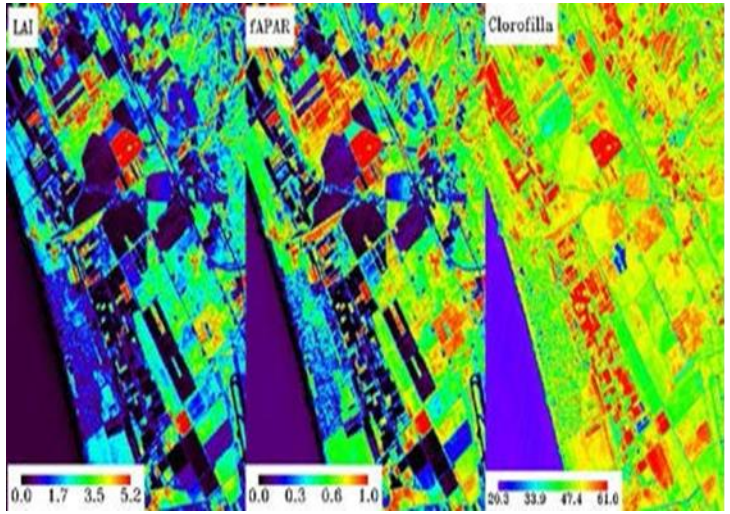
NEREUS Mission/Objectives





Data from satellite imagery

Useful Information for people, companies and organisations

SPREAD THE **USE AND UNDERSTANDING** OF SPACE TECHNOLOGIES

ADVOCATE MATTERS OF REGIONAL SPACE USES

STIMULATE THE DEVELOPMENT OF SPACE **APPLICATIONS**

Importance of NEREUS for regional engagement in space and satellite-based technologies

A JOINT PLATFORM TO:

- Highlight the **regional dimension** of European space policy and programmes
- Build **partnerships** and networks at a European scale
- Facilitate the **involvement** in EU/ESA-funded activities
- Enhance **cross-sectorial exchanges** among operators
- Access crucial **information** in advance
- Develop j**oint positions as European users of space technologies**, voice them, and provide enhanced **visibility** of regions at the European level

Interregional Collaboration

We bring regions and its stakeholders together with the objective to use space-based solutions to tackle common problems in all public domains and help them build resilient space ecosystems!

Interregional Collaboration

At a European level:

- **We represent your region's interests directly to EU leaders**, ensuring your priorities are heard and integrated into the European space agenda;
- We promote your region's space expertise, achievements, and potential to **decision-makers** at the EU, ESA, and other influential organisations.
- As a member, you join **exclusive meetings and strategic dialogues with EU institutions**, ESA, and key stakeholders, opening doors to collaborations and funding opportunities.
- We **align your regional needs with EU space strategies**, shaping policies and programmes that reflect your unique strengths.

Interregional Collaboration

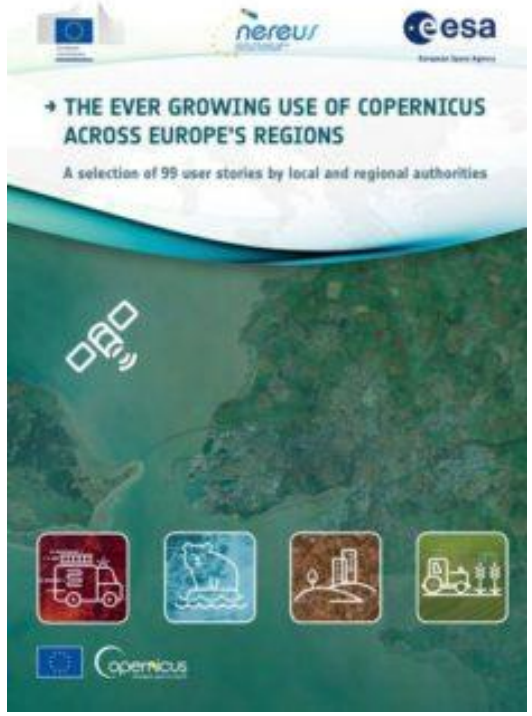
At a regional level:

- **Partner with other regions** that share your ambitions and challenges to build strong, **competitive consortia**;
- **Help your politicians** by showing how **space offers horizontal solutions** to challenges across every public sector;
- **Unlock regional potential** by using space solutions to boost your region's **economic profile/strategy**;
- Benefit from end-to-end support in the **EU projects**, from identifying the right calls and crafting **winning proposals** to reporting, and ensuring long-term impact.

