



EMODnet



European Marine
Observation and
Data Network

Secretariat for EMODnet and the European Atlas of the Seas

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Centralisation Phase

EMODnet Open Sea Lab III Short report [D1.4]





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OPEN SEA LAB 3.0 HACKATHON Virtual



**One Ocean.
One EMODnet:**
Surf a brand new
Marine Data & Innovation wave!

Ideation & Team Formation:
6-24 March 2023
HACKATHON:
27-28 March 2023
Pitching & Award Event:
30 March 2023



Report of EMODnet Open Sea Lab III

The Open Sea Lab III event was organised by the EMODnet Secretariat, in collaboration with VLIZ, Copernicus Marine Service, ICES and Marine@UGent and IMEC. Supported by the European Commission and VLIZ.



CO-ORGANISING PARTNERS



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Open Sea Lab 3.0 Report

1 EMODnet Open Sea Lab: Background

The European Marine Observation and Data Network (EMODnet) is an EU public marine data service of the EC Directorate-General Maritime Affairs and Fisheries (DG MARE), providing a European focal point and trusted source of *in situ* (field/in-water derived) marine data and data products, upon which many marine and maritime users depend. EMODnet is delivered through a collective effort involving more than 120 European organisations and a growing network of public and private partners across Europe.

EMODnet organises a hackathon series called Open Sea Lab. OSL hackathons capture the imagination in a way that few events in the marine data world can, which is largely due to the openness, creativity and enthusiasm of all of those involved. It provided an opportunity for those interested in developing innovative blue solutions to learn, to teach, to network and to create during the three days of the open data bootcamp.

The concept of Open Sea Lab originated from discussions at the EMODnet Open Conference 2015, with the aim to raise awareness of EMODnet, and to promote the use of EMODnet data, also increasing the value of EMODnet services to users across Europe and beyond. Open Sea Lab transcends the boundaries of a traditional hackathon, offering participants an immersive experience into the realm of marine Open Data. Its approach is centred around the needs of users, serving as live ‘stress-tests’ of EMODnet services, with both marine data and entrepreneurial experts providing guidance to participants in developing applications tailored to those needs. Crucially, the OSL series aims to attract a more diverse user base for EMODnet and

to showcase user-driven societal applications of EMODnet data, data [products and wider services, whilst also collecting valuable feedback so that EMODnet services can continue to be improved and evolve to meet user needs and requirements.

Following the first and second editions of OSL in 2017 and 2019 respectively, the third edition of OSL (3.0) was planned for early Spring 2023, specifically timed to that users could test the newly EMODnet services, (with all thematics unified in January 2023, and simultaneous turning off of individual thematic portals).

Figure 1. Open Sea Lab original logo



1.1 EMODnet’s Open Sea Lab I and II: a look back

- **Open Sea Lab I**

The first Open Sea Lab, held in November 2017 in Antwerp, Belgium, was a collaborative effort between the EMODnet Secretariat, Flanders Marine Institute (VLIZ), IMEC, renowned specialists in user-centric innovation and received support from the European Commission's Directorate General for Maritime Affairs and Fisheries (DG MARE). Participants from 15 European countries with diverse backgrounds and skill sets came together from 15-17 November 2017 in the stimulating environs of the StartUp village in Antwerp, Belgium. This three-day event saw the participants coached by organisers from EMODnet, VLIZ and IMEC through expert-led workshops and one-on-one trainings to improve their data manipulation, business-modelling, user-testing

and pitching skills. More information on the first edition can be found on the dedicated OSL page ¹on the EMODnet website.

- **Open Sea Lab II**

The second edition of EMODnet Open Sea Lab (OSLII) in 2019 had 70 participants from 19 countries, hosted as an in-person event in Ghent, Belgium. OSLII built upon OSL I with collaborations between the EMODnet Secretariat, Flanders Marine Institute (VLIZ), IMEC, and also with Copernicus Marine Service and ICES. The event received support from the European Commission's Directorate General for Maritime Affairs and Fisheries (DG MARE). You can find more information on the dedicated OSL page on the EMODnet website².

2 EMODnet Open Sea Lab 3.0; Supporting the EU Green Deal and UN Decade of Ocean Science

The third edition of EMODnet's hackathon - Open Sea Lab 3.0 (OSL 3.0) - was an opportunity to challenge users to test EMODnet's newly centralised services, inviting the community to explore and exploit the advantages brought by having a common cross-thematic map viewer and new, expanded functionalities and features. OSL 3.0 was also set in an ever evolving EU and international ocean policy landscape. Since OSL II EMODnet had delivered a high-resolution multi-resolution digital map of the seabed of European waters by 2020, as a contribution to the wider EU Marine Knowledge 2020 initiative. At the time of OSL 3.0 in early 2023, the EU Green Deal and its many policy objectives was in full swing, the EU Digital Twin of the Ocean was well in development, for which EMODnet provides a key infrastructure together with Copernicus Marine Service and EMODnet had pledged its contribution to the objectives and cross-cutting enablers of the EU Mission "Restore our Ocean and Waters by 2030". At a global level, the UN Decade of Ocean Science for Sustainable Development had begun, with multiple contributions of EMODnet to this and to the wider UN Agenda 2030 and its 17 Sustainable Development Goals. OSL 3.0 was geared at fostering community networking and promoting the development and uptake of innovative, science-based solutions based on EMODnet resources for Policy, Research/Academia, industry (private sector), civil society (NGOs) and wider society / ocean literacy applications.

As in previous editions OSL 3.0 event was organized in collaboration with DG MARE, Copernicus Marine

Service, ICES, VLIZ, IMEC and Marine University Gent and supported by VLIZ and the European Commission (see Figure 2). This edition was fully virtual and open to participants around the world. As a result, more than 500 people, from over 80 countries registered for the chance to innovate and unlock marine data to provide solutions around the six hackathon challenges.



Figure 2. Open Sea Lab III logo

¹ <https://emodnet.ec.europa.eu/en/missed-open-sea-lab-watch-film>

² <https://emodnet.ec.europa.eu/en/open-sea-lab>

2.1 Open Sea Lab 3.0 Challenges

The hackathon presented six challenges to which participants could use open marine data for societal solutions (see text below and Figure 3).

