FORCOAST

Earth Observation Services For Wild Fisheries, Oystergrounds Restoration And Bivalve Mariculture Along European Coasts

PROJECT DELIVERABLE REPORT

Deliverable Number: D7.4
Deliverable Title: Marketing Material
Author(s): Deltares
Work Package Number: WP7
Work Package Title: Marketing & Communication

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FORCOAST Project Information	
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Project coordinator	Ghada El Serafy, Deltares
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Project website	https://forcoast.eu/

Deliverable Information	
Work package number	WP7
Work package title	Marketing & Communication
Deliverable number	D7.4
Deliverable title	Marketing Material
Description	This deliverable lists all marketing material suitable for the execution of the project. A detailed description of all marketing materials can be found in. The following items are to be included: - Project webpage (1) - Conference posters/proceedings (3), workshops (3), exhibitions (2) - Publications (2) - Newsletter (quarterly) - Social media (monthly) - Direct client consultancy and communication (upon request) (task 7.4)
Lead beneficiary	Deltares
Lead Author(s)	Deltares
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Approvals				
	Name	**Organisation**	**Date**	**Signature (initials)**
Coordinator	Ghada El Serafy	Deltares	31/10/2022	GES
WP Leaders	Ghada El Serafy	Deltares	31/10/2022	GES

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Executive Summary

This deliverable *D7.4 – Marketing Material* summarises the dissemination, communication and marketing materials of the FORCOAST project, products and services. In total six different types of marketing materials have been produced during the project's duration:

- Graphical products (i.e. posters, leaflets)
- Social media (i.e. Twitter, LinkedIn)
- Material for local activities (i.e. newsletters, posters, videos)
- Exhibitions
- Publications
- Press releases

By producing and distributing these materials to the relevant stakeholder networks both as a project and via the FORCOAST project partners, visibility and promotion of the service catalogue offer has been achieved. An analysis of the applicable communication tools in which the materials of this deliverables are part of, including metrics, is presented in deliverable D7.3 – An Analysis and Overview of Different Communication Tools.

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1 Introduction

This deliverable *D7.4 – Marketing Material* summarises the dissemination, communication and marketing materials of the FORCOAST products and services. This deliverable complements the other three deliverables of WP7.

The objective of the marketing material presented in this report was to reach out to relevant stakeholders and users and promote the project and the service catalogue. As the project moved on and the services development along with it, the marketing focus was given more to the offer side of the project and what it has to offer from the services.

Deliverable *D7.3 - An Analysis and Overview of Different Communication Tools*, provides examples and screenshots of the marketing material details all the project's communication activities in terms of presentations and networking at external events; exchanges and cooperation with other H2020 projects; local project webinars; scientific publications and project presentations; project presence on social media. This document only collects the marketing material produced within the project and introduced in D7.3 and provides links at which this material can be accessed where applicable.

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2 Graphical Products: Posters and Leaflets

This section provides an overview of promotional materials used to strengthen the marketing efforts for FORCOAST.

2.1 Conference Posters

Several posters have been designed to be used by project partners effectively during various industry and scientific events. The following section provides an overview of all posters presented around the globe with a strong focus on European stakeholders and end-users.

AMEMR Conference 2021

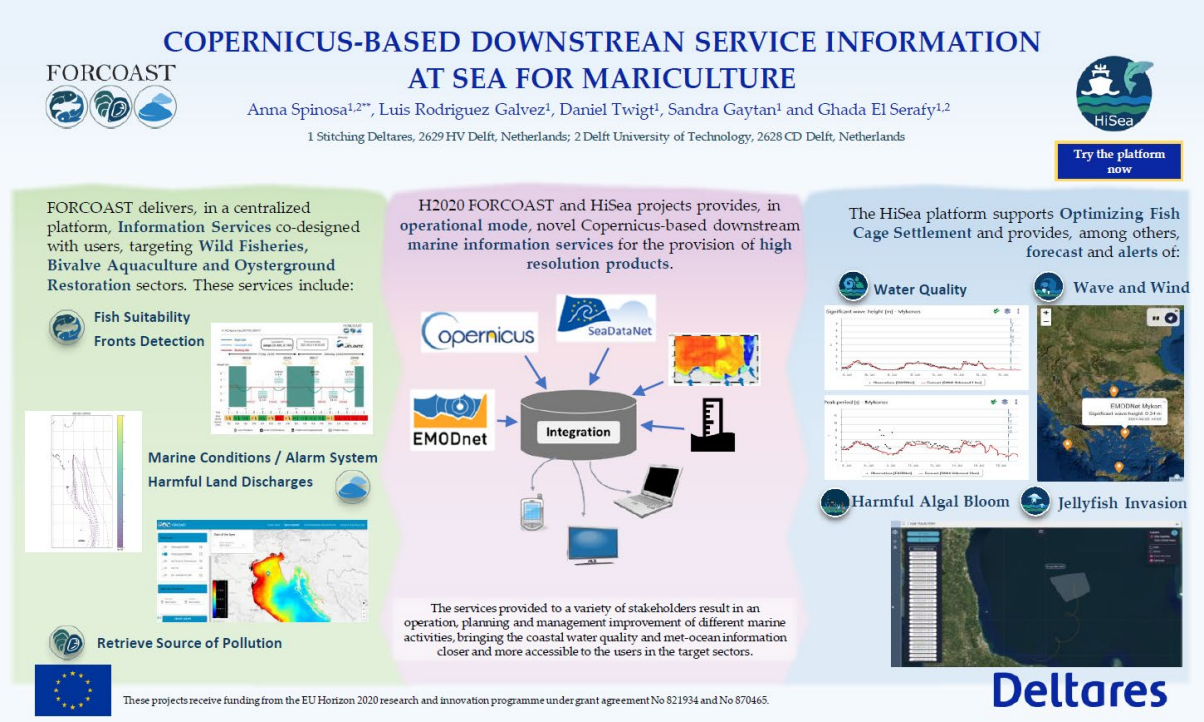


Figure 1: Poster of FORCOAST and HiSea projects for the AMEMR Conference 2021

APA2021

YTIDE - METEOROLOGICAL AND OCEANOGRAPHIC SERVICE FOR AQUACULTURE

Francisco Campuzano[1,3*], Nuno Ferreira[2], Tiago Garcia[1], Nuno Loureiro[1], Caio Fonteles[1], Sónia Romão[1], Sofia Aguiar[1], Artur Costa[1], Nuno Lourenço[1], Ramiro Neves[3]

Email: Francisco.Campuzano@colabatlantic.com

ytide@colabatlantic.com

[1] CoLAB +ATLANTIC, Portugal

[2] ExporSado, Setubal, Portugal

[3] Instituto Superior Técnico – Universidade de Lisboa, Portugal

+ TIME IS MONEY

*"Arriving 15 minutes later can mean an extra cost of €1,500" **

*"This happens 6 or more times a month" **

** Estimations made with our partner ExporSado*

ADAPTED TO YOUR OFFICE

SETTING UP YTIDE SERVICE FOR YOU

+ USER REQUIREMENTS

- ✓ Owning a smartphone
- ✓ Provide location of your production area
- ✓ Define environmental limit conditions (tide, wind, waves, ...)
- ✓ Access to internet during the day