Flagship initiative Copernicus4regions (NEREUS, European Commission, European Space Agency)

Making **situation and needs at regional level** more transparent

Bridging service provider and public users



Developing **strong advocacy tools** for promoting the regional dimension

Enhancing **regional cooperations/ partnerships**

Community building

Best practice example from Riga

SENTINELS FOR FLOOD AND YIELD LOSS MAPPING

Many fields ready to harvest are flooded during severe rainfall. Sentinel satellite data was used to replace field visits and to accelerate payment of compensation.

The challenge

In August 2017, Latvia experienced extremely heavy rainfall. More than twice the monthly norm poured in two days at the very beginning of the harvesting season.

Fields were flooded and it was impossible to get agricultural machinery on them. The Government declared a state of emergency in the agriculture sector. It was clear that administrative institutions would have to check flooded fields so that farmers could receive compensations for the yield loss but many roads were impossible to drive and raining continued for more than a month.

The space based solution

For the largest flooded fields, Copernicus Sentinels became very useful. Both Sentinel-1 radar and Sentinel-2 optical satellite data were used to map the flooded areas.

Sentinel-1 radar is capable of "seeing" through clouds which allowed for the use of remote sensing data for flood mapping even though the sky was still overcast and it was raining often. Furthermore, since radar backscatter on water is completely different from vegetated areas, it makes flood mapping with radar data quite unmistakable.

High revisit frequency allowed for the mapping of flooded areas every week or even more often, if necessary. The possibility of obtaining data every few days allowed fields that became flooded after a while to be caught, when water flowed down the terrain.

At the end of September Sentinel-2 was able to get some optical images. Many fields were still under water. Flood mask was also generated from optical data and merged with data from previous dates.

Flood maps from Sentinel satellite data were integrated into Land Parcel Information System and used together with farmer applications for compensation.

Benefits to Citizens

According to Sentinel data every parcel that was under water was considered to have lost yield and excluded from these fields that must be visited. Use of Sentinels reduced the amount of on-the-spot visits. Inspectors from the Rural Support Service could spend their time visiting only those fields whose yield loss was not clear from satellite data (small parcels and fields where crops emerge from water or the soil was too wet to harvest).

Use of Sentinels and drones shortened time for field visits by a third. Faster field visits saved plenty of administration costs (fewer working hours, less driving to visits). 3100 farmers with 82000 ha of damaged area received their compensation for yield loss in less than two-months after the first day of rainfall. That was an unprecedented speed for emergency administration - from field visits to payments.

Severe rain caused flood at the beginning of harvesting season in Eastern Latvia. Image: Rural Support Service

Thematic Area	Region of Application	Sentinel mission used	Copernicus Service used	Usage Maturity Level
AGRICULTURE, FOOD, FORESTRY AND FISHERIES	LATVIA - LATGALE	S1 S2	-	5

→ THE EVER GROWING USE OF COPERNICUS ACROSS EUROPE'S REGIONS: A selection of 99 user stories by local and regional authorities

Farmers received compensation payments faster and could start preparing for the next season.

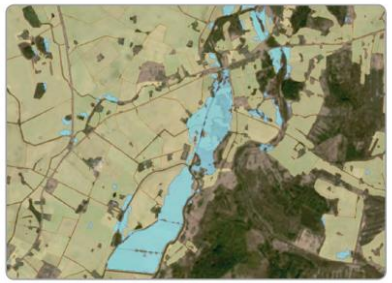
Outlook to the future

Every emergency or, in this case, loss of yield, leaves people with hope that it will not happen again or, at least, it will not happen soon. Still, emergencies happen and it is essential for government institutions to respond as soon as possible, to estimate damage rapidly, and to administer support payments in a short space of time.

The Sentinel constellation proved its worth in helping to administer compensation for flood damage. This was also the first example in Latvia of the joint use of both Sentinel-1 and 2.

If flooding strikes again, we will be experienced at mapping flooded parcels even faster. Also, we could extend flooded areas over digital terrain model, if available.

There are always things to improve with every solution. But it would not be possible without the Copernicus Sentinel satellites' data and its short revisit time.



