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MARITIME TRANSPORT: TOWARDS SMARTER AND GREENER SOLUTIONS

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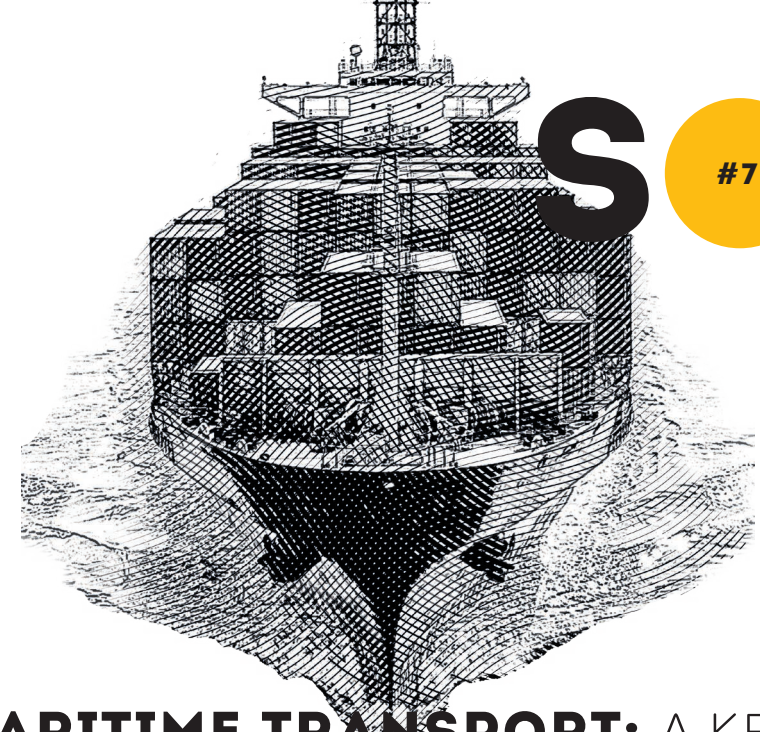


MARITIME TRANSPORT: A KEY FACTOR FOR MULTIPLE ENVIRONMENTAL ISSUES

Frédéric Moncany de Saint-Aignan, president of the French **Maritime Cluster (Cluster Maritime Français - CMF)**

BECOMING CARBON NEUTRAL BY 2050 IS AN AMBITIOUS GOAL FOR BOTH VESSELS AND PORTS, BUT IT HAS SUCCEEDED IN BRINGING TOGETHER DIFFERENT STAKEHOLDERS IN THE MARITIME TRANSPORT SUPPLY CHAIN. WHILE MUCH WORK REMAINS TO BE DONE, VARIOUS FRENCH ACTORS AND CENTRES OF EXPERTISE ARE PLAYING A CRUCIAL ROLE IN SHAPING THE MARITIME SECTOR OF THE FUTURE.

Frédéric Moncany de Saint-Aignan says that the ecological challenges facing the maritime sector revolve around three main pillars: decarbonisation, the transition to digital and attracting people into the industry, in particular through training and recruitment.
After years of preparation, **CMF** officially launched its maritime eco-energy transition platform at the **One Ocean Summit** held in Brest in February 2022, in partnership with the **French Ministry of the Sea** and the **French Agency for Ecological Transition (ADEME)**, as well as setting up the **MEET 2050 Institute** (signifying the maritime eco-energy transition towards 2050), whose highly ambitious goal is to draw up and steer the zero-emissions vessels and ports programme. **French Government** commitments and the involvement of industrial concerns in implementing this programme were emphasised during the Brest summit. **Frédéric Moncany de Saint-Aignan** said, "Our work in this field is all about bringing the various partners together and facilitating exchange between researchers, labs, industry, operating companies, financial backers, insurers and institutions." He added, "**MEET 2050** is working on a number of specific projects, exploring the opportunities from sail propulsion, e-fuels and hybridisation."