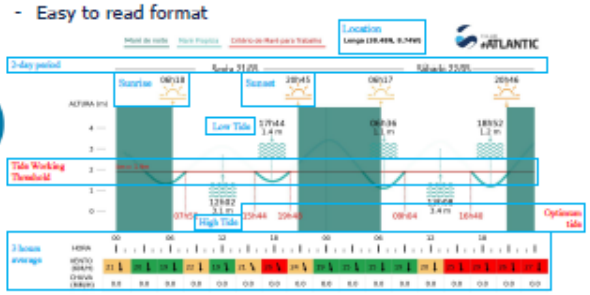
+ SERVICE

- ✓ Service delivered to your mobile phone
- ✓ Specific channel per user or group of users
- ✓ Currently distributed by Telegram app
- ✓ Free trial period for Portugal
- ✓ Daily message for the following 2 days
- ✓ Weekly message for the following week

INFORMATION EASY TO READ

The information you need to make decisions and plan activities:

- Customised for your production site
- Easy to read format



+ ADVANTAGES

Ease of access:
faster and easier than accessing a website

Interaction with colleagues:
sharing information never been so intuitive

Increased productivity:
time optimisation and more efficient work

One stop shop:
capacity to aggregate operational information

Experienced modelling team:
co-designed with end-users

+ EVERYTHING YOU NEED ON YOUR PHONE & PC

WHAT IS INCLUDED IN YOUR YTIDE

3D high-resolution numerical modelling:
State-of-the-art models adapted to your site

Astronomical and meteorological tide:
Including all the contributions to water level

Global ocean circulation:
Unleashing and downscalling global processes

Including local effects:
local high-res bathymetry and river forcing

YTIDE MAKES ALL THE DIFFERENCE

Service	Local Data	Bathymetry effect	High-resolution meteorology	Atmospheric pressure effect	Wind effect	Distribution via smartphone
YTIDE	✓	✓	✓	✓	✓	✓
Global Models	✗	✓	✗	✓	✓	✗
Tidal charts	✗	✗	✗	✗	✗	✗
Other tidal services	✗	✗	✗	✓/✗	✗	✓/✗

www.forcoast.eu twitter.com/forcoast.eu linkedin.com/company/forcoast info@forcoast.eu

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Figure 2: FORCOAST poster on the Marine Conditions service for the AquaEAS 2021 meeting

Ocean Sciences Meeting 2020 and EGU 2021 conference

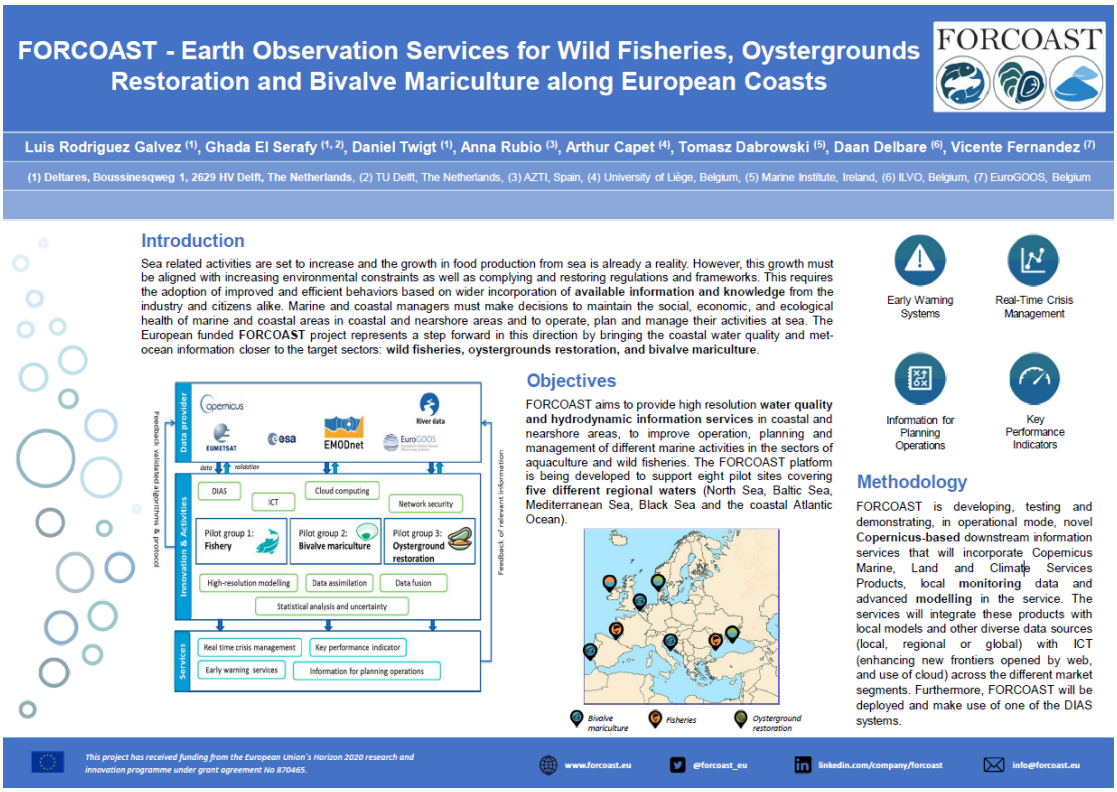

Figure 3: FORCOAST poster for the Ocean Sciences Meeting 2020 and EGU 2021 conference