- **Challenge 1: Protecting and restoring marine & freshwater biodiversity.** How might we leverage EMODnet to evolve a true trans-European nature network that protects our sea areas; to restore rivers or to scale up nature-based solutions that improve the resilience of coastal communities? *Participants were challenged to use biology, seabed habitats and human activities data, interacting with EMODnet map viewer and data catalogue.*
- **Challenge 2: Eliminating pollution of our ocean, seas and waters.** How might we leverage EMODnet to reduce microplastics and plastic litter at sea or to reduce the use and risk of chemical pesticides, through innovative solutions or improved international governance? *Participants were challenged to use chemistry, physics and human activities data, interacting with EMODnet map viewer and data catalogue.*
- **Challenge 3: Making the blue economy carbon-neutral and circular.** How might we leverage EMODnet to eliminate or sequester greenhouse gas emissions from maritime economic activities; develop zero-carbon and low impact aquaculture; promote low-carbon, multi-purpose use of the marine and water space; or mobilise the ocean and inland water's potential for carbon-free energy? *Participants were challenged to use physics and human activities data, in combination with e.g., satellite data from Copernicus Marine Service and/or other data & research infrastructures (e.g., ICOS-Centre, Lifewatch, EMBRC), and any other data deemed relevant, interacting with EMODnet map viewer and data catalogue.*
- **Challenge 4: Contributing to the UN Decade of Ocean Science for Sustainable Development.** How might we leverage EMODnet to advance a digital knowledge system that supports international collaboration towards better understanding, monitoring, forecasting and protecting the Ocean? *Participants were challenged to merge data from EMODnet (including [resources available for Global Stakeholders](#)), Copernicus Marine Service, Copernicus Earth observation and/or any other data service.*
- **Challenge 5: Empowering social innovation.** How might we leverage EMODnet to inspire and support social innovation practices or participatory governance approaches that empower citizens to co-design and co-implement solutions to restore our Ocean and Waters by 2030? *Participants were challenged to leverage available resources (e.g., the EU Atlas of the Seas) to develop new applications that enhance users' capabilities to respond to Ocean challenges, including promoting Ocean literacy and citizenship and/or making data more accessible to citizens (e.g., building a bot in Twitter that feeds off the Atlas of the Seas to provide user-requested updates on any specific resource published).*
- **Challenge 6: WILD CARD: HACK THE OCEAN!** How might we leverage EMODnet data for the change that you would like to see in our relationship with the Ocean? *Participants were free to showcase how EMODnet data & resources can be leveraged to address Ocean challenges that are relevant to them and their communities.*

OPEN SEA LAB 3.0 HACKATHON REGISTER NOW Agenda ideation Terms and conditions

Challenge #1
PROTECTING AND RESTORING MARINE & FRESHWATER BIODIVERSITY.
How might we leverage EMODnet to evolve a true trans-European nature network that protects our sea areas; to restore rivers or to scale up nature-based solutions that improve the resilience of coastal communities?

Challenge #2
ELIMINATING POLLUTION OF OUR OCEANS, SEAS, AND WATERS.
How might we leverage EMODnet to reduce microplastics and plastic litter at sea or to reduce the use and risk of chemical pesticides, through innovative solutions or improved international governance?

Challenge #3
MAKING THE BLUE ECONOMY CARBON-NEUTRAL AND CIRCULAR.
How might we leverage EMODnet to eliminate or sequester greenhouse gas emissions from maritime economic activities; develop zero-carbon and low impact aquaculture; promote low-carbon, multi-purpose use of the marine and water space;

OPEN SEA LAB 3.0 HACKATHON REGISTER NOW Agenda ideation Terms and conditions

Challenge #4
CONTRIBUTING TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT.
How might we leverage EMODnet to advance a digital knowledge system that supports international collaboration towards better understanding, monitoring, forecasting and protecting the

Challenge #5
EMPOWERING SOCIAL INNOVATION.
How might we leverage EMODnet to inspire and support social innovation practices or participatory governance approaches that empower citizens to co-design and co-implement solutions to restore our Ocean and Waters by 2030?

Challenge #6
WILD CARD: HACK THE OCEAN!
How might we leverage EMODnet data for the change that you would like to see in our relationship with the Ocean?

Figure 3. Challenges 1,2,3,4,5 and 6 of the EMODnet OSL 3.0

2.2 Communication Campaign and Participants

The 3rd edition of the OSL hackathon was an endeavour that aimed at embracing the power of virtual connectivity, transcend geographical barriers and welcome participants from all corners of the globe. By adopting a fully virtual format, the event opened its doors to a diverse and global community, resulting in a great level of participation.

The decision to make the hackathon accessible worldwide proved to be a success, as more than 500 individuals from over 80 countries registered to take part in the hackathon (Figure 4). This overwhelming response demonstrated the level of interest and enthusiasm generated by the event's communication campaign, which effectively spread the word and captured the attention of aspiring innovators, researchers,

and enthusiasts worldwide. One of the primary objectives of the hackathon was to create opportunities for the continued expansion of the user base of the EMODnet network.



Figure 4. OSL 3.0 Participation metrics (number and geographical diversity of registrations, starting participants and registered teams).

By bringing together researchers, academics, businesses, public administrations, NGOs, students and citizens, the event encouraged collaboration in the co-creation of innovative solutions to address the challenges faced by the ocean. Additionally, the hackathon aimed to bring together individuals from diverse backgrounds such as coders, communicators, marine researchers, data scientists, students, and citizens. It embraced inclusivity and welcomed participants with varying expertise and interests (Figure 5).

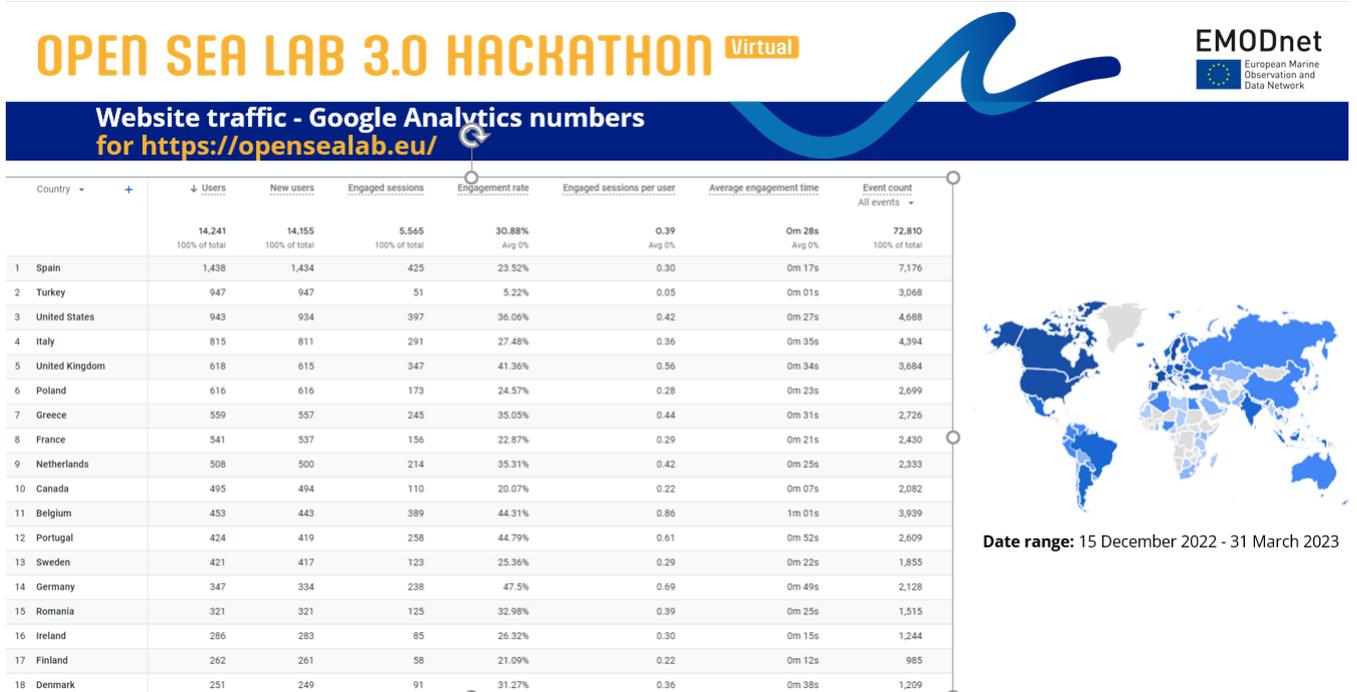


Figure 5. OSL 3.0 Website Traffic Analytics by Country

The virtual nature of the hackathon offered unique advantages, enabling participants to collaborate and contribute regardless of their physical location (Figure 6). It fostered a truly global community of bright minds, each bringing their unique perspectives, insights, and expertise to the table. The collective power of

such a diverse group ensured a rich and vibrant exchange of ideas, propelling the hackathon to new heights of innovation and creativity.