DIGITAL TWINS

The transition to digital is another key issue for the maritime sector, as it can help optimise logistics, with all the knock-on benefits that implies. "*We need to learn how to make better use of the data that comes out of the ocean, and to do that we must further develop maritime cybersecurity, allowing stakeholders to become more robust and resilient*" **CMF**'s president explains, echoing the favourable impression given by digital twin technology at the **One Ocean Summit**. In this regard, **France Cyber Maritime** embodies French excellence in global maritime cybersecurity.

To prevent these developments in the maritime economy becoming compromised by staff shortages, whether in shipbuilding, transportation, the ports or other services, the sector is working actively to ensure it remains attractive. A partnership agreement was recently signed with **Pôle emploi**, the French employment agency, to raise awareness about the current demand and to improve coordination with training institutions at all levels.

When it comes to the goal of both vessels and ports becoming carbon neutral by 2050, the technological options remain wide open, **Frédéric Moncany de Saint-Aignan** notes. "*Fuel oil is currently like an omnipresent, generic molecule, but in future we will see some highly differentiated segments emerge.*" With technologies increasingly adapted for different uses, including electric or sail propulsion, LNG and hydrogen, one thing's for sure, and it's a good thing: "*The ocean is well and truly on the agenda for leaders around the whole world.*"

IN NUMBERS

90 — 90% OF TRADED GOODS ARE CARRIED OVER THE WAVES

3 — SHIPPING REPRESENTS 3% OF TOTAL GREENHOUSE EMISSIONS

20 — 20 SHIPS UNDERGOING MAJOR REPAIRS EACH YEAR IN BREST

2,8 — 2,8 MILLION TONNES TRADED IN THE PORT OF BREST

1 — 1 TERMINAL DEDICATED TO MARINE RENEWABLE ENERGIES IN BREST (40 HECTARES)

NEWS IN BRIEF

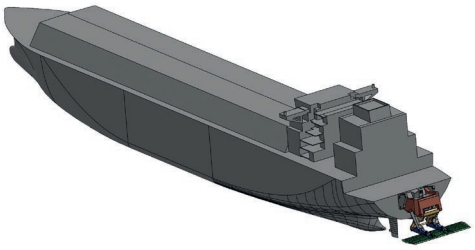
BLUE FINS: HYDROFOIL TESTING

A WHALE-INSPIRED HYDROFOIL FOR MORE EFFICIENT VESSEL PROPULSION. THE **BLUE FINS** INNOVATION IS MOVING INTO A NEW TESTING AND DEVELOPMENT PHASE.

Olivier Giusti founded **Blue Fins** in 2020 to develop wave energy conversion technologies. He states: "*Our objective is to harness the energy of ocean waves to propel vessels*".

The start-up joined forces with **Ifremer**, which holds the patent, to create a prototype hydrofoil inspired by a whale's tail fin. Olivier explains: "*The design reduces fuel consumption by around 20% in large transporter ships on transoceanic routes where there are strong tides and therefore energy to be harnessed*". **Blue Fins** is aiming to attract large merchant shipping, and eventually also passenger transport, on routes with ideal tidal conditions, "*for instance between Brest and Ouessant and between the Antarctic and Patagonia*".

Following the latest experiments proving the hydrofoil's propulsion performance, the next tests - planned for 2023 - will use a model vessel equipped with a **Blue Fins** system in a towing tank. "*After that we hope to conduct field trials at sea in 2024.*" The company **Blue Fins** is currently recruiting two new employees, and recently won the **i-Lab** innovative technology competition run by **BPI France**. Olivier concludes: "*This was important for us and will help our project to grow*".



©Bluefins

©Grain de Sail

GRAIN DE SAIL: FULL OF PROMISE

Grain de Sail 2 is currently under construction. **Jacques Barreau**, **General Manager of Grain de Sail**, explains: "*This will be a 50m vessel with a 350-tonne cargo capacity and 90% lower greenhouse gas emissions*". The company's second ship will transport organic coffee and cocoa back to France for the company to process in its workshops: "*We started out in the maritime sector, wanting to decarbonise transport. We chose to ship our own raw materials: we act as coffee roasters, chocolate makers and ship owners.*" **Grain de Sail**, based in Morlaix, began by producing coffee in 2013, adding chocolate making in 2016. The same year, **Grain de Sail** had the idea of exporting organic wine to New-York so as not to make an empty trip.