Poster-video of EO for Water Cycle 2020

https://www.youtube.com/watch?v=oyXbUJ3k08E

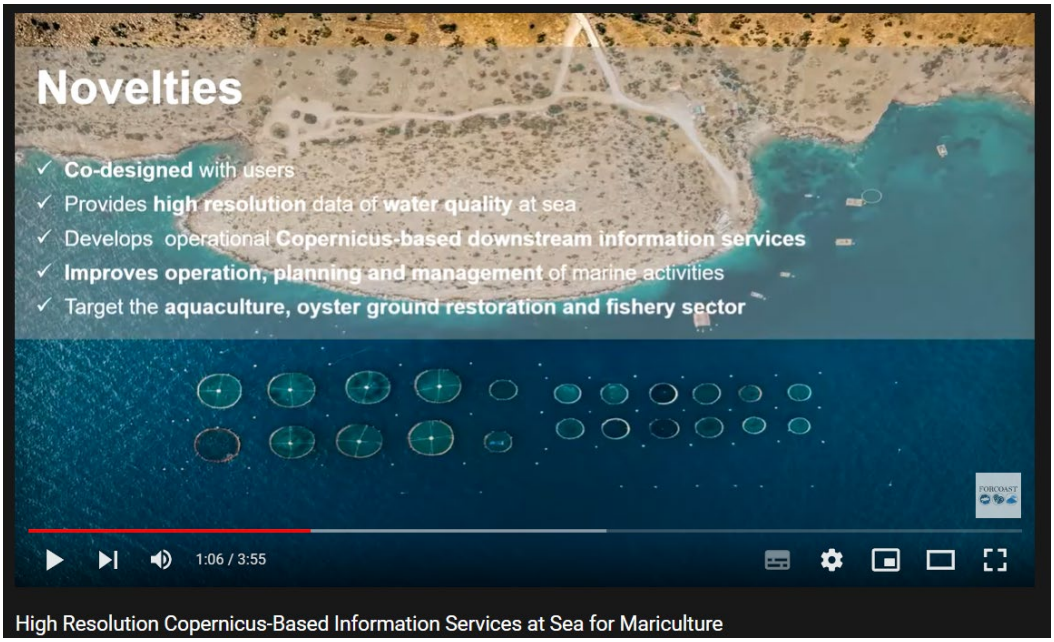

Figure 4. Poster-video for the EO for Water Cycle 2020 conference, from YouTube

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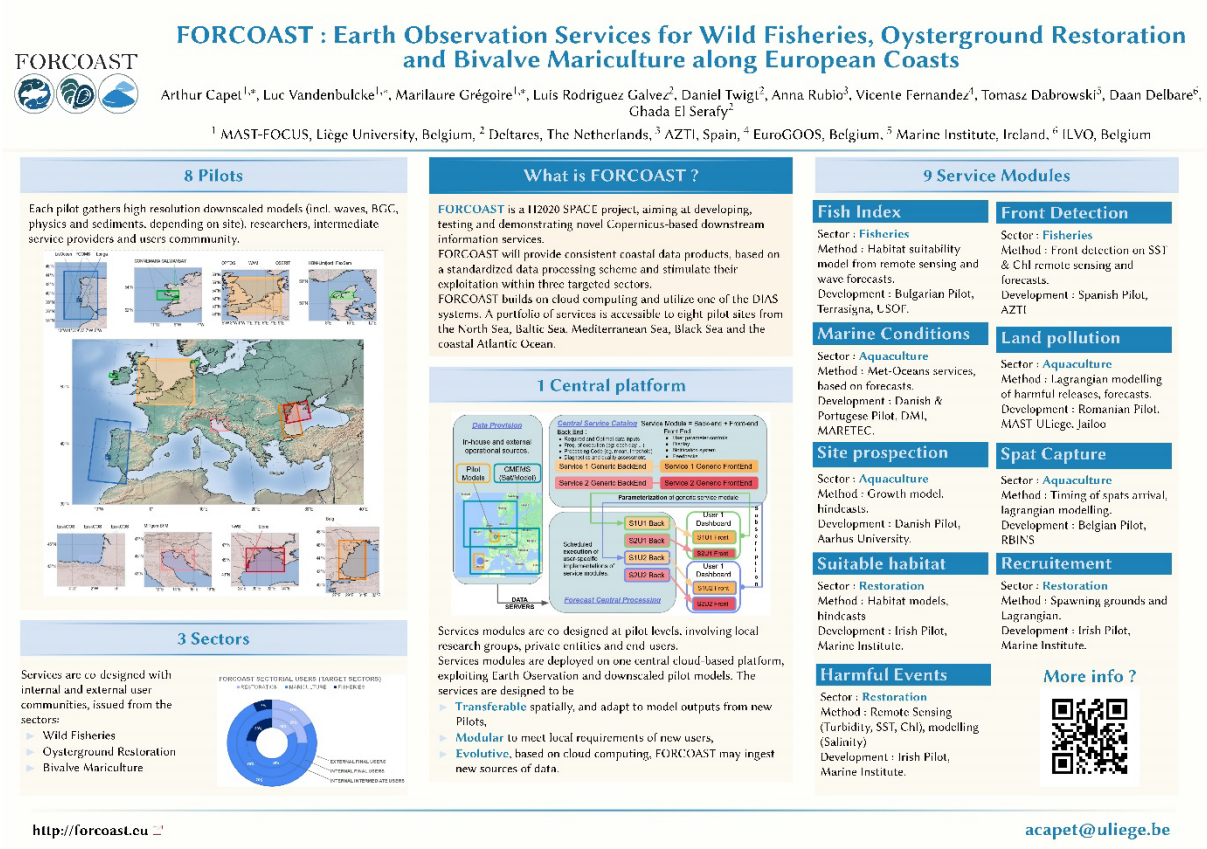
ULiege Colloquium 2021



2.2 Leaflets

FORCOAST has drafted several leaflets focusing on the different services and producted provided. The project leaflet was first produced to introduce the FORCOAST project (Figure 5). It briefly presents information about the project within a condensed space, with the intention of making it easily accessible to a large number of potentially interested stakeholders. Later iterations of the leafleat included a description of each of the services including the relevant information for the users. These leaflets were updated towards the end of the project to convey the relevant information about each service in their final status (Figure 5 to Figure 12).

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Figure 5: FORCOAST leaflet presenting the project overview