Figure 6. OSL 3.0 Event Tornado Platform Usage Analytics

The success of the communication campaign was evident in the impressive turnout for the event (Figure 7). The organizers' strategic dissemination of information, leveraging various digital platforms and social media channels, effectively reached and engaged individuals who were passionate about marine conservation, technology, and data-driven solutions. The campaign's emphasis on the hackathon's potential for impact resonated with audiences worldwide, inspiring them to be part of this event.

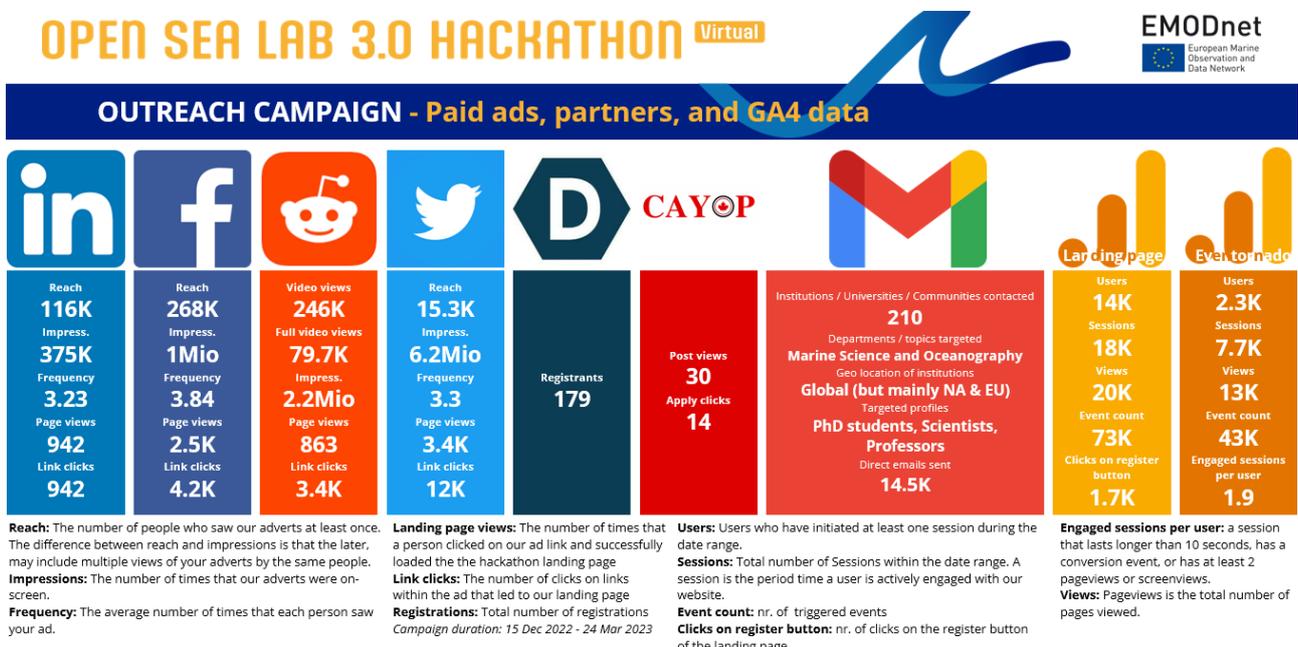


Figure 7. OSL 3.0 Communication Campaign Results

2.3 Registration and team formation

The official website of Open Sea Lab³ provided a user-friendly platform that served as a comprehensive resource and information hub for all participants and enthusiasts alike. The hackathon registration phase took place from December 2022 to March 2023. Participants were required to create a profile and fill in the registration form. A "Starter Kit" containing essential information and instructions for the hackathon was produced and made available for download. The Starter Kit contained useful information such as how to use the Hackathon platform, how to create or join a team, how to access the resources, how and when to submit their work, the required content for each deliverable, etc.

Participants were encouraged to form teams of three to ten members, with at least one member having a strong IT background. Whilst individual registration was permitted, each person needed to team up with others since individual participation in the hackathon was not allowed.

The registration details and the challenge descriptions were readily available on the OSL 3.0 website, enabling interested individuals to easily sign up and become part of this exciting event. The website featured an intuitive and straightforward registration process, simplifying the on-boarding experience for participation, which was reflected in the positive responses from participants in the OSL 3.0 post-event feedback survey (Figure 8).

The registration and onboarding process for the Open Sea Lab 3.0 Hackathon was very easy

32 responses

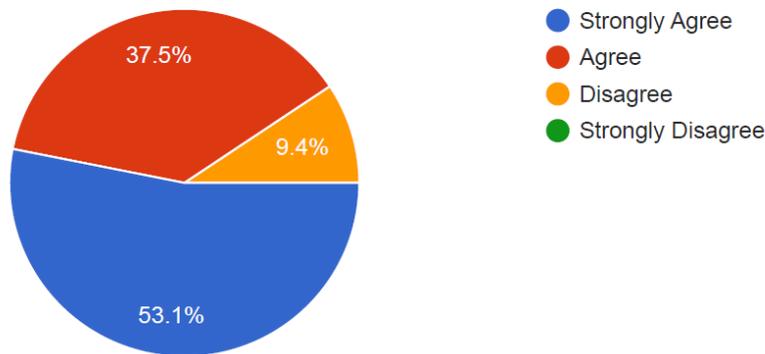


Figure 8. OSL 3.0 Onboarding Feedback Survey Results Through Google Forms

Following registration, participants were guided towards the Event Tornado⁴ platform that powered the online hackathon. Participants had the opportunity to form teams based on shared interests and skills. This collaborative approach allowed for diverse perspectives and expertise to be brought together, fostering innovation and multidisciplinary problem-solving. The platform also provided detailed guidelines in the form of Terms and Conditions, to assist participants in understanding the hackathon's structure, rules, and objectives. These guidelines served as a compass, offering clarity and ensuring that participants could navigate through the event effectively. With this wealth of information at their fingertips, participants could focus their energy on creativity and challenge solutions.

Once a team was created further information was sent directly in the private team chat of the hackathon platform (Figure 9). This included Hackathon deadlines and important announcements, instructions on how to contact the mentors, guidelines on how to deliver the hackathon deliverables and final work, and other

³ <https://opensealab.eu/>

⁴ [EMODnet Open Sea Lab 3.0 Hackathon \(eventornado.com\)](https://eventornado.com)

relevant details. In addition to the content and instructions available on the hackathon platform, tutorial videos, written guidelines, and PowerPoint templates for their presentations were provided to the teams.

How to participate

Register for the hackathon

- Click on the "Register Now" button and fill in the form.

REGISTER NOW

Get familiar with EMODnet

- Follow a 3-week (optional) virtual ideation warm-up at your own pace and learn about EMODnet's services & tools. The warm-up is guided by EMODnet (Project & Associated) & OSL 3.0 Partners, coaches, mentors, and professionals and will kick off in February 2023. Its Agenda will be published soon. Stay tuned!

Form a team and propose your idea

- During the warm-up, you will be able to engage with other participants through this platform and you will be able to form and/or join a Team to shape the idea that you will work on during the hackathon.

