OCEANIDS Workshop Follow-Up: Shaping the Future of Resilient and Inclusive Coastal Societies on 11 March 2025, Port of Antwerp, Belgium

The first OCEANIDS workshop, held at the Port of Antwerp, brought together key stakeholders from public/port authorities, industry, academia, and the maritime sector to discuss the role of digital transformation, Earth observation, and climate resilience in fostering sustainable coastal and port management. The workshop served as a platform for exchanging best practices, exploring innovative solutions, and strengthening collaborations for maritime spatial planning and blue economy initiatives. The workshop was organised by NEREUS (Network of European Regions Using Space Technologies) and CDP (Carbon Disclosure Project) with the support of EARSC and Geosystems Hellas.

Key Takeaways

Port Authorities and Climate Resilience

The Vice-Mayor of Antwerp, **Johan Klaps**, emphasized the growing importance of ports as hubs for SMEs and as enablers of hydrogen and methanol production. The Port of Antwerp-Bruges is transforming into a smart port by integrating advanced technologies and fostering innovation. Initiatives include developing a digital twin for real-time monitoring, deploying autonomous drones for inspections, and implementing a private 5G network to enhance communication and data processing. Collaborations with startups, government bodies, and research institutions are central to creating a sustainable and efficient port ecosystem.

Joeri Vandeperre, Port of the Future Advisor, outlined the strategic priorities of the Port of Antwerp-Bruges, emphasizing its role as a driver of sustainable economic growth, handling a significant volume of European trade. He highlighted:

- Efforts in climate resilience, including initiatives on alternative fuels (hydrogen and methanol), circular economy projects, and digital transformation.
- The significance of maritime spatial planning as a tool for sustainable blue economy growth.

Eleni Hatziyanni, Policy Officer at DG MARE, presented the European Commission's vision on maritime spatial planning, emphasizing its role in enabling sustainable blue economy growth and ensuring ports' climate adaptation strategies align with EU policy objectives. She stressed the importance of integrating Copernicus data and advanced digital tools to support regional decision-making processes.

Roya Ayazi, NEREUS Secretary General, highlighted the vital role of European regions in driving space-enabled maritime innovation. She emphasized NEREUS's mission to connect regional authorities, industry, and academia, ensuring Earth Observation and satellite technologies enhance port operations, sustainability, and coastal resilience. By fostering cross-sector collaboration, NEREUS empowers regions to translate space-based insights into actionable solutions for the maritime sector.

Scientific and Technological Innovations

During the session, OCEANIDs technical partners presented key advancements, including:

- **EO for the Port of the Future & the OCEANIDS Platform** – **Kilian Vos** (OHB Digital) demonstrated integrated solutions for smart coastal and port management, leveraging remote sensing and data analytics.
- **Smart Port Operations** – **Mikko Strahlendorff** (Finnish Meteorological Institute) presented climate-informed decision-making tools aimed at improving operational resilience.
- **AI and Digital Transformation** – **Alexandru Stan** (IN2 Digital Innovations) and **Konstantinos Palaiologos** (Web2Climate) highlighted the role of AI-driven tools and applications in fostering inclusive and transparent port governance.
- **Decision Support Systems for Economic Growth** – **Eirini Marinou** (Geosystems Hellas) and **Jesus Peña Martín** (Port of Málaga) underscored how data-driven approaches enhance port efficiency, economic impact assessment, and workforce planning, by showcasing the Decision Support System that will be delivered, focusing on the use case of Malaga Port.

Empowering Ports Through Climate-Informed Maritime Planning and Innovation

During the discussion, Óscar Bergasa López (Las Palmas Port Authority) emphasized how projects like OCEANIDS can strengthen the integration of local knowledge into regional maritime planning. He underscored the need for climate resilience strategies in port operations, advocating for the exchange of best practices to address the diverse challenges faced by ports of varying sizes.

Jesus Pena Martin (Puertos del Estado), alongside Piotr Krasnicki (ESPO), reinforced the importance of aligning policy frameworks with operational realities, ensuring that regulatory measures are not only comprehensive but also adaptable to local conditions. Their insights reflected a growing demand for user-driven, evidence-based tools that empower decision-makers across Europe's port network.

Joeri Vandeperre (Port of Antwerp-Bruges) provided a forward-looking perspective, highlighting how digitalization and smart technologies are transforming ports into innovation hubs. The implementation of AI-driven analytics, digital twins, and autonomous monitoring systems is paving the way for enhanced efficiency and sustainability. His remarks aligned with broader European strategies that advocate for smart, green, and resilient infrastructure.

From a scientific perspective, Muriel Lux (Mercator Ocean International) stressed the critical role of ocean intelligence in maritime spatial planning. Data-driven insights from ocean monitoring are not only essential for environmental protection but also for optimizing logistics and safeguarding coastal resilience in the face of climate change.