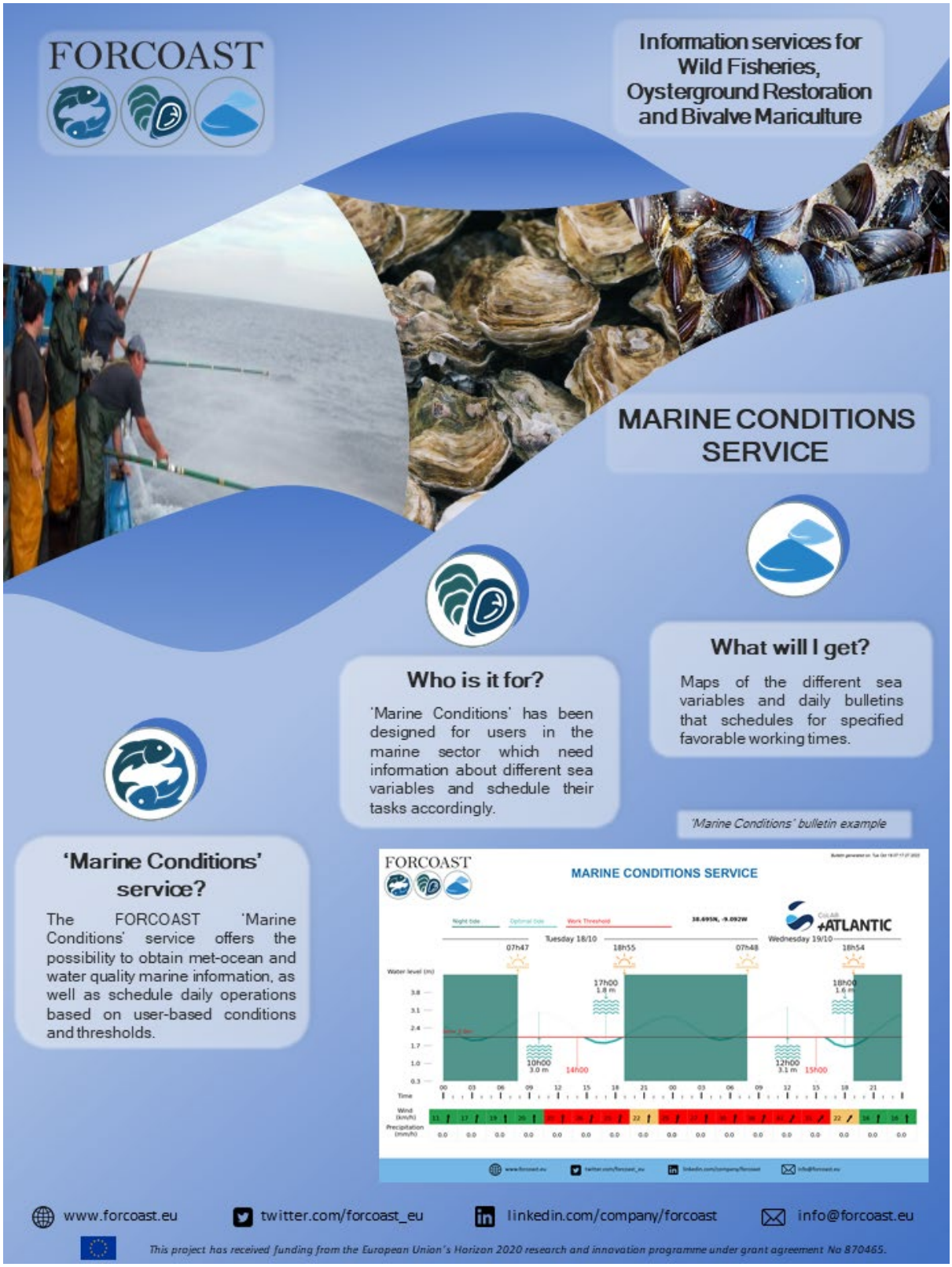

Figure 6: FORCOAST leaflet presenting the Marine Conditions services

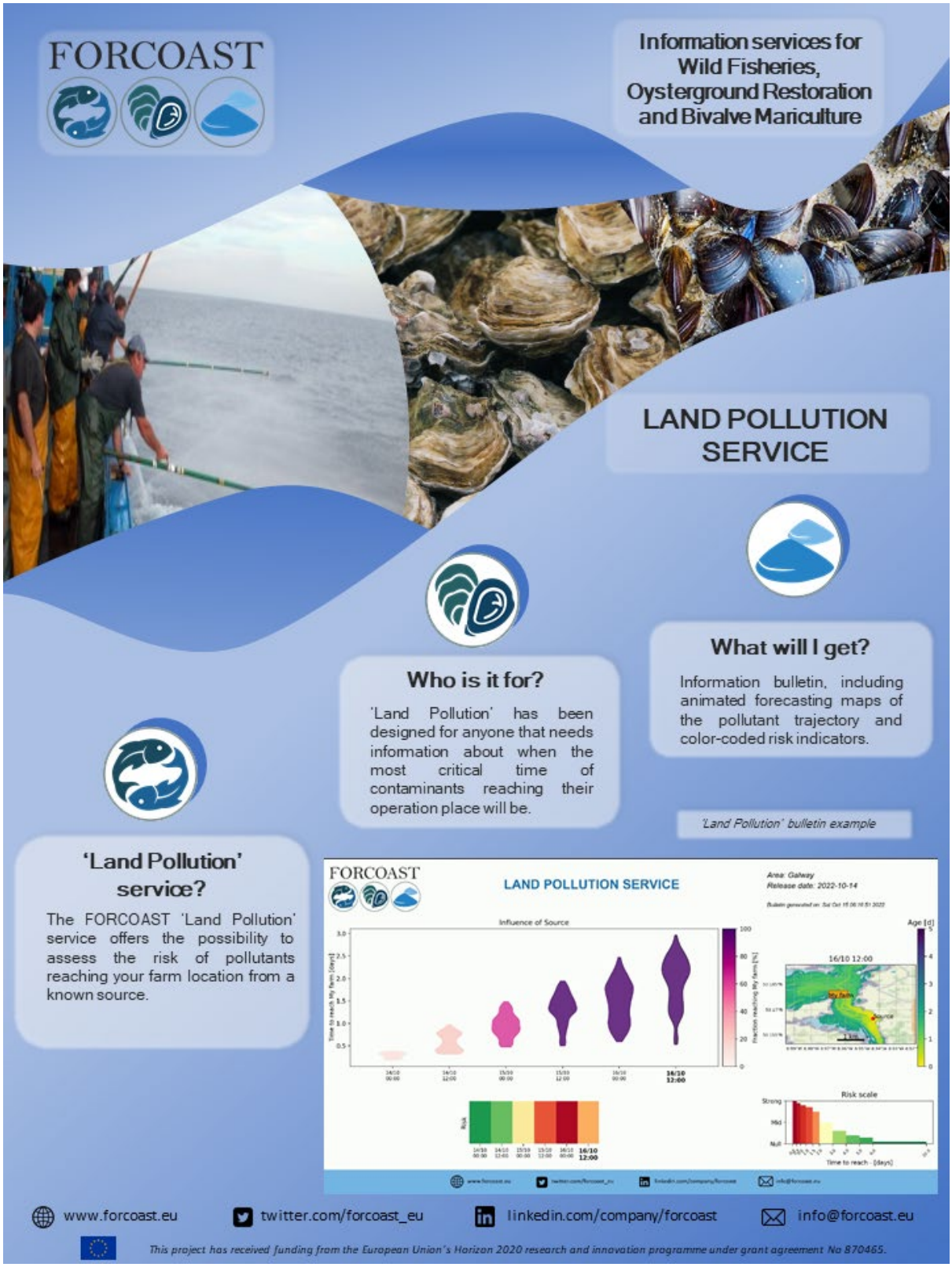

Figure 7: FORCOAST leaflet presenting the Land Pollution service

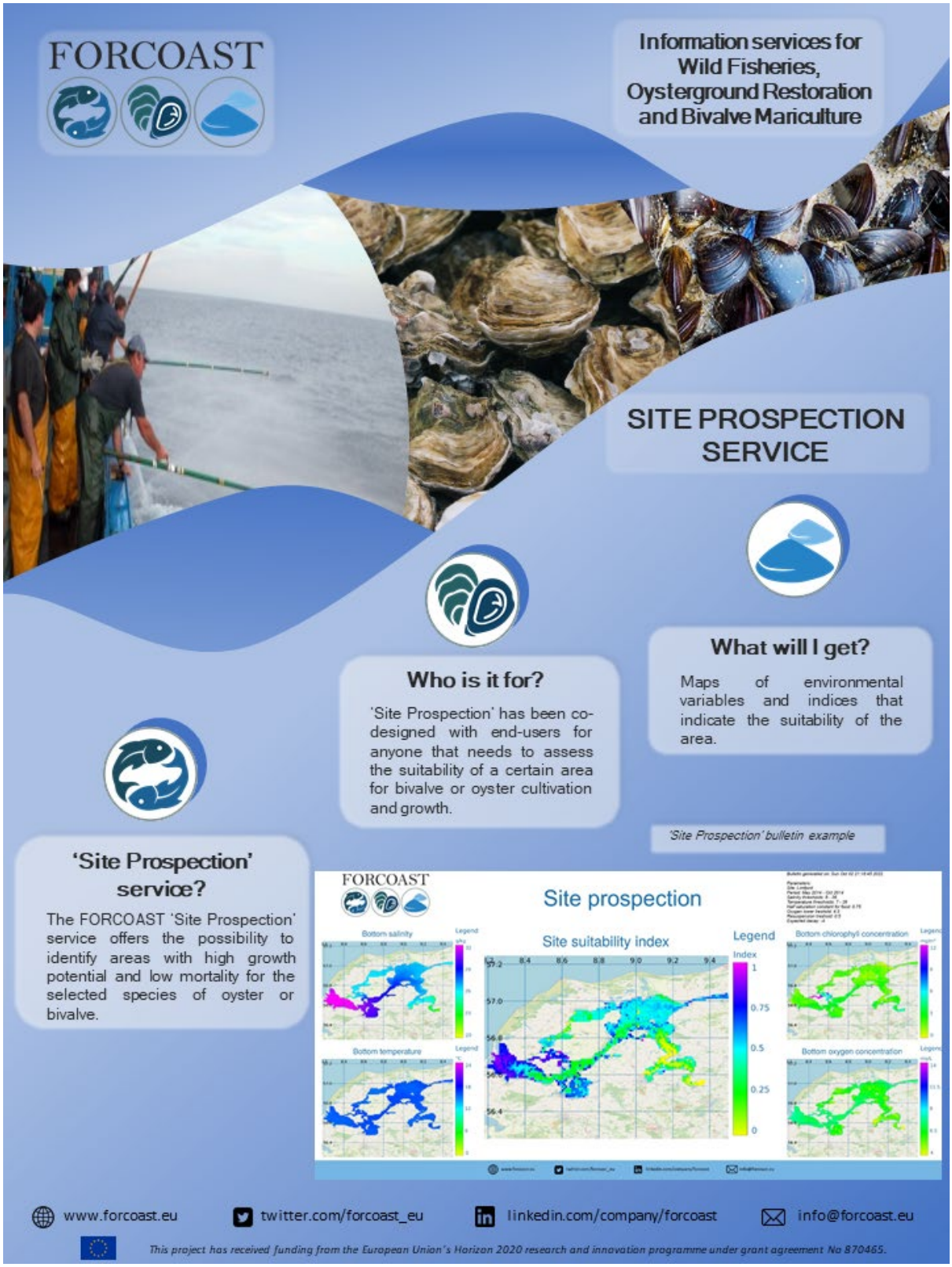

Figure 8: FORCOAST leaflet presenting the Site Prospection service

Figure 9: FORCOAST leaflet presenting the Spat Capture Assistance service

Figure 10: FORCOAST leaflet presenting the Contaminants Source Retrieval service

Figure 11: FORCOAST leaflet presenting the Suitable Fishing Areas service

Figure 12: FORCOAST leaflet presenting the Fronts Detection service

3 Social Media

FORCOAST is present on different social media channels, which helped the project become more reachable and visible to a broader audience. The two main platforms where FORCOAST provides updates about the project, related events and news are LinkedIn and Twitter.

Figure 13: FORCOAST Twitter account

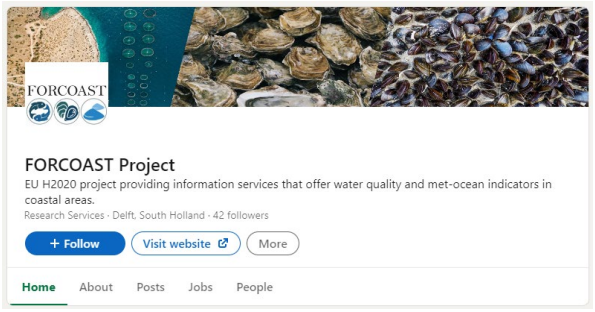

Figure 14: FORCOAST LinkedIn profile

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Figure 15: Example tweets published by FORCOAST

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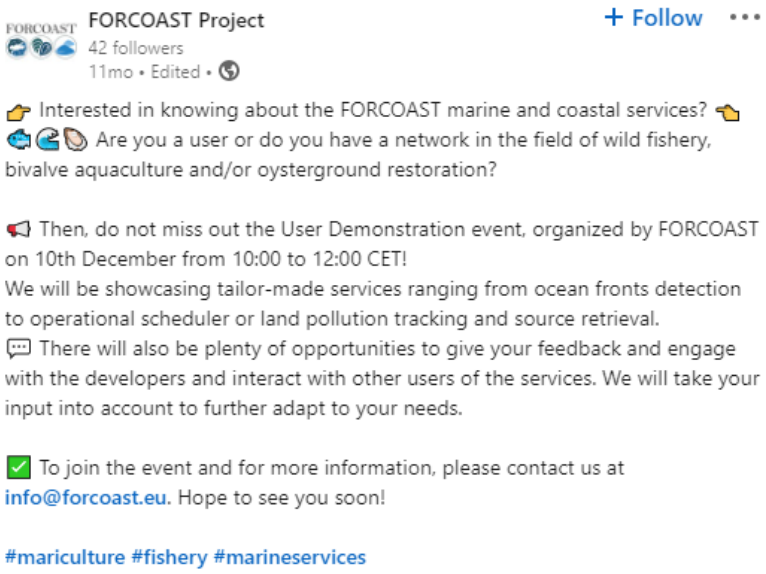

Figure 16: Example LinkedIn post published by FORCOAST

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4 Local Activities

The consortium partners have been carrying out dissemination activities to reach out to local civil and industry stakeholders. These activities vary from Pilot to Pilot, but in general terms they include two-way communications via email with local stakeholders, participation in relevant events and distribution of marketing material. As an example, the activities done by Cuan Beo in the Irish Pilot are presented below.

Newsletter:

A newsletter (AAA) is released on a regular basis which contains a FORCOAST section in which the ongoing work in the project is outlined and examples are provided of how the services are applied in Galway Bay Ireland.