Participate in the 3-day virtual hackathon

- Together with your Team and your EMODnet Coaches & Mentors, develop your idea for the OSL 3.0!

IMPORTANT: Please note that the Hackathon is intended for Teams in which at least one (or more) team members are familiar with coding and/or programming.

MATCHMAKING & TEAM FORMATION
16 March @ 16:00

- Live Session #5 - GEARING UP FOR THE 2-DAY HACKATHON!
21 March @ 16:00
- Live Session #6 - COUNTDOWN!
23 March @ 16:00
- Registrations & Teams closed
24 March @ 12:00
- Launch of the 2-day Virtual Hackathon
27 March @ 10:00
- Deliverable 1 // Page Summary
27 March @ 14:00
- Deliverable 2 // Presentation
28 March @ 12:00
- Deliverable 3 // Publication of the solution in the EMODnet's Use Cases

Figure 9. Screenshot from the Event Tornado platform instructions page for the OSL 3.0 hackathon

Through its interactive features, the platform fostered a vibrant community of like-minded individuals. Participants could engage in discussions, share ideas, and seek collaborations with fellow enthusiasts, cultivating an atmosphere of collaboration and knowledge-sharing. This dynamic exchange of ideas added an extra dimension to the hackathon, transforming it into a platform for networking and building lasting connections.

2.4 Coaches and Mentors

The **OSL 3.0 Coaching & Mentoring Team** was a key pillar of the organisation and delivery of the EMODnet hackathon. Together, coaches & mentors provided the necessary expertise that was needed to support participants, creating a thriving context for their performance. Even at times when they seemed to be working in the background or if participants did not seem to be making the most of their presence, coaches and mentors were key protagonists adding to the participants' EMODnet and hackathon experience.

In February 2023, the EMODnet Secretariat organized **an in-person Training & Networking Day for the Coaching & Mentoring Team of OSL 3.0**, in advance of the Hackathon (Figure 10). The event aimed to equip coaches and mentors with comprehensive knowledge and resources necessary for their participation in the hackathon. The training day took place on February 8, 2023, at the Brussels OSL 3.0 venue. In consideration of those who were unable to attend in person, the event also included interactive live streaming to ensure that everyone was well-informed and briefed ahead of the hackathon.



Figure 10. OSL 3.0 Coach and Mentor team workshop on February 8th, 2023 in Brussels. ©EMODnet Secretariat

Many team members were recurring members of the OSL **Coaching & Mentoring Team**, and this added value by bringing continuity, knowledge of the hackathon's objectives and processes, and a strong sense of collaboration among the coaches and mentors (Figure 11).

Their tasks and expertise varied according to their specific role:

- **Coaches**, as data experts, provided support to all participants on specific topics such as accessing and exploiting specific data, utilizing EMODnet's map viewer, and navigating the Central Portal;
- **Mentors** were subject matter experts and marine researchers with a strong scientific background. They were assigned to specific teams and offered general knowledge, expertise, and advice to guide participants in developing their proposed solutions to the challenges they aimed to address.

In each challenge, a mentor was selected as the Lead Mentor. These Lead Mentors supported the organizers by delivering inspiring presentations on their assigned challenges during the warm-up phase of the event. They guided participants on how EMODnet data could be applied to advance marine knowledge. Additionally, the Lead Mentors assisted the organizers in assigning mentors to teams once they were formed. They also played a role in the pre-evaluation process, helping to shortlist the maximum of 10 finalist teams that would be submitted to the event judges for evaluation.

OPEN SEA LAB 3.0 HACKATHON Virtual



THANK YOU COACHES AND MENTORS!

 Lennert Schepers VLIZ, Project manager, Data Centre - Geospatial Data & Products Mentor / Lead Mentor	 Tjerk Hrijger Project Engineer at MARIS B.V. Mentor / Lead Mentor	 Alecia Cociancich Technical Collaborator, OGS Mentor / Lead Mentor	 Alessandro Ptitto Project and Business Development Manager, COGEEA Mentor / Lead Mentor	 Tim Collart Team Lead in Marine Data Analytics and GIS at the EMODnet Secretariat Coach / Mentor / Lead Mentor	 Romane Zufic Capacity Development Officer at Mercator Ocean International Coach / Mentor / Lead Mentor
 Sytze van Heteren Coastal and Marine Geologist at TNO - Geological Survey of the Netherlands Mentor	 Janine Guinan Consultant Marine Geoscientist, GSI Mentor	 Joana Beja Data Centre Senior Scientific Officer at VLIZ - Flanders Marine Institute Mentor	 Andreia F. De Carvalho Mercator Ocean International, Copernicus Marine & WEKEO Training Officer Mentor	 Aurora Biardeau Copernicus Marine - Product Owner Mentor	 Corinne Derval Mercator Ocean International Portfolio and Market Intelligence Manager Mentor
 Janine Guinan Consultant marine geoscientist, Geological Survey of Ireland Mentor	 Neil Holdsworth Head of Data and Information at International Council for the Exploration of the Sea Coach / Mentor	 Marco Alba R&D Technical Area Manager at ETT S.p.A. Coach / Mentor	 Helen Woods Marine Evidence Manager at the Joint Nature Conservation Committee, UK Coach / Mentor	 Charles Troupin University of Liege, GeohydroDynamics and Environment Research, Engineer in Physics, PhD in Sciences (Oceanography) Coach / Mentor	 Conor Delaney Technical Coordinator at EMODnet Coach / Mentor
 Fabrice Messal UX & Capacity Development, Copernicus Marine Service, Mercator Ocean International Coach / Mentor	 Martin Pasquier Copernicus Marine Technical Support Coach	 Luigi Falco Geographer and GIS expert, COGEEA Coach	 Francesco Misurale R&D at ETT S.p.A. Coach	 Nick Earwaker Web Developer, Lovell Johns Coach	 Anna Hrystalli R, RSE - Research Software Engineering, Consultant in R Coach
 Ruben Perez-Perez VLIZ/Data Centre Science Officer Coach	 Sebastien Mieruch Group Leader, Alfred-Wegener-Institute, Helmholtz Center for Polar and Marine Research Coach	 Elena di Medio Copernicus Marine & WEKEO Technical Support Manager Coach	 Cedric Giordan Mercator Ocean International - Copernicus Marine & WEKEO User Support Manager Coach	 Eleanor Stewart Marine Data Specialist at JNCC Coach	
 George Spoelstra Consultant/Owner at GGS Geo Consultancy BV Coach	 David Bina Copernicus Marine & WEKEO Technical Support Officer Coach	 Frederic Leclercq IT Project Manager at VLIZ - Flanders Marine Institute Coach	 Anais Perrin Copernicus Marine Technical Support Officer Coach	 Salvador Fernández Bejarano Science Officer/VLIZ - Flanders Marine Institute Coach	

Figure 11. OSL 3.0 Coach and Mentors Team members, including experts from EMODnet, Copernicus Marine Service, ICES and more

2.5 Warm-Up Sessions and Resource Pack

The Open Sea Lab 3.0 hackathon Warm-Up Sessions and hackathon Resource Pack (Annex 1) were led by the EMODnet Secretariat, with content developed through a collaborative effort involving experts from EMODnet, VLIZ, ICES, and Copernicus Marine. The hackathon Resource Pack was a document that provided guidance on discovering and accessing open marine data from various data providers. It included *in situ* data and derived data products on EMODnet Bathymetry, Biology, Chemistry, Geology, Human Activities, Physics, and Seabed Habitats. Additionally, the document highlighted the availability of marine remote sensing data, hind and forecast model data from the Copernicus Marine Service, as well as marine ecosystem and fisheries data from ICES.