Flooded area mapped (blue) using Sentinel-1&2. Overlap with reference parcels (yellow) show the lost yield in Eastern Latvia.
Credit: Contains modified Copernicus Sentinel data 2017

> "Using Sentinels to check damaged fields lets us finish compensation payments in less than two months from the first drop of rain."
>
> ***Indulis Abolins,***
> ***Deputy Director of Rural Support Service***

Acknowledgements

Thanks to the Copernicus programme for Sentinel missions and data, ESA for training courses and tutorials for data processing, and Riga Technical University for academic support.

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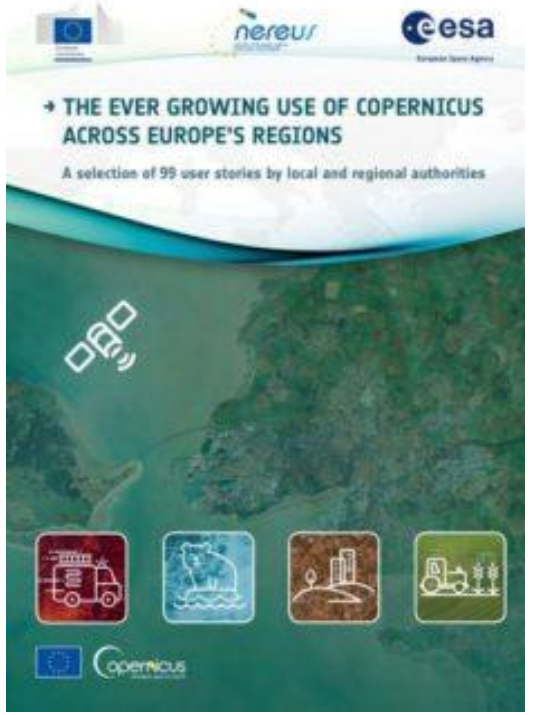


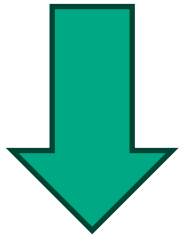
A few years later

Over the last few years, the service for flood mapping and yield loss estimation was not further developed. The main reason is that an emergency situation, such as the one dating back in the summer of 2017, has not occurred again. However, the knowledge acquired is kept in the "toolbox" of Rural Support Service and the solution is considered to be still of interest for the organisation.

Zane Atstāja, RURAL SUPPORT SERVICE OF THE REPUBLIC OF LATVIA (Control department)

Importance of NEREUS for regional engagement in space and satellite-based technologies

We shape the **regional space ecosystem** by helping regions to **integrate space into their regional and smart specialisation strategies and develop space policies/strategies to benefit various public domains.** Moreover, we encourage interaction **between the public sector, industry and academia so that they collaborate on space solutions to improve policy/decision making**. For us, space data is a tool to benefit all other non-space sectors and to tackle challenges impacting the citizen, such as climate change. To this end, **sharing expertise from member regions helps you to contribute to regional growth and innovation.**



Member Regions

+Other regions, space agencies, non space sector users

Regional ecosystem

UNIVERSITIES

RESEARCH CENTRES

INDUSTRY

SMEs

1. How NEREUS aligns with SATSDIFACTION's goals

***SATSDIFACTION**: promotes better governance at local and regional level, helping partners and their stakeholders become more efficient, effective and accountable.*

NEREUS:

- prioritizes the interests of regional space users by engaging in political dialogue with key institutions;
- advocates for the role of regions in implementing the European Space Strategy and emphasizing the user perspective;
- explores the potential of space applications in support of public policies for a better-informed decision-making;