Links to previous newsletter examples:

- http://cuanbeo.com/wp-content/uploads/2021/05/April-2021-Newsletter-Final.pdf
- https://cuanbeo.com/wp-content/uploads/2022/01/Cuan-Beo-January-2022-Newsletter-1.pdf

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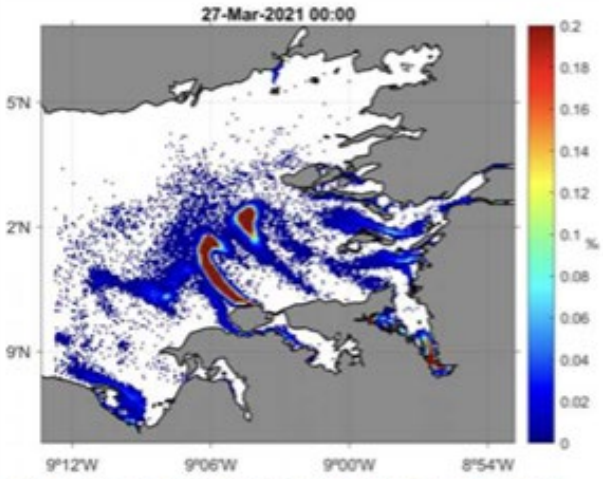
Cuan Beo Environmental CLG 11 January 2022

Forcoast Ocean Model Development

Above is a diagram showing how we can input our local knowledge and marine data collection into the FORCOAST ocean modelling system and use the system in our oyster reef restoration work to determine (a) Site Suitability for Reef Restoration, (b) Identifying Sources of Contaminants and (c) Larval Settlement.

Identifying Sources of Contaminants

Ocean modelling aims to identify the site-specific issues that constrain native oyster reef restoration in Galway Bay. The *'Contamination Source Retrieval'* service module allows us to simulate how particles disburse from various discharge points in Galway Bay and identify the most significant areas of particle concentration. We can then determine whether these discharges present a risk to oyster health. This service therefore allows us to identify the best locations for native oyster reef restoration by revealing the areas lease impacted by pollution or freshwater discharges.



The 'Contamination Source Retrieval' service module showing particle distribution from a fresh water discharge point (Clarin River). The darker areas show the highest concentration of particles.

Figure 17. FORCOAST promotion from Cuan Beo in the January 2022 Newsletter

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Poster:

A 'Galway Bay Oyster Reef Restoration Project 2020' poster was released and included in this a section outlining the role Forcoast is playing in better understanding marine environmental conditions in Galway Bay.