The fact the company is now ready to launch a second, larger vessel shows how successful it has been. "*In 10 years' time, we hope to have stepped up our activities - with several vessels exporting to the US and doing short hops around Europe, and perhaps we'll have established production facilities abroad too*". **Grain de Sail**'s model shows that alternatives to fossil fuels are not only possible, they're also profitable. "*The world's fleet is moving forward, and we need to rethink our patterns of consumption too, focusing once again on quality, local produce.*"

Jacques Barreau will be on the panel for the first plenary session on 'New propulsion systems for low-carbon shipping' on 27 September 2022 as part of **Sea Tech Week®** in Brest.

INFO + graindesail.com

The Saint-Malo, the forthcoming LNG-electric hybrid ferry ©Brittany Ferries

MARITIME TRANSPORT SETS A COURSE FOR INNOVATION AND DECARBONISATION

POLLUTION AND MORE COMMITMENT: THESE ARE THE IMPERATIVES FOR TRANSPORTATION IN THE MEDIUM TERM, AS BOTH OPERATING COMPANIES AND THE REGULATORY AUTHORITIES AGREE. WE TALK TO **MAGDA KOPCZYNSKA**, **DIRECTOR FOR WATERBORNE TRANSPORT AT DG MOVE*** AND **JEAN-MARC ROUÉ, CHAIR OF BRITTANY FERRIES' SUPERVISORY BOARD**.

WHAT IS THE MAIN ISSUE FOR MARITIME TRANSPORT AS FAR AS THE EUROPEAN COMMISSION IS CONCERNED?

MAGDA KOPCZYNSKA : Transportation plays an essential role in the common market and in ensuring the free movement of goods and people. Maritime transport carries 80% of global trade and 400 million passengers every year in Europe. DG MOVE provides support for competitiveness, safety and the sector's environmental and digital transitions, in particular through European legislation. DG MOVE receives technical assistance from European Maritime Safety Agency (EMSA) and coordinates the activities of EU Member States for the International Maritime Organization (IMO).

HOW WOULD YOU DESCRIBE THE ACTIVITIES AND THE IMPORTANCE OF BRITTANY FERRIES TODAY?

JEAN-MARC ROUÉ : The company is 50 years old this year: that's 50 years of developing regular maritime routes between peripheral locations. Starting out from Brittany and Normandy across to England and Ireland, between the UK and Spain and now connecting Spain and Ireland – which is a new post-Brexit development – we currently transport 2.5 million passengers a year, 80% of whom are British, and 95% of whom travel with their vehicles. We have 11 vessels in our fleet, and a 12th is currently undergoing tests and is due for delivery in 2023. We also ship some 200,000 commercial vehicles, both accompanied and unaccompanied, including tractors, lorries and trailers. Brittany Ferries is now the biggest employer of French sailors.

WHAT ARE YOUR RESPECTIVE VISIONS FOLLOWING THE COMMITMENTS MADE AT THE ONE OCEAN SUMMIT AND AT THE UN OCEAN CONFERENCE IN LISBON?

MAGDA KOPCZYNSKA : We welcome the growing awareness on the part of States and international organisations of the issues around protecting the ocean, and their commitments to take concrete action. These complement the measures taken by Europe to facilitate maritime transport's environmental transition, in particular through alternative fuels, including for shore power for ships at berth. We would hope to expand this policy from the European level to the IMO worldwide. Equally, we are addressing the marine pollution that maritime transport produces, with port waste reception facilities and penalties for polluting discharges.

JEAN-MARC ROUÉ : What we needed was a framework. There is less focus on shipping than on aviation because it only accounts for 3% of emissions despite transporting 80% of all goods. Nevertheless, the IMO is taking steps to improve things. For example, an emissions index per nautical mile is now being instigated – rather than per tonne transported – which means vessels will need to be modernised or improved.