1. How NEREUS aligns with SATSDIFACTION's goals

Annual European Regional Symposium by NEREUS Regions

Establishment of Regional Space strategies

Civil Protection, Blue Economy and Defence & Security

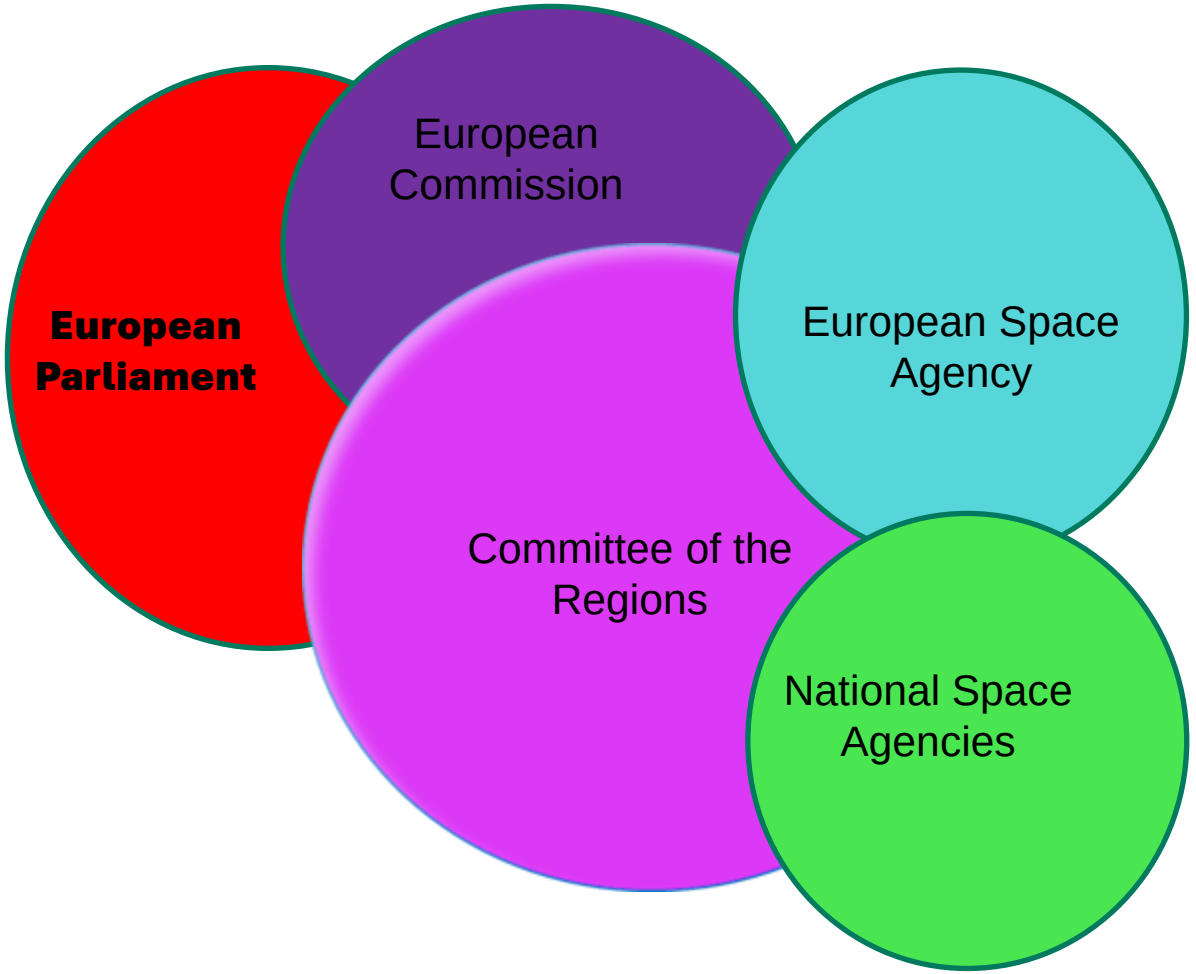
4TH EUROPEAN SYMPOSIUM BY NEREUS REGIONS

NEW SPACE FOR MULTIPLE CHALLENGES
RESILIENCE & SUSTAINABILITY

Ponta Delgada/Portugal, 2025

1. How NEREUS aligns with SATSDIFACTION's goals

Promoting INTERREG policy outcomes at the EU level. Final event at the Committee of the regions in 2027.



2. How NEREUS aligns with SATSDIFACTION's goals

Enhancing project intelligence through regional cooperation: case studies & SATSDIFACTION examples

***SATSDIFACTION**: promotes the exchange and transfer of experiences related to the use of Satellite Data in local and regional Spatial Data Infrastructures*

NEREUS: To bring regions and their stakeholders together and promote the use of space-based solutions for common challenges, NEREUS focuses on networking, building partnerships, and fostering dialogue and knowledge exchange. It also works to expand its network to new regions and strengthen connections between the space community and other user groups.