Link to poster:

- http://cuanbeo.com/2021/06/03/galway-bay-oyster-restoration-project-2020-work-programme/

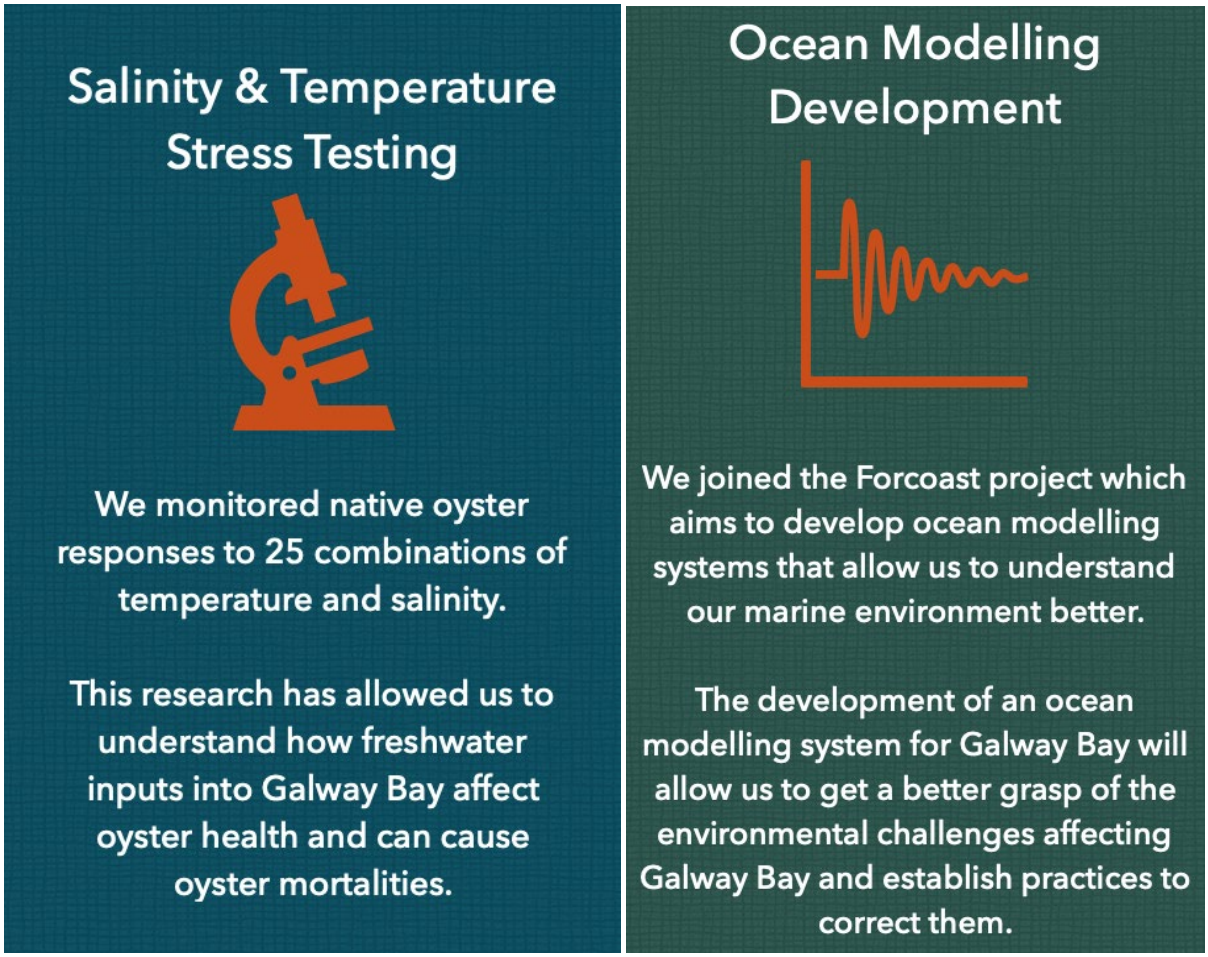

Figure 18. FORCOAS promotion example at Cuan Beo poster

Video

A series of videos were created in 2020 and 2021 outlining the work we do on the Galway Bay Oyster Reef Restoration outlining the work we do and why we need a marine environmental monitoring system to help us understand our marine environment better.

Link to videos:

- http://cuanbeo.com/video/

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Demonstrations at Industry Workshops:

There are a number of Oyster Reef Restoration and Aquaculture industry workshops in which Cuan Beo presents demonstrations of the service models in action. These workshops actively look for new technologies to make presentations on how their services work and how they will improve oyster reef restoration or aquaculture.

Link to past presentation made by Cuan Beo:

- http://cuanbeo.com/2021/06/03/galway-bay-oyster-restoration-project-2020-work-programme/

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5 Exhibitions

CMEMS Training for Black Sea

Figure 19. FORCOAST cover slide for the CMEMS Training for Black Sea event

FORCOAST Final Conference

The full article with the outcomes and reflection of the conference can be found at:
https://forcoast.eu/forcoast-final-conference-outcomes/


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12 OCT 2022

FORCOAST Final Conference Outcomes

by admin | posted in: Press Releases |

Last Wednesday (5th October 2022) the final FORCOAST conference was held. It was hosted by EuroGOOS in the Museum of Natural Sciences in Brussels. Over 20 people represented the different target sectors of wild fishery, bivalve aquaculture and oysterground restoration. Attendees were able to join the conference in person, amongst which were partners, and stakeholders from industry and research institutions, including the external advisory board. Due to the hybrid setting of the meeting, several others were also able to join the meeting online.

The conference opened with a statement from a representative from the Directorate-General for Maritime Affairs and Fisheries on the need of the fishery and aquaculture communities for the provision of tailor-made services to the sectors. This makes the FORCOAST-developed services a perfect fit for the prospect of a collaborative way to embed this type of services to enable a wider scope for growth and benefits.

In the first part of the conference, FORCOAST highlights were presented, followed by a demonstration of the functionalities of the FORCOAST platform prototype. The various services that the FORCOAST platform offers were illustrated by their respective developers, including a discussion with the participants of the conference. That allowed for insights into potential market uptake and service evolution to be considered by the consortium in the near future.

In the second part of the conference, the legacy of FORCOAST was discussed with panellists representing core services and global initiatives including market-oriented entities. The first panel discussion focused on the stakeholder vision and the market uptake. Four representatives from the industry and three partner were present. Everyone concurred on the value of the services in general or in their specific sector, and the importance of feedback, accountability and validation of the services were highlighted. The panellists have agreed that getting people acquainted with the services and gaining trust will be key to successfully disseminating the services.

The second panel discussion focused on the wider communities' uptake and global upscaling. The panellists included five representatives

Figure 20. FORCOAST website article about the Final Conference/Assembly outcomes

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Figure 21. Pictures from the FORCOAST Final Conference/Assembly

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6 Publications

In total five scientific papers were published under FORCOAST. They can also be found on the project website here: https://forcoast.eu/products/publications/

Table 1. FORCOAST scientific publications

Journal	Title	Authors
Marine Pollution Bulletin	Methodology for defining homogeneous water bodies for management purposes (Figure 20) https://doi.org/10.1016/j.marpolbul.2021.113004	Vibe Schourup-Kristensen, Marie Maar, Janus Larsen, Christian Mohn, Jens Murawski, Jun She, Hans H.Jakobsen
Frontiers in Marine Science	Ocean Circulation Model Applications for the Estuary-Coastal-Open Sea Continuum (Figure 21) https://doi.org/10.3389/fmars.2021.657720	Jens Murawski, Jun She, Christian Mohn, Vilnis Frishfelds and Jacob Woge Nielsen
Conservation Physiology	Comparing life history traits and tolerance to changing environments of two oyster species (Ostrea edulis and Crassostrea gigas) through Dynamic Energy Budget theory (Figure 22) https://doi.org/10.1093/conphys/coac034	Brecht Stechele, Marie Maar, Jeroen Wijsman, Dimitry Van der Zande, Steven Degraer, Peter Bossier, Nancy Nevejan
Proceedings of 9th EuroGOOS International conference	Intercomparison of stand-alone and two-way nested models for CMEMS downstream service https://hal.archives-ouvertes.fr/hal-03334374/	Vilnis Frishfelds, Jens Murawski, Jun She
EGU General Assembly Conference Abstract	Tuning standalone setup of Limfjord with CMEMS boundary conditions https://ui.adsabs.harvard.edu/abs/2021EGUGA..2315344F	Vilnis Frishfelds, Jens Murawski, Jun She