WHAT CAN YOU DO TO SUPPORT THE DECARBONISATION OF MARITIME TRANSPORT?

MAGDA KOPCZYNSKA : In line with the European Green Deal, the Commission has set out measures to achieve a 55% reduction in greenhouse gas emissions by 2030. DG MOVE has made two

Magda Kopczynska - Power - mk ©NorShipping

The Salamanca, the company's first ship to run on liquefied natural gas (LNG) ©Brittany Ferries

legislative proposals for maritime transport: a regulation on the use of alternative fuels, and one on the deployment of alternative fuels infrastructure. At an international level, we are coordinating the efforts of European States to raise ambitions and adopt concrete measures.

JEAN-MARC ROUÉ : Our vessels will sail for 35 years. When we placed the order for the Salamanca, we chose an engine fuelled by liquefied natural gas (LNG) that could also use green methane – which is a scalable solution. For our next vessel in 2023, we coupled LNG propulsion with electric power for manoeuvring within ports, with no burning of fuel, no noise and no pollution. On the freight side, we have launched a 980km rail link extending seamlessly from our sea routes to Britain and Ireland. We're in the business of selling dreams and leisure, and we ought to be able to go beyond mere regulations.

INFO + ec.europa.eu/info/departments/mobility-and-transport_en
corporate.brittany-ferries.com/en

HOW DO YOU VIEW A NETWORK LIKE CAMPUS MONDIAL DE LA MER ?

MAGDA KOPCZYNSKA : Organisations like **Campus mondial de la mer** bring together different stakeholders from industry, research and local authorities, building partnerships and facilitating fruitful meetings that enhance consultation at a European level. They also help with effective implementation of the European regulatory framework and the practical integration of European policy at a local level.

JEAN-MARC ROUÉ : As we pursue our development here in Europe we get support from the network as we continue to decarbonise. With a turnover of €500 million, we don't have an R&D department; we work with partners at the **Campus mondial de la mer**. We also draw on the expertise of companies with experience in this area, such as **CMA CGM**, which already uses LNG. Our teams did full-scale training on their vessels. We all win if we work together!

*DG MOVE: European Commission Directorate-General for Mobility and Transport

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NEW PROPULSION METHODS: CLEANER AND FURTHER?

CAN WIND BE USED FOR MARITIME TRANSPORT? IT'S A SIMPLE, AGE-OLD IDEA AFTER ALL! SAILING VESSELS HAVE HISTORICALLY BEEN MERCHANT SHIPPING COMPANIES' PREFERRED MODE OF TRANSPORT. AT A TIME OF SMART TECHNOLOGIES AND NOVEL MATERIALS, GOING BACK TO WIND PROPULSION IS SURPRISINGLY MODERN: IT COULD ALLOW US TO TAKE A KEY STEP TOWARDS DECARBONISING. BRITTANY HAS DEMONSTRATED GREAT INNOVATION, LAYING THE FOUNDATIONS OF A WIND PROPULSION SECTOR. WE CAUGHT UP WITH **CAROLE BOURLON** FROM **BRETAGNE DÉVELOPPEMENT INNOVATION** (**BDI**) AND **STÉPHANE PENNANGUER** FROM BRITTANY REGION.

"*Maritime transport moves 90% of goods and is responsible for 3% of greenhouse gas emissions. The International Maritime organization (IMO) has set clear objectives in this respect - to reduce emissions by 30% by 2030 and 50% by 2050.*" **Carole Bourlon, responsible for coordinating racing yacht and composite material projects at BDI**, notes that these objectives have sparked calls for more decarbonised solutions to be developed. **Stéphane Pennanguer** from the **Directorate for the Sea at Brittany Region** explains: "*We urgently need to act, and the rise in fuel prices has brought things to a head. Wind-propelled maritime transport is promising and economically viable.*" Using a model developed by the company **Grain de Sail** to transport coffee and chocolate in wind-propelled vessels, and by the **Wind Ship** organisation to begin to speed up the transition to wind propulsion, in late 2021 **BDI** and **Brittany Region** unveiled the structure for a regional-level wind propulsion sector. **Carole Bourlon** adds "*In Brittany we have a head start with the technology, plus a favourable business ecosystem, especially with offshore racing, which we hope will form a viable commercial sector of its own*".