2. How NEREUS aligns with SATSDIFACTION's goals

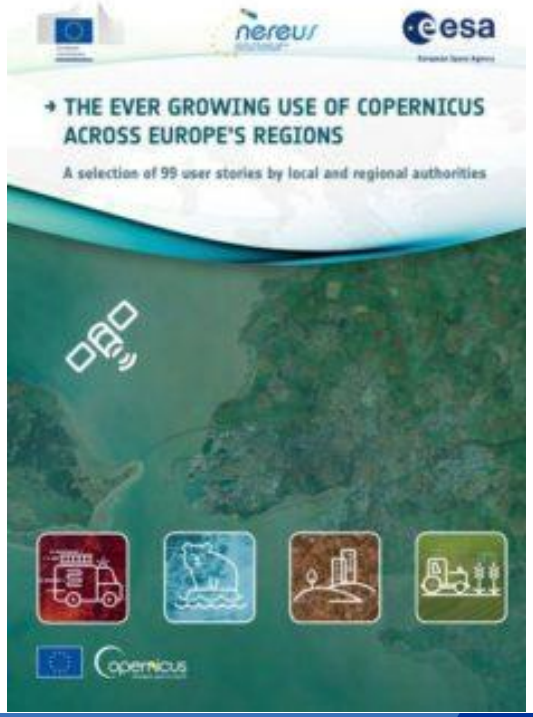
*Flood management has been a priority for Wallonia, guided by the **PLUIES Plan (2003)** and the **EU Flood Directive (2007/60/EC)**, implemented through the **Transversal Flood Group (TGI)**. The directive sets a framework for assessing, mapping, and managing flood risks, requiring **strategic Flood Risk Management Plans (FRMP)** updated every six years*

Veneto Region	*Land management*
Podkarpackie Region	*Renewable energy sources*
Azores Region	*Energy Transition*
Sviluppo Basilicata	*Training & Education*
ISSeP- Wallonia	*Flood Prevention*
Riga Municipality	*Urban sustainable development*
Occitanie Region	*Climate change adaptation*

SAT/TION

COP4REG

Copernicus4regions



2. How NEREUS aligns with SATSDIFACTION's goals

The Climate Change Adaptation Plan aims to protect people, property, and biodiversity in Occitanie / Pyrénées-Méditerranée by reducing vulnerability, limiting damage from extreme events, minimizing costs, and strengthening natural ecosystems.

Veneto Region	*Land management*
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ISSeP- Wallonia	*Flood Prevention*
Riga Municipality	*Urban sustainable development*
Occitanie Region	*Climate change adaptation*

OCEANIDS:

- **Enhance access to existing data and services related to climate change impacts on coastal regions.**
- **Create advanced, reusable information tools tailored to user needs.**
- **Develop novel climate services integrated into operational EU infrastructure.**
- **Establish a data-exchange framework for efficient data flow and validation from local and central sources**
- **Demonstrate OCEANIDS tools and applications with 12 end users across 7 European regions, including vulnerable areas.**

SAT/TION

OCEANIDS

Project Overview

The **OCEANIDS** project is a European Union initiative aimed at making coastal regions more resilient and inclusive by using innovative digital tools to support sustainable growth in the Blue Economy. But what does that mean in practical terms? Simply put, **OCEANIDS** is helping local communities, businesses, and authorities better understand and manage the impacts of climate change on coastal areas.

Imagine a tool that helps port managers predict extreme weather events or a mobile app that lets local citizens contribute their ideas and feedback on coastal protection measures in real-time. That's what **OCEANIDS** is building a set of user-friendly applications that connect people with the data and insights they need to take meaningful action. The project is all about empowering communities to create positive change, using modern technology to make coastal living safer, more sustainable, and more inclusive.

Let's take a closer look at what **OCEANIDS** has achieved in its first year.

Crete, Greece
- Focus: Sustainable tourism practices and the mitigation of coastal risks.
- Activities: Monitoring air and water quality, tracking coastline changes, and assessing land movement.

Brittany, France
- Focus: Marine biodiversity preservation and addressing the impacts of climate change on local communities.
- Activities: Monitoring ocean levels and surface conditions, mapping flood risks, and assessing biodiversity loss.

Azores, Portugal
- Focus: Post-earthquake assessments and climate-related hazard monitoring.
- Activities: Monitoring volcanic and seismic risks, tracking ocean acidification, and assessing marine dead zones (hypoxia).

Bremen, Germany
- Focus: Improving port operations and integrating climate adaptation measures into infrastructure planning.
- Activities: Monitoring ocean levels and mapping flood risks to strengthen local resilience.

Coastal Finland
- Focus: Investigating the impacts of sea-level rise and developing local adaptation strategies for coastal communities.
- Activities: Forecasting and mapping ocean winds, monitoring ship movements, and assessing the effects of sea-level rise on coastal areas.