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Marine Pollution Bulletin 173 (2021) 113004

Contents lists available at ScienceDirect

Marine Pollution Bulletin

journal homepage: www.elsevier.com/locate/marpolbul

Methodology for defining homogeneous water bodies for management purposes

Vibe Schourup-Kristensen [a,*], Marie Maar [a], Janus Larsen [a], Christian Mohn [a], Jens Murawski [b], Jun She [b], Hans H. Jakobsen [a]

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ARTICLE INFO

Keywords:
Homogeneous water masses
Toxic algae management
Estuarine management
Transitional waters
Limfjorden

ABSTRACT

European legislation requires monitoring of toxic algae in marine areas where shellfish are harvested for consumption. Monitoring assumes the existence of homogeneous water bodies, the definition of which have important implications for stakeholders and consumers. Yet, the definition of homogeneous water bodies remains unclear. Here we present a methodology to divide coastal and estuarine waters into homogeneous water bodies to monitor toxic algae. The proposed method is mainly based on water transport, and secondarily on oceanographic characteristics; salinity and sea surface height. We apply the methodology to the Limfjord in Denmark and demonstrate its usefulness in areas with a complicated coastal morphology. The oceanographic descriptors applied in the method are standard outputs from coastal hydrodynamical models. Provided that validated and high resolution model output is available for a given area, the technique is thus adaptable to other morphologically and oceanographically complicated estuarine and coastal areas where toxic algae monitoring is necessary.

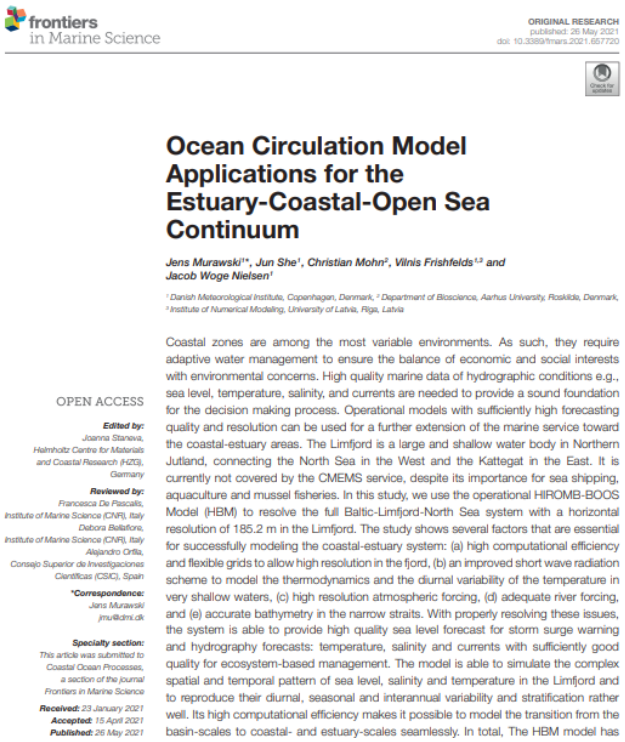
1. Introduction

Blooms of toxin-producing algae are a recurring phenomenon in Northern European estuarine and coastal waters, including the inner Danish waters and the eastern North Sea (Karlson et al., 2021). Due to bio-accumulation in filter-feeders and fish, toxic algae are a significant concern for fisheries and aquaculture industries (Berdalet et al., 2016) as they are transmitted up the food chain, with the risk of causing severe shellfish poisoning in humans (Jørgensen and Andersen, 2007; Tangen, 1983; Ayres, 1975). Bio-accumulation in shellfish can potentially occur even when toxic algae only exist in moderate concentrations (Reguera et al., 2016). To secure food safety, monitoring for toxic algae must be conducted regularly in all marine areas where shellfish are harvested from a given AMA tests positive for algae toxicity, all mussel harvesting in this same AMA will be temporarily closed to ensure food safety. PA's are operational areas based on needs for managing water quality. There are no requirements demanding AMA's and PA's to overlap, and often is an AMA a composite of multiple PA's.

The term "homogeneous water mass" is commonly used with regards to water management, e.g. in the US Clean Water Act from 1972 and the European Water Framework Directive (WFD, European Community, 2000). However, neither of these, nor the European Community (2019), give a clear definition of such a water mass, leaving the final definition to the individual state (European Community, 2004b), preferably based on local oceanographic conditions (Reguera et al., 2016).

Defining a homogeneous water mass is non-trivial. Especially estu-

Figure 22. Scientific Publication under FORCOAST: Methodology for defining homogeneous water bodies for management purposes



frontiers in Marine Science

ORIGINAL RESEARCH
published: 26 May 2021
doi: 10.3389/fmars.2021.657720

Ocean Circulation Model Applications for the Estuary-Coastal-Open Sea Continuum

Jens Murawski[1], Jun She[1], Christian Mohn[2], Vilnis Frishfelds[1,3] and Jacob Woge Nielsen[1]*

[1] Danish Meteorological Institute, Copenhagen, Denmark, [2] Department of Bioscience, Aarhus University, Roskilde, Denmark, [3] Institute of Numerical Modelling, University of Latvia, Riga, Latvia

Coastal zones are among the most variable environments. As such, they require adaptive water management to ensure the balance of economic and social interests with environmental concerns. High quality marine data of hydrographic conditions e.g., sea level, temperature, salinity, and currents are needed to provide a sound foundation for the decision making process. Operational models with sufficiently high forecasting quality and resolution can be used for a further extension of the marine service toward the coastal-estuary areas. The Limfjord is a large and shallow water body in Northern Jutland, connecting the North Sea in the West and the Kattegat in the East. It is currently not covered by the CMEMS service, despite its importance for sea shipping, aquaculture and mussel fisheries. In this study, we use the operational HIROMB-BOOS Model (HBM) to resolve the full Baltic-Limfjord-North Sea system with a horizontal resolution of 185.2 m in the Limfjord. The study shows several factors that are essential for successfully modeling the coastal-estuary system: (a) high computational efficiency and flexible grids to allow high resolution in the fjord, (b) an improved short wave radiation scheme to model the thermodynamics and the diurnal variability of the temperature in very shallow waters, (c) high resolution atmospheric forcing, (d) adequate river forcing, and (e) accurate bathymetry in the narrow straits. With properly resolving these issues, the system is able to provide high quality sea level forecast for storm surge warning and hydrography forecasts: temperature, salinity and currents with sufficiently good quality for ecosystem-based management. The model is able to simulate the complex spatial and temporal pattern of sea level, salinity and temperature in the Limfjord and to reproduce their diurnal, seasonal and interannual variability and stratification rather well. Its high computational efficiency makes it possible to model the transition from the basin-scales to coastal- and estuary-scales seamlessly. In total, The HBM model has