These sessions and the Resource Pack⁵ aimed to provide participants with valuable insights, guidance, and resources to make them ready for and enhance their hackathon experience (Figure 12). The collective expertise of these organizations ensured the creation of high-quality content that covered various aspects, including accessing and utilizing relevant data, understanding marine observations, and exploring innovative solutions to address Ocean challenges. They were both valuable resources for the development of innovative solutions during the competition and enabled participants to explore a wide range of marine-related aspects.



RESOURCE PACK

WELCOME TO THE OPEN SEA LAB 3.0 HACKATHON!

This document outlines how to discover and access open marine data from the following data providers.

- In-situ data and derived data products on Bathymetry, Biology, Chemistry, Geology, Human Activities, Physics and Seabed Habitats from the **European Marine Observation and Data network (EMODnet)**. Your application needs to make use of at least one EMODnet dataset to be eligible for the Open Sea Lab III competition.
- Marine remote sensing as well as hind and forecast model data from the **Copernicus Marine Service**
- Marine ecosystem and fisheries data from the **International Council for the Exploration of the Sea (ICES)**

Figure 12. OSL 3.0 Resource Pack cover

Additionally, a total of six Warm-Up Sessions were conducted leading up to the hackathon, taking place between 6-24 March 2023 (see Annex I for an overview of the content of the Warm-Up Sessions), and allowed participants to familiarize themselves with the provided resource pack and receive expert guidance, enabling them to effectively utilize the available tools and information. This collaborative effort fostered a supportive

⁵https://emodnet.ec.europa.eu/sites/emodnet.ec.europa.eu/files/public/ResourcePack_OpenSeaLabHackathon_20M_arch.pdf

and enriching environment for participants, equipping them with the necessary knowledge and resources to tackle the hackathon's challenges and contribute to the advancement of marine knowledge and innovation. Each Warm-Up Session was designed with a unique goal in mind and featured speakers selected based on their specific areas of expertise, including high level speakers from all co-organising hackathon partners as well as DG MARE.

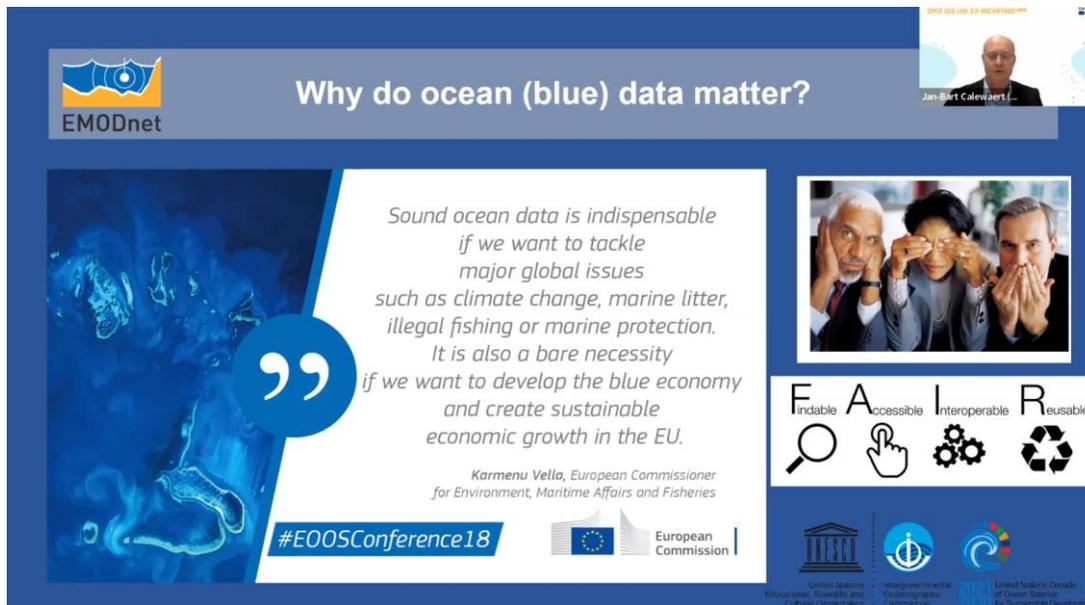


Figure 13. Jan Bart Calewaert presenting EMODnet to OS Lab 3.0 participants during the first online Live Session (screenshot), ©EMODnet Secretariat

2.6 The 2-day online hackathon and Jury Team deliberations

Following the launch and virtual live sessions during the warm-up period, the actual Open Sea Lab 3.0 Hackathon lasted two days. As it was a virtual event and involved participants from many different time zones, there was a brief welcoming online welcome session and the hackathon started on 27th March at 10am and continued until 28th March 5pm, providing participants with dedicated time for their projects.

During these two “hacking” days participants were connected to each other through the hackathon/Event Tornado platform, interacted with mentors and coaches and touched-base with their assigned Lead Mentors. In addition to their deliverables, participants had the opportunity to win small prizes by participating in “Mini Challenges” by asking them to wear the promotional material that was sent to them for the hackathon and take creative team photos or providing an inspirational phrase about working with EMODnet data (Figure 14). These mini challenges aimed to strengthen the spirit of collaboration in teams working remotely and on a tight schedule. Submissions showcased exceptional creativity and helped in further enhancing the team spirit among participants.

MINI CHALLENGE 1.

Martina Gaglioti
GIS MAPPERS

MINI CHALLENGE 1.

Britt Lonneville
NUTRIENT NAVIGATORS

MINI CHALLENGE 1.

**Anton De Jaeger/
 Dries Lorré**
MARINE DEBRIS DETECTORS

MINI CHALLENGE 2.

Tobias Weiß
MARINE DEBRIS DE

Figure 14. Examples of OSL 3.0 Mini Challenge Submissions by Hackathon Teams

Following the two intense days of working on their ideas, the teams submitted their final deliverables for evaluation. The Lead Mentors played a crucial role in the evaluation process, starting with the pre-evaluation stage where they assessed the ideas and selected the top 10 finalists to be submitted to the jury members (Figure 15).

The evaluation criteria for the hackathon's "proof of concept" were structured around several key aspects:

- The first criterion, Fitness-for-purpose, carried a maximum of 10 points and focused on identifying a clear problem, its relevance to the hackathon's topics and challenges, the potential contribution to addressing the problem, and the intended beneficiaries;
- The use of data criterion, also worth 10 points, emphasized the incorporation of EMODnet Central Portal datasets, along with other data resources, while addressing interoperability and data reusability;
- Visualisation, worth another 10 points, assessed the ability of the concept to visualize data comprehensively for both expert and non-expert audiences. The Maturity criterion, assigned 10 points, assessed the overall development stage of the proof of concept, including a clear outline, a well-tested prototype, and a functional application ready for scaling;
- The Roadmap for user uptake criterion, with 5 points, evaluated the outlined plan for 3-6 months, considering effective outreach strategies and realistic execution within the proposed timeframe and available resources;
- Lastly, the Quality of video-pitch criterion carried 5 points and assessed the presentation quality and effectiveness of the teams' video pitches;
- An additional 5 points were given to the teams that had at least one student member and another 5 points for providing a use case connected to EMODnet services.