BRITTANY'S ASSETS

BDI conducted a study that showed transport in sailing vessels is already a reality in Brittany, with further opportunities for development: 61 companies are already active in the sector, with a turnover of €28 million, and a further 100 companies are expected over the next two years. **Stéphane Pennanguer** states: "*We can identify two major assets - skills and technologies associated with offshore racing, and a network of major and secondary ports*". Brittany is therefore in a position to accelerate its own decarbonisation and offer its industrial solutions to the rest of the world. "*We have two main objectives: to develop wind-powered maritime transport lines and increase volumes, and at the same time to establish secondary product lines with high added value, for example travel to and from Brittany's islands. Short sea shipping may have a significant impact locally.*"

Wind propulsion is garnering great interest and Brittany is a very attractive location, a point highlighted by **Carole Bourlon**: "*Since November 2021 and the sector launched, we have been in very regular discussions with 30 or so companies*". There is no shortage of ideas, people and projects - but they still need to be streamlined by means of a regional-level roadmap which is expected in the coming months and will set out a strategy. "*This will also ensure any crossover with other energy vectors such as hydrogen is harnessed.*"

GREEN HYDROGEN AT SEA?

France Energies Marines and its partners are exploring the possibility of supplying vessels with green hydrogen from wind farms in future. **Marie Robert** is leading the research project. She explains: "*Now that there are so many offshore wind projects, producing hydrogen at sea from green energy generated by these turbines could enable us to store and distribute energy. Hydrogen produced through electrolysis in this way could help propel vessels at sea, or be exported onto shore. Hydrogen has a much higher mass energy density than petrol, but a much lower volume energy density, even in compressed or liquid forms, so it requires large storage volumes.*" This option will be discussed in Brest at **Sea Tech Week®** between 26th and 30th September, during a round table bringing together a variety of maritime transport and offshore wind proponents.

TRAINING TOMORROW'S NAVAL ARCHITECTS THE BEST WAY TO MEET OUR FUTURE MARITIME TRANSPORT CHALLENGES.

Jean-Yves Pradillon, lecturer and researcher at **ENSTA Bretagne** in charge of their specialised advanced 'Marine Renewable Energies Expert' Master's.

ENSTA BRETAGNE PROVIDES TRAINING FOR TOMORROW'S NAVAL ARCHITECTS AND IS HELPING SHIPPING TO REINVENT ITSELF, WITH A KEY FOCUS ON SUSTAINABLE DEVELOPMENT.

ENSTA Bretagne, the Ecole Nationale Supérieure de Techniques Avancées, is a national engineering school located in Brest. It supports innovation in many areas, including maritime, defence and other high-technology applications. These include transport, aerospace, energy and all things digital.
France does not have a stand-alone naval architecture school, as **Jean-Yves Pradillon** explains. He is the lecturer and researcher at **ENSTA Bretagne** in charge of their specialised advanced 'Marine Renewable Energies Expert' Master's: "*At **ENSTA Bretagne**, we train architects who can draw and design objects that move through water, bearing in mind hydrodynamic and vessel propulsion parameters*".
Naval architects make up between 20 and 25% of each cohort at **ENSTA Bretagne**. They are trained in four main strands: hydrodynamics, including performance during forward motion and stability; structural design; R&D engineering for tomorrow's structures and materials – looking at behaviour and durability on the ocean; and ship design heavily focused on sailing vessels, in partnership with the **Paris La Villette architecture school**.