As moderator, Roya Ayazi (NEREUS) framed the discussion within the larger context of European funding and interregional collaboration. Under the EU Horizon Europe programme, projects such as OCEANIDS, help to leverage space-based and oceanographic data to support decision-making in the maritime sector.

Industry & Academia Perspectives: Driving Innovation for Sustainable Coastal Communities

During the panel discussions, industry leaders and academic experts highlighted the transformative potential of **space-based technologies, artificial intelligence, and maritime**

robotics in enhancing coastal resilience. The integration of **Copernicus data and AI-powered tools** was identified as a key enabler for **predictive analytics, risk assessment, and operational efficiency** in port management—an approach that aligns with Europe's broader efforts to modernize maritime infrastructure through innovation.

Moderated by **Afroditi Mathioudaki (CDP)** and **Leon Wiesner (EARSC)**, the discussion emphasized the importance of **inclusive innovation**, ensuring that OCEANIDS tools are accessible and adaptable across diverse coastal regions. The moderators underscored the necessity of bridging the gap between research and real-world application, enabling ports and coastal communities to leverage satellite-based insights for climate adaptation.

Pascal Schichor (European Space Imaging) and **Antoine Masse (IGN FI)** reinforced the role of **high-resolution Earth Observation (EO) data** in improving situational awareness. By integrating advanced imaging capabilities with AI-driven analytics, port authorities can optimize resource management, monitor environmental changes, and enhance security measures.

From an industry perspective, **Samuel Fonseca (Grupo Cotesa)** and **Pau Gusch (SeaBots)** showcased how maritime robotics and autonomous systems are revolutionizing data collection and operational efficiency in ports. Their contributions highlighted the shift towards **real-time, automated decision-making**, reducing human intervention while increasing safety and sustainability.

Cory Fletcher (University of Antwerp) brought an academic lens to the discussion, stressing the need for continuous research and collaboration between universities, startups, and policymakers. She advocated for stronger **cross-sector partnerships** to refine and deploy cutting-edge technologies that support the long-term resilience of coastal communities.

As a whole, the panel reinforced the idea that **space-enabled digital transformation** is not only a technological advancement but a **strategic imperative**. The **OCEANIDS project** exemplifies how Europe's space and maritime sectors can work together to create more adaptive, efficient, and environmentally responsible port ecosystems.

Expert Insights from the OCEANIDS Advisory Board: Strengthening Maritime Resilience and Innovation

A key highlight of the discussions was the valuable contribution of the OCEANIDS Advisory Board, whose members provided critical evaluations of the project's tools and methodologies across both industry-academia and port authority panels. Their interventions reinforced the importance of data-driven decision-making, governance adaptability, and cross-sector collaboration in ensuring the long-term impact of OCEANIDS on maritime resilience.

Moderated by Margarita Chrysaki (NEREUS), the advisory board panel addressed essential questions regarding data-sharing frameworks, the added value of OCEANIDS tools for public authorities, and strategies for adapting best practices across different geographic and governance structures.

Dr. Sagi Dalyot (TECHNION) explained how OCEANIDS tools enhance decision-making through advanced geodata science and environmental crowdsourcing methodologies. His insights underscored the project's capacity to integrate local knowledge into scalable, AI-powered maritime solutions.

Dr. Giannakopoulos Christos (IERSD) and Alejandro J.Roman M (Paraguay Aerospace Development) emphasized the need for flexible, context-specific adaptation of OCEANIDS tools to support both European and international coastal communities.

Francois Soulat (CNES) positioned the project within the broader landscape of satellite-driven maritime services, reinforcing the importance of continuous innovation in EO applications.

Beyond individual contributions, the advisory board played a crucial role in shaping the broader dialogue on collaboration opportunities, particularly in bridging industry and academia to advance maritime sustainability. Ultimately, the advisory board's expertise strengthened the OCEANIDS panels, bringing forward strategic perspectives on governance, technology adaptation, and sustainable coastal management—reinforcing the project's relevance within Europe's blue economy and beyond.

Next Steps

The OCEANIDS project will continue to engage with stakeholders to refine its digital tools, ensuring they align with the evolving needs of public authorities, industry partners, and coastal communities. Future activities will focus on:

- Expanding collaboration among ports to foster best practice exchanges.
- Enhancing interoperability between maritime data platforms and policy frameworks.
- Strengthening industry-academia partnerships to accelerate the uptake of innovative maritime solutions.
- Further developing AI-driven climate adaptation solutions tailored to port authorities.

The workshop reinforced the collective commitment to leveraging technological advancements for a resilient and inclusive blue economy. OCEANIDS remains dedicated to supporting maritime actors in navigating the complexities of climate adaptation and sustainable port management.