During the Pitching & Award Event, a second round of evaluation took place live. The 10 top-scoring teams from the first round had their video pitches played during the event, and they were available to respond to the Jury's questions. Following the question session, the Jury deliberated privately and assigned up to an additional 50 points to each team. Once all the points were assigned, the rankings were determined, and the first three teams with the highest scores were eligible for the 1st, 2nd, and 3rd place awards, respectively.

To prepare for the Award and Pitching ceremony, the Jury Members held a virtual meeting where they shared the preliminary evaluation results, discussed the questions to be asked during the Pitching & Award Ceremony, and decided on who would announce the winners.

THANK YOU JURY MEMBERS!

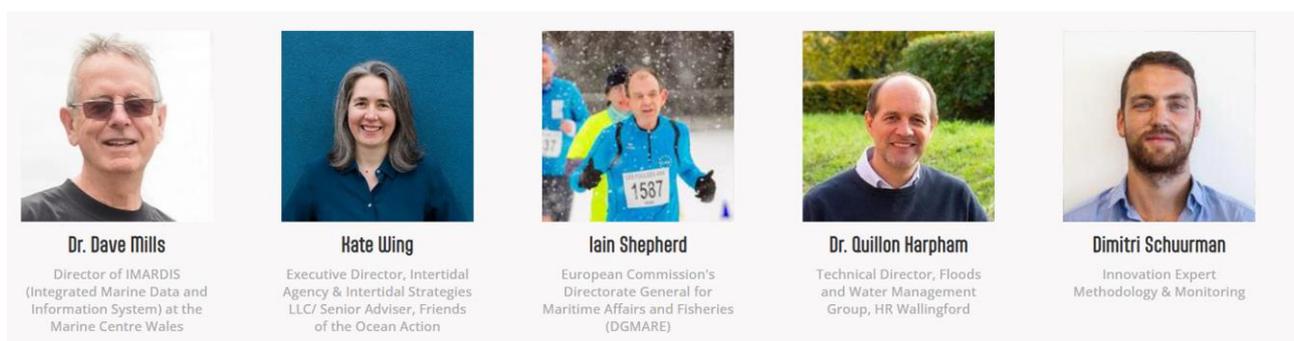


Figure 15. The OSL 3.0 Jury Team

2.7 Day 3 – Award and Pitching Ceremony

The Pitching & Award Ceremony, which took place on 30th March 2023, was an exciting live event that showcased highlights from the hackathon journey and the announcement of the winners. The event commenced with a warm welcome by the EMODnet Secretariat and DG MARE representatives, setting the stage for a memorable experience. Participants then delved into the impressive statistics and facts surrounding the hackathon during the Hackathon Facts and Figures session, discovering the magnitude of their contributions and the impact they made.

An interactive segment of the event featured polls and quizzes via Slido, providing attendees with the opportunity to test their marine knowledge with general questions about the ocean as well as and engage in fun interactions about their hackathon experience (Figure 16). This segment allowed participants to showcase their learning throughout the hackathon journey.



Figure 16. Participants Replying to Slido question: “How do you feel after completing the hackathon?”

The creative video pitches from the 10 finalist participating teams were played, bringing their creative ideas to life in the Video Pitches and Q&A session. Following each pitch, the jury members had the chance to engage in Q&A sessions, allowing for a deeper exploration of the teams' concepts.

Following the pitching and Q&A session final evaluation round by the jury members, the awaited moment arrived as the winners of the Open Sea Lab 3.0 hackathon were announced (see next section). The prizes were announced by the jury members themselves. As the event concluded, expressions of gratitude were extended to all the participants, mentors, coaches, and supporters who contributed to the hackathon's success. Heartfelt thanks were given to everyone involved, signifying the importance of their role in creating an exceptional experience.

2.8 Winning Teams and Prizes

The winning teams of EMODnet OSL 3.0 presented their innovations and were celebrated during the European Maritime Day (EMD 2023) on 24-25 May 2023 (Figure 17). Each winning team had the opportunity to send up to three members to Brest, France, where they participated in various activities. The event provided a platform for the EMODnet OSL 3.0 Winners to showcase their talent and solutions through pitching sessions and exhibitions (Figure 18). This allowed them to present their innovative ideas and projects to a diverse audience consisting of policymakers, business leaders, and representatives from civil society.

CELEBRATE THE WINNERS AT EUROPEAN MARITIME DAY! **MAY 2023**



- **Up to 3 members of each winning Team** will be invited to travel to Brest, France, in May 2023 and take part in an exciting programme of activities at **European Maritime Day 2023**.
- **OSL 3.0 Winners** will enjoy the opportunity to pitch and exhibit their solutions, while networking and interacting with an international audience of policy-, business-, and civil society representatives.
- **European Maritime Day** is the **leading annual meeting point** for Europe's maritime community to network, discuss, and forge joint action on maritime affairs.

Figure 17. OSL 3.0 Prizes

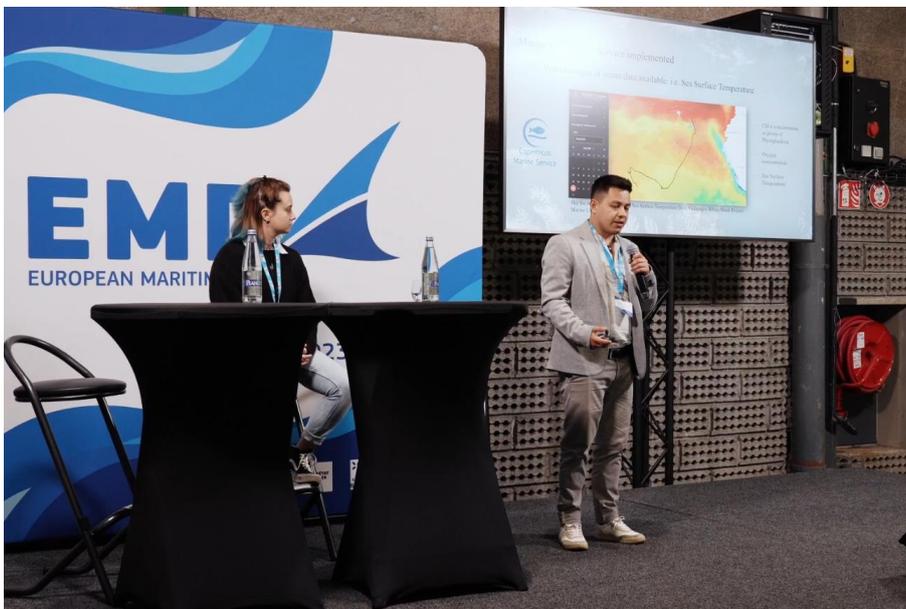


Figure 18. Second Prize Winning Team, Wildlife Tracker EO, Pitching Their Idea to European Maritime Day 2023 Stakeholders in Brest, France, ©EMODnet Secretariat

Moreover, the winners had the opportunity of engaging in valuable networking opportunities, interacting with an international audience passionate about maritime affairs. The European Maritime Day (EMD) served as the premier annual meeting point for Europe's maritime community. It offered a dynamic environment where participants could connect, engage in discussions, and collaborate on joint actions related to various aspects of maritime affairs.

Below is a brief overview of the three winning teams and their proposals.

The "Hot Steel" team presented a science communication tool that utilized EMODnet's species/biota habitat data. Their project aimed to raise awareness about climate change and its profound impact on the natural world. By effectively communicating this information, they sought to inspire action and promote a deeper understanding of the importance of conservation efforts.