"*It is inevitable that our new graduates will encounter issues around sustainable development, so it's our job to prepare them for this.*" Jean-Yves mentions several of the avenues they explore, such as alternative drive systems, recycling composite materials (by separating the matrix from the fibre) and designing hybrid vessels. "*Naval architects may be called upon to work alongside ocean-going constructions such as floating wind turbines, with sustainable development at the heart of what they do.*"

INFO + **www.ensta-bretagne.fr**

BREST: BECOMING A TEN-T CORE PORT

Mériadec Le Mouillour, Chief Executive of **the Western Brittany Metropolitan Chamber of Commerce and Industry** (CCIMBO)

THE PORT OF BREST IS A GENERAL PORT WITH TWO WELL-ESTABLISHED AREAS OF ACTIVITY - COMMERCIAL SHIPPING AND SHIP REPAIR - AND AN EMERGING FOCUS ON MARINE RENEWABLE ENERGIES. WITH A VOLUME OF 2.8 MILLION TONNES ANNUALLY, THE PORT HANDLES A WIDE RANGE OF IMPORT AND EXPORT GOODS. IT IS A VITAL LINK IN THE LOGISTICS CHAIN FOR BRITTANY'S AGRIFOOD SECTOR.

Brest has long been part of the global port network and has been proposed as one of the core ports in the **Trans-European Transport Network** (**TEN-T**). "*The port will have access to major European funding streams ringfenced for the core ports in the network in return for undertaking work to decarbonise and upgrade its port infrastructure by 2030 and railway network by 2040*", explains **Mériadec Le Mouillour**, **Chief Executive of the Western Brittany Metropolitan Chamber of Commerce and Industry** (CCIMBO).
"*The climate data are irrefutable. The **TEN-T** refocus that took place in 2021 should be seen as an opportunity for the port of Brest, boosting investments and enabling it to position itself as a provider of low-carbon transport solutions*", **Mériadec Le Mouillour** continues.
Sea Tech Week® is an important event which will consolidate Brest's position as a maritime capital. "*Without overlooking the major challenges we face in Brest in the areas of marine renewable energy and the rail-road-sea modal shift, I hope **Sea Tech Week®** will give us the opportunity to showcase the achievements of the Port-S100 digital services project delivered in partnership with the **French Hydrographic and Oceanographic Service** (**Shom**).*"
In conclusion, the **CCIMBO** Chief Executive adds, "*We also look forward to sharing information with professionals, researchers and funders about the **Multi-partner Maritime and Port Transitions Chair** we are working on with the University of Brest.*"

INFO + **www.bretagne-ouest.cci.bzh**

©Blue observer

BLUE OBSERVER: EXPLORING THE SEA UNDER SAIL

BLUE OBSERVER, ESTABLISHED IN BREST IN FEBRUARY 2021, IS A LOW-CARBON MARITIME SCIENTIFIC RESEARCH ORGANISATION. PUBLIC AND PRIVATE-SECTOR RESEARCH TEAMS CAN STUDY THE OCEAN FROM ITS SAIL-BASED OCEAN RESEARCH PLATFORM.

"Our core activity is running scientific expeditions using our sailing vessel", explains **Amadeus Beaujolin**, **Blue Observer**'s Chief Executive. The sail-based platform means it's possible to access little-studied maritime areas, perform technical operations and collect biological samples. "*There's a real need to coordinate and share efforts to increase our understanding of the ocean so we're better able to value and protect it.* ***Campus mondial de la mer*** *is a valuable source of support for this. In April, for example, the "****Rencontre Immersion****" meeting gave us an opportunity for very practical exchanges between students, representatives from the scientific community and private stakeholders.*"

NOVEMBER 2021 - THE INAUGURAL EXPEDITION

On 14 November 2021, **Blue Observer** launched its first three-month expedition in the **Atlantic**. The French sailing vessel deployed 95 **Argo** profiling floats at predefined GPS positions to enhance the **Argo** global network. In addition, marine aerosol samples were collected from the open ocean. **Amadeus Beaujolin** expands: "*We're also planning our own innovations. We're working on a project with* ***Roscoff Marine Station*** *to use the marine aerosols to establish the world's first strain library. This is the first time we've launched an innovative project of our own.*"