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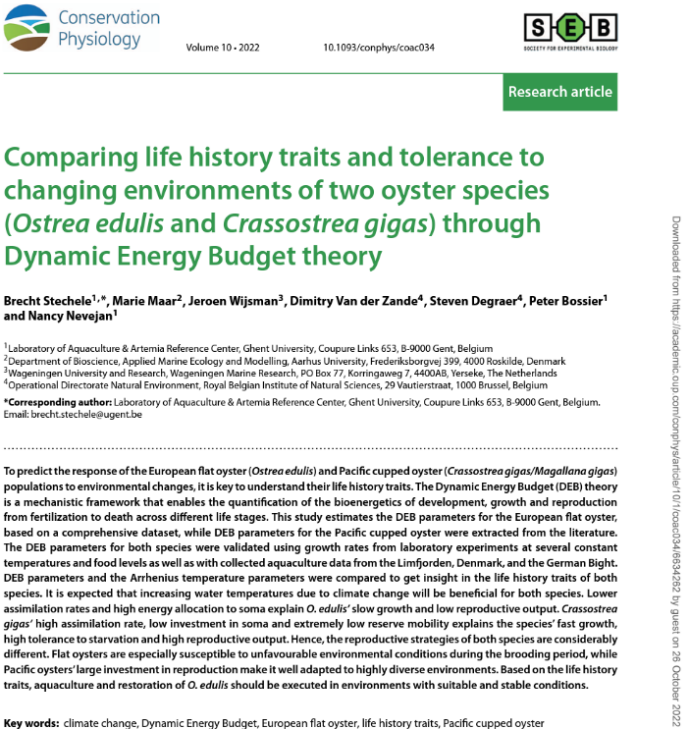
Figure 23. Scientific Publication under FORCOAST: Ocean Circulation Model Applications for the Estuary-Coastal-Open Sea Continuum

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 870465.



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Research article

Comparing life history traits and tolerance to changing environments of two oyster species (*Ostrea edulis* and *Crassostrea gigas*) through Dynamic Energy Budget theory

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To predict the response of the European flat oyster (*Ostrea edulis*) and Pacific cupped oyster (*Crassostrea gigas/Magallana gigas*) populations to environmental changes, it is key to understand their life history traits. The Dynamic Energy Budget (DEB) theory is a mechanistic framework that enables the quantification of the bioenergetics of development, growth and reproduction from fertilization to death across different life stages. This study estimates the DEB parameters for the European flat oyster, based on a comprehensive dataset, while DEB parameters for the Pacific cupped oyster were extracted from the literature. The DEB parameters for both species were validated using growth rates from laboratory experiments at several constant temperatures and food levels as well as with collected aquaculture data from the Limfjorden, Denmark, and the German Bight. DEB parameters and the Arrhenius temperature parameters were compared to get insight in the life history traits of both species. It is expected that increasing water temperatures due to climate change will be beneficial for both species. Lower assimilation rates and high energy allocation to soma explain *O. edulis'* slow growth and low reproductive output. *Crassostrea gigas'* high assimilation rate, low investment in soma and extremely low reserve mobility explains the species' fast growth, high tolerance to starvation and high reproductive output. Hence, the reproductive strategies of both species are considerably different. Flat oysters are especially susceptible to unfavourable environmental conditions during the brooding period, while Pacific oysters' large investment in reproduction make it well adapted to highly diverse environments. Based on the life history traits, aquaculture and restoration of *O. edulis* should be executed in environments with suitable and stable conditions.

Key words: climate change, Dynamic Energy Budget, European flat oyster, life history traits, Pacific cupped oyster

Figure 24. Scientific Publication under FORCOAST: Comparing life history traits and tolerance to changing environments of two oyster species (Ostrea edulis and Crassostrea gigas) through Dynamic Energy Budget theory

7 Press Releases

FORCOAST has drafted five press releases (Figure 23) published on the project website: https://forcoast.eu/category/press-releases/ and distributed among partners and relevant media outlets. Many WP leaders have released statements on their websites about project kick-off and other FORCOAST relevant events that took place over the course of the project duration.

Table 2: Press releases by different FORCOAST partners

Partner	**Link**
AZTI	https://www.azti.es/en/proyectos/forcoast/
Deltares	https://www.deltares.nl/en/news/e2-million-aiming-provide-information-services-fishery-aquaculture-sectors/
EuroGOOS	https://eurogoos.eu/forcoast/
CNR	https://www.cnr.it/en/research-projects/project/36913/forcoast-earth-observation-services-for-fishery-bivalves-mariculture-and-oysterground-restoration-along-european-coasts-dta-ad004-285
OGS	https://www.ogs.it/en/projects/forcoast

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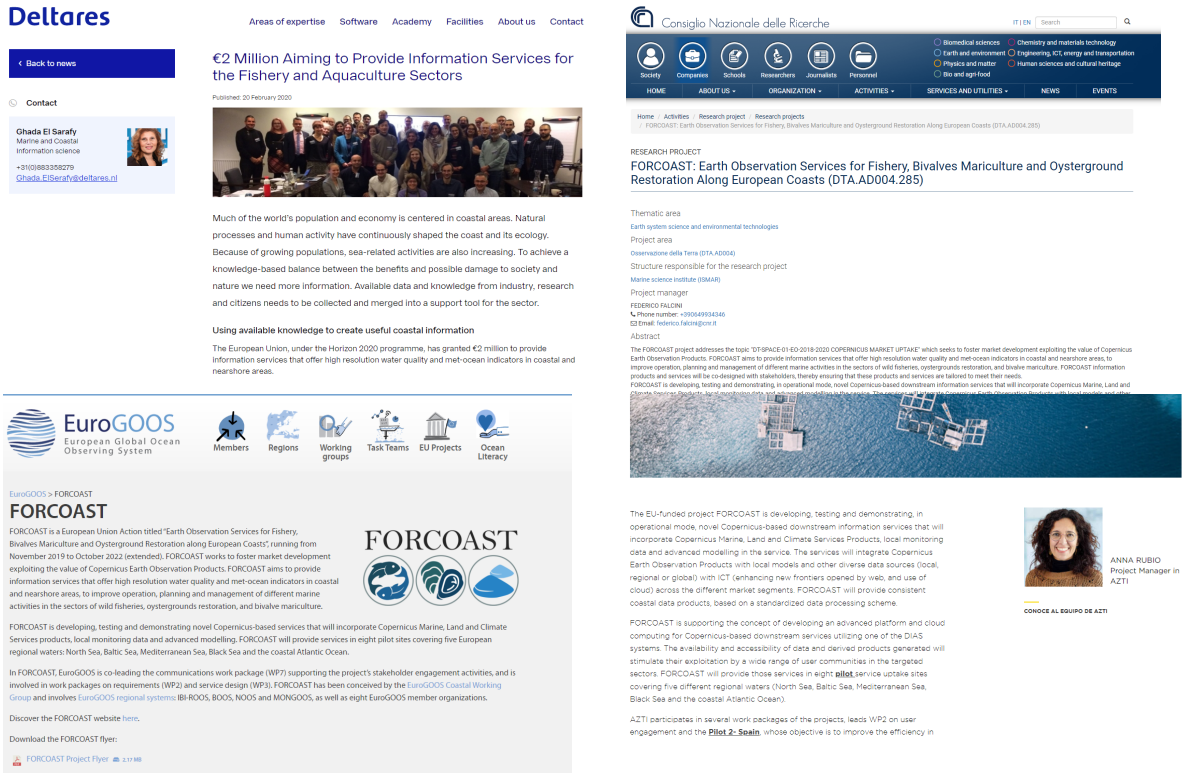

Figure 25. Press releases examples at partners' websites

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