Hot Steel - 3rd PRIZE

Members

 Robert Schlegel FR	Team lead
 Adrien Wehrle CH	Data management
 Julie Geiger FR	Communications

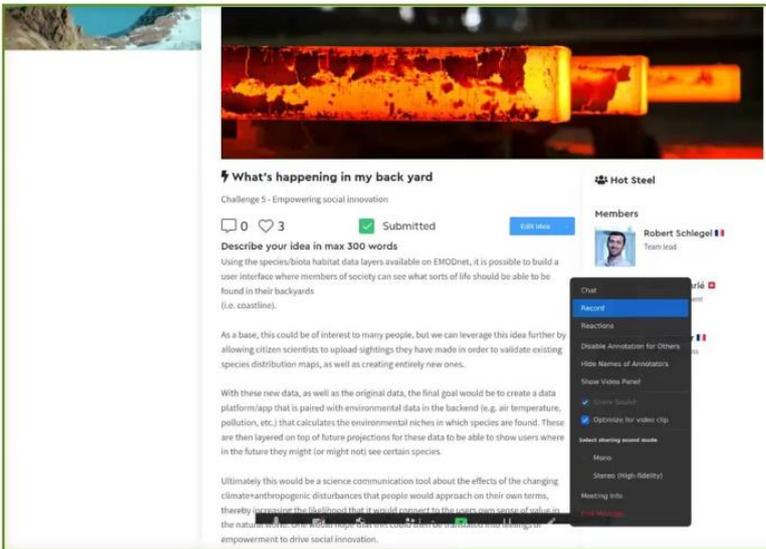


Figure 19. OSL 3.0 Winning Team 3rd Place

The "Wildlife Tracker EO" team developed an innovative solution leveraging EMODnet data to identify wildlife hotspots. Their application not only assisted in identifying these crucial areas but also supported marine spatial planning efforts, ensuring the effective management and conservation of marine ecosystems and biodiversity.

Wildlife Tracker EO - 2nd PRIZE

Members

 Bryan Vallejo ec	Team lead
 Tran Ngo vn	Business Administrator
 Ederson Enriquez ec	Content Creator
 Alessandra Sellini it	GIS Developer



Figure 20. OSL 3.0 Winning Team 2nd Place

Lastly, the "Carbon Games: Maritime" team conceptualized the GreenWave Navigator prototype, a maritime route planning solution. Their project aimed to minimize the environmental impact of sea transportation by utilizing advanced data analysis and machine learning techniques. The GreenWave Navigator offered optimized route recommendations that considered various factors, including fuel efficiency, emissions reduction, and the protection of vulnerable marine areas.

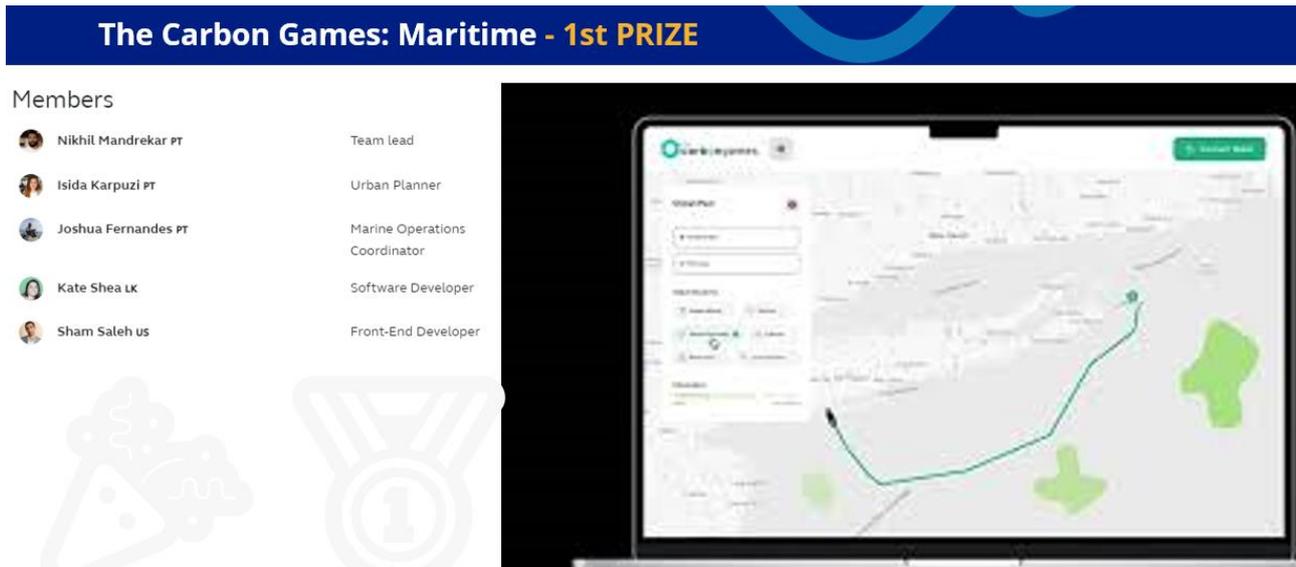


Figure 21. OSL 3.0 Winning Team 1stCoaPlace

Attending the EMD 2023 not only provided the winners with recognition for their achievements but also served as a platform to further their projects and establish meaningful connections within the maritime community. This experience contributed to their professional growth, expanding their networks, and opening doors to potential collaborations and future opportunities. The celebration of winners at the European Maritime Day exemplified the significance of EMODnet OSL in promoting innovation, knowledge exchange, and collaboration in the maritime sector.

A short video of Open Sea Lab 3.0 has also been produced to accompany this report, including winning team pitches, interviews with participants, jury members, coaches and mentors and wider activities at the European Maritime Day 2023.

2.9 Open Sea Lab 4.0?

The EMODnet Open Sea Lab is an event series. Community interest in Open Sea Labs has greatly expanded over the years, with the first Open Sea Lab having 48 applications and five competing teams, the second edition of OSL expanding to 120 applications and 16 teams, and the third OSL – the first fully virtual edition – attracting more than 500 registrations with 39 ideas submitted by the respective teams in total.

In OSL 3.0, the participation of some returning applicants who participated in earlier editions highlights the positive experience and impact of OSL. The success of the fully virtual OSL 3.0 also showed that whilst an in-person event does enable a community spirit and camaraderie, this was also possible as an online event, particularly given the high momentum of the live sessions and the engagement of teams in mini challenges.

A post-event survey was sent to all participants to gather their valuable feedback to ensure that any future iterations of Open Sea Lab are built upon the positive outcomes and lessons learned from the previous editions. By incorporating participant perspectives and incorporating the best practices from previous events, future Open Sea Lab editions can be further enhanced to create an even more impactful and rewarding experience for all involved.

A short video of Open Sea Lab 3.0 has also been produced to accompany this report, including winning team pitches and wider activities at European Maritime Day 2023.

Looking ahead, Open Sea Lab has the potential to further expand, potentially with hybrid formats involving European and global nodes that can participate remotely. Lessons learned, community feedback and positive experiences of both physical and virtual hackathons will be considered in order to capitalize on the outcomes of OSL 3.0, and previous editions, ready for OSL 4.0.



Figure 22. OSL 3.0 Coach and Mentor Planning meeting ©EMODnet Secretariat

The organisers of Open Sea Lab III would like to extend a sincere thank you to everyone who took part and contributed to making Open Sea Lab the success that it was.

Until next time, check out: emodnet.ec.europa.eu and see what you can create with marine open data!