OCEANIDS

3. How NEREUS aligns with SATSDIFACTION's goals

INTERREGIONAL COOPERATION for TRANSFORMATIVE LEARNING AND CAPACITY BUILDING

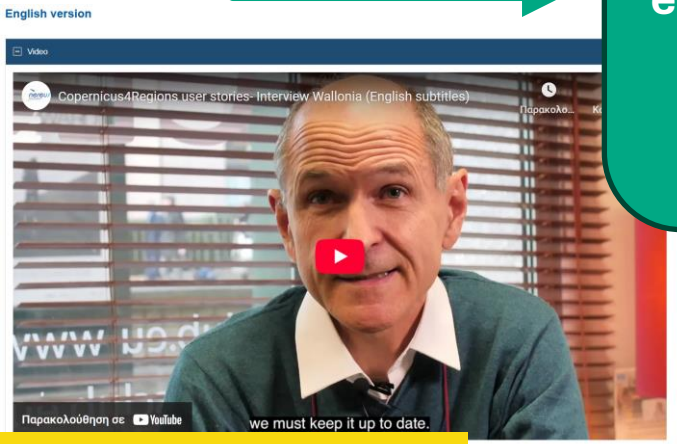
***SATSDIFACTION, a work of experts**: Through a transformative learning process based on mutual peer studies and reviews, learning Deep Dives (learning experiences which includes site visits, observation of practice, masterclasses and workshops), the project will promote better governance.*

NEREUS: NEREUS will monitor technology trends to address user needs and societal challenges, promoting cross-sector dialogue through workshops and political engagement. The relaunched Earth Observation Working Group will further support this by fostering open science, knowledge exchange, and sustainable development across regions.

3. How NEREUS aligns with SATSDIFACTION's goals

Veneto Region	*Land management*
Podkarpackie Region	*Renewable energy sources*
Azores Region	*Energy Transition*
Sviluppo Basilicata	*Training & Education*
ISSeP- Wallonia	*Flood Prevention*
Riga Municipality	*Urban sustainable development*
Occitanie Region	*Climate change adaptation*

NEREUS targeted webinars on energy/education/training, videos, communication material



3. How NEREUS aligns with SATSDIFACTION's goals

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Earth Observation Working Group! A group of EO experts!

Scientific contribution

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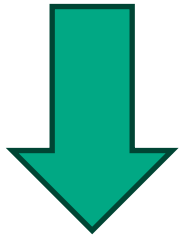

Integration of satellite data in regional ecosystems

Regional Law 11/2004 "Rules for land use and landscape governance"

LDD in Venice kick-off meeting+ Capacity Building Bootcamp in Treviso focusing on integrating satellite data with Territorial Data Infrastructures to enhance regional and local decision-making. Through practical workshops and collaborative sessions, attendees developed shared methodologies aimed at utilizing satellite data effectively within European local and regional administrations. The bootcamp underscored the project's commitment to fostering evidence-based policies and innovative tools, leveraging data from the European Copernicus sensor and satellite network to address community needs and contribute to sustainable development goals.

Regional programme for the development of renewable energy sources for the Podkarpackie Region

2nd Learning Deep Dive of the SATSDIFACTION project on 13–14 February 2024 in Rzeszów, Poland. The region designed a rich, forward-thinking agenda centered on leveraging satellite data to support renewable energy and climate strategies. The region facilitated discussions on:Integrating satellite and drone data into public administration and climate policy. National spatial data systems, AI, and remote sensing in agriculture and energy. Use of space data for managing renewable energy infrastructure. Study visits to the Solina hydroelectric plant and a nearby wind farm showcased real-life applications of EO data and clean energy.

Azorean Energy Strategy 2030

On 27–28 June 2024, the Azores region hosted the 3rd SATSDIFACTION Learning Deep Dive in Ponta Delgada, High-level discussions on energy transition, climate neutrality, and the Azores' SDI strategy, with live demos and contributions from national and regional experts. Field visits to a **geothermal power plant and natural sites**, offering insights into sustainable energy and environmental preservation.

Integration of satellite data in regional ecosystems

Climate change adaptation plan to better protect people, goods and biodiversity

From 10–12 December 2024, the Occitanie Region hosted the 4th SATSDIFACTION Learning Deep Dive in Montpellier. The three-day event featured strategic discussions on integrating satellite data into regional climate policies, showcased the region's dynamic space ecosystem, and included hands-on fieldwork on coastal erosion and shoreline monitoring. The final day focused on applications in agriculture and water management.

Riga Development program 2022-2027

From 10-11 September 2025: Use of Satellite Data for the achievement of the Sustainable Development Goals 2030

Riga Planning Region – Priorities, Challenges, and Opportunities

Field visits

Walloon Water Code (Book II of the Environmental Code relating to the transposition of the WFD 2000/60) / M.B. 23.09.2004

7-10/4 2025: The 5th LDD was focused on **flood management and the use of satellite data for emergency response and recovery**.

Experts shared in-depth insights into the **2021 mega-flood**, lessons learned, and how Earth Observation (EO) data supported response and recovery.

Workshops explored hydrological modeling, damage assessment using EO, and cross-border cooperation through Interreg projects like **FLOWS**, **EMFloodResilience**, and **MARHETAK**. The field visit to the Vesdre catchment provided hands-on learning at sites such as **Pepinster**, the **Gileppe dam**, and the **High Fens**, emphasizing nature-based solutions, dam safety, and climate resilience.

- **Next LDD 2026: The new Basilicata Multi-fund ROP (ESF + ERDF) 2021-2027**

Integration of satellite data in regional ecosystems: Common actions!

- High-Level Political Support→ All events featured regional policymakers or institutional leaders to boost visibility and political support.
- Focus on Climate Action→ Regions explored the use of satellite data and spatial tools to support climate strategies, including flood management, renewable energy, coastal erosion, and carbon neutrality.
- Knowledge Sharing & Capacity Building→ Each LDD included thematic workshops, panel discussions, and technical sessions to exchange best practices among regional experts and stakeholders.
- Use of Satellite Data & Spatial Infrastructures→ Common emphasis on integrating Earth Observation (EO) and geospatial data into public policies and local decision-making.
- Multi-Stakeholder Involvement→ Events brought together academia, public authorities, research centers, private sector, and civil society to ensure holistic approaches.
- Field Visits & Demonstrations→ Each region organized site visits or live demos (e.g., hydro/wind plants, flood zones, coastal sites) to showcase tangible applications of geodata and sustainable practices.
- Networking & Community Building→ Informal activities (dinners, tours, social moments) facilitated cross-regional connections and strengthened the SATSDIFACTION community.

NEREUS CONTRIBUTION IN SATSDIFACTION & next steps

NEREUS is at the forefront of this initiative by leading the **communication and outreach strategy** of the project and **promote the initiative beyond the consortium towards public authorities,regional communities and institutional players at European scale.**

Veneto Region	*Land management*
Podkarpackie Region	*Renewable energy sources*
Azores Region	*Solar Energy*
Basilicata	*Training & Education*
ISSeP- Wallonia	*Flood Prevention*
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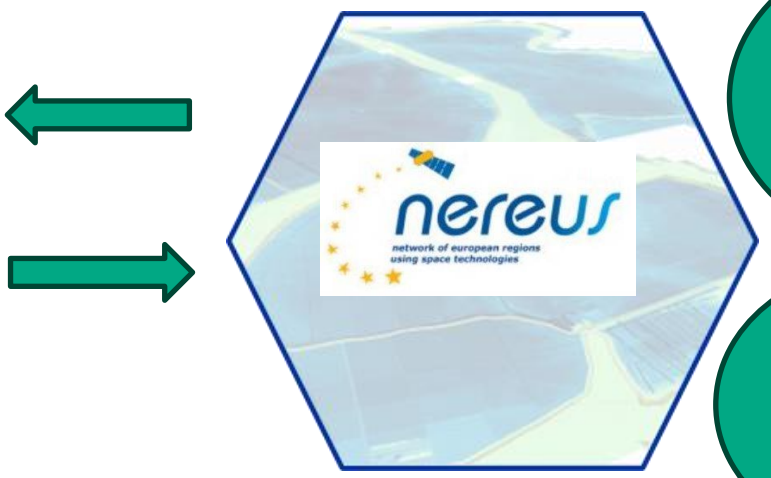

Ensure the continuation of interregional collaboration beyond the project

Promotion: Social media, website, videos

Sharing experience/expertise/ advocate on capacity building skills; identifying the needs of the Public Administrations and the available space solutions offered by the businesses.

THE ROLE OF NEREUS IN SATSDIFACTION & next steps

- Expected outcomes and impact of SATSDIFACTION?
- Future opportunities for collaboration in space-related projects?

Thank you!

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