3 Annex 1: Open Sea Lab 3.0 Agenda

Live sessions 6th-23rd March 2023

Warm-Up Sessions Week 1 // 6-10 March 2023

ALL TIMES CET

Get participants to visit EMODnet's new central portal and get familiar with its structure, functionalities and use.

Live Session #1

Tuesday // 7 March // INTRODUCING EMODnet OPEN SEA LAB 3.0

- 16:00 – Introduction to the Agenda of the event – Angeliki Karampourouni – EMODnet Secretariat
- 16:05 – Explanation of house-rules – Michele Erba – Kreativdistrikt
- 16:15 – Welcome to OSL 3.0! – Zoi Konstantinou -DG MARE, Jan-Bart Calewaert- Head of EMODnet Secretariat
- 16:20 – About EMODnet OSL 3.0 Hackathon: What? When? Who? How? Why? – Angeliki Karampourouni – EMODnet Secretariat
- 16:25 – What is EMODnet? How can it help you, to help the Ocean? – Jan-Bart Calewaert, Head of EMODnet Secretariat
- 16:35 – How Copernicus Marine Services & EMODnet team up to deliver open data products – Aurore Biardeau – Copernicus Marine
- 16:45 – The power of Open data to address Ocean challenges – Alessandro Pititto – EMODnet Human Activities, COGEA
- 16:55 – Exploring Eventornado and the hackathon resources – Michele Erba – Kreativdistrikt
- 17:10 – Ask us anything! Q&A session – All speakers and attendees
- 17:25 – What next? – Angeliki Karampourouni – EMODnet Secretariat
- 17:30 – Close Session

Live Session #2

Thursday // 9 March // HANDS ON! NAVIGATING EMODnet's new Central Portal

- 16:00 – Welcome! Objectives and high-level overview of the contents of this live session – Angeliki Karampourouni – EMODnet Secretariat
- 16:05 – EMODnet's Central Portal Hands on! Making the most of the Data Catalogue & Map Viewer – Conor Delaney – EMODnet
- 16:30 – Hands-on inspiration: Using ERDAPP and other resources – Conor Delaney – EMODnet
- 17:20 – Ask us anything! Q&A session – All speakers and attendees
- 17:30 – Close Session

Warm-Up Sessions Week 2 // 13-17 March 2023

Get acquainted with challenges & mentors, select challenges and form Teams

Live Session #3

Tuesday // 14 March // OSL 3.0 OCEAN CHALLENGES: WHAT? WHY? HOW?

- 16:00 – Connection of participants and explanation of house rules – Angeliki Karampourouni – EMODnet Secretariat
- 16:03 – Welcome! Introduction to the objectives of week 2 and a high-level overview of the contents of this live session – Angeliki Karampourouni – EMODnet Secretariat
- 16:10 – PROTECTING AND RESTORING MARINE & FRESHWATER BIODIVERSITY – Lennert Schepers – EMODnet Biology, VLIZ
- 16:20 – ELIMINATING POLLUTION OF OUR OCEAN, SEAS, AND WATERS – Alexia Cociancich – EMODnet Chemistry, OGS
- 16:30 – MAKING THE BLUE ECONOMY CARBON-NEUTRAL & CIRCULAR – Tjerk Krijger – EMODnet Bathymetry and Chemistry, Maris B.V.
- 16:40 – CONTRIBUTING TO THE UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT – Romane Zufic – Mercator Ocean International
- 16:50 – EMPOWERING SOCIAL INNOVATION – Tim Collart – EMODnet Secretariat
- 17:00 – WILD CARD: HACK THE OCEAN! – Alessandro Pititto, EMODnet Human Activities, COGEA
- 17:10 – ROUND TABLE: Why are Ocean challenges also data challenges? – All speakers
- 17:22 – Ask us anything! Q&A session – All speakers and attendees
- 17:30 – Close Sessions

Live Session #4

Thursday // 16 March // MATCHMAKING & TEAM FORMATION

- 16:00 – Welcome! Objectives and high-level overview of the contents of this live session – Angeliki Karampourouni – EMODnet Secretariat
- 16:05 – What does a good Team look like? Guidelines on Team composition – Michele Erba – Kreativdistrikt
- 16:10 – No Team? No problem! How to find a Team on the OSL 3.0 hackathon platform – Michele Erba – Kreativdistrikt
- 16:50 – Ask us anything! Q&A session – All speakers and attendees
- 16:55 – Wrap-up Key messages & plan for next week – Michele Erba – Kreativdistrikt
- 17:00 – Close Session

Warm-Up Sessions Week 3 // 20-24 March 2023

Gear up for the hackathon with your Mentor & Team

Live Session #5

Tuesday // 21 March // GEARING UP FOR THE 2-DAY HACKATHON!

- 16:00 – Welcome! Objectives and high-level overview of the contents of this live session – Angeliki Karampourouni – EMODnet Secretariat
- 16:05 – What is your problem? Improve your hackathon deliverables by iterative innovation scoping – Dimitri Schuurman – IMEC
- 16:35 – Delivering on deadlines: Key milestones; where to find templates & guidelines for the submission of deliverables – Michele Erba – Kreativdistrikt
- 16:40 – How to interact with your Mentors and the Coaches – Michele Erba – Kreativdistrikt
- 16:45 – Receive support for each challenge: How to leverage the challenges support channels on Eventornado – Michele Erba – Kreativdistrikt
- 16:50 – Ask us anything! Q&A session – All Speakers and attendees
- 16:55 – Wrap-up Key messages & plan for the week – Angeliki Karampourouni – EMODnet Secretariat
- 17:00 – Close Session

Live Session #6

Thursday // 23 March // COUNTDOWN!

- 16:00 – Welcome! Objectives and high-level overview of the contents of this live session – Michele Erba – Kreativdistrikt
- 16:05 – Teams overview and Mentors' assignment – Michele Erba – Kreativdistrikt
- 16:15 – Submission of the Idea description (max 300 words) by Teams on Eventornado – Michele Erba – Kreativdistrikt
- 16:20 – Ask us anything! Q&A session – All speakers and attendees
- 16:30 – See you soon! Invitation to the Hackathon Launch Session on 27 March 2023 – EMODnet & Kreativdistrikt
- 17:00 – Close Session

2-day virtual hackathon 27th-28th March 2023

Public

Mar 27

Time	KICK OFF AND SUBMISSION OF DELIVERABLE 1
10:00	Welcome & opening of EMODnet OSL 3.0 Hackathon
10:10	Ready to hack?
10:30	Let the hacking start!
14:00	▶ Deliverable 1 // Page Summary
16:00	Participate in Mini Challenge 1 for a chance to win a €50 Gift card!

Mar 28

Time	HACK AND SUBMISSION OF THE PROOF OF CONCEPT
12:00	▶ Deliverable 2 // Presentation
14:00	Participate in Mini Challenge 2 for a chance to win a €50 Gift card!
16:00	▶ OPTIONAL - Deliverable 3 // Code/notebook/app
18:00	▶ Deliverable 4 // Video Pitch
18:30	Make your voice heard: Take the survey!

Closing ceremony, 30th March 2023

Mar 30

Time	PITCHING & AWARD (VIRTUAL) LIVE EVENT
16:00	🎤 Pitching & Award Live Event
16:05	Welcome!
16:10	Video-pitching and Q&A session with Judges
17:00	Final Jury deliberations & public vote for the
17:30	Announcement of Winners!
18:00	Thank you!