INFO + blue-observer.com

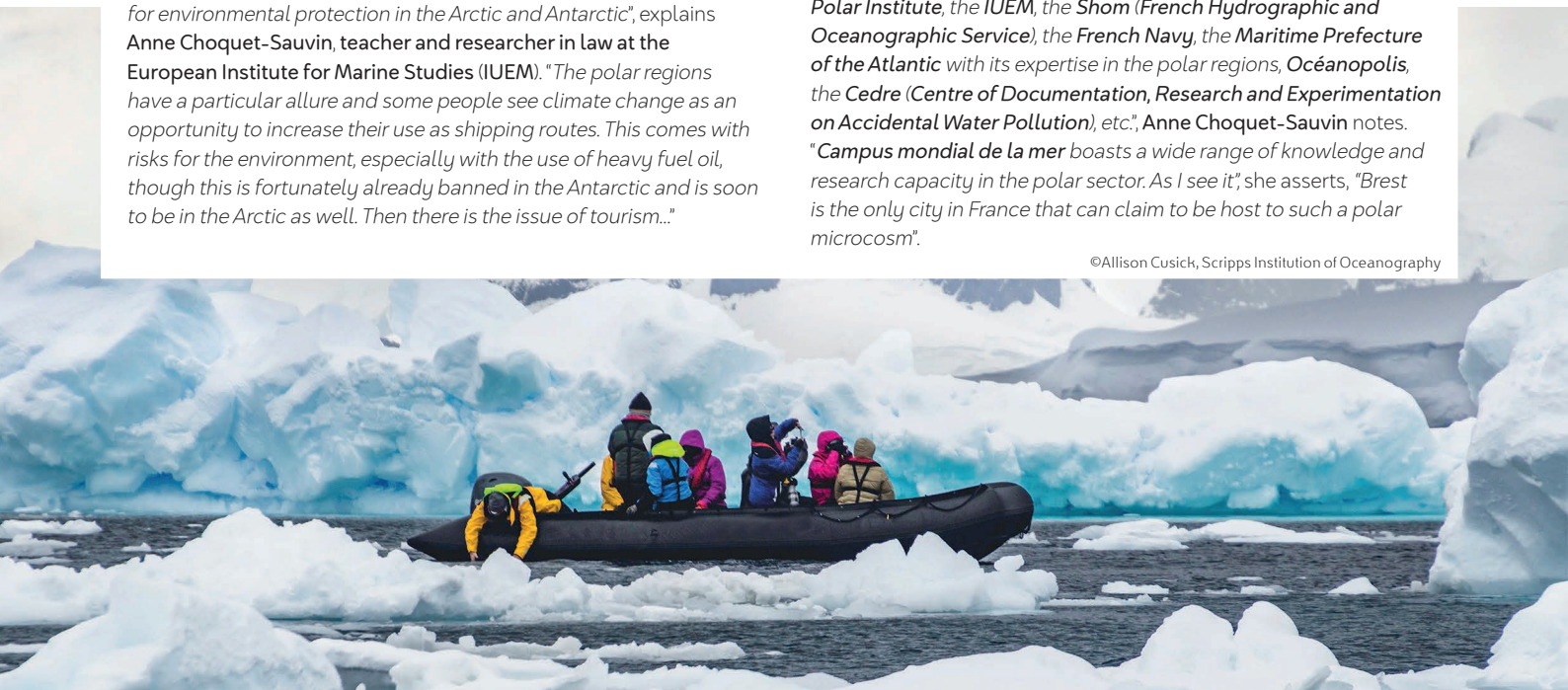
BREST IN POLE POSITION!

THE POLAR REGIONS HAVE BECOME THE FOCUS OF A RANGE OF ISSUES FACING THE WORLD IN THE 21ST CENTURY. TO TRULY UNDERSTAND THE CHALLENGES BEFORE US, THESE ISSUES MUST BE CONSIDERED FROM MULTIPLE PERSPECTIVES. THE RANGE OF SCIENTIFIC NETWORKS ACTIVE HERE PLACES BREST AT THE HEART OF THIS WORK.

Climate change is clearly visible in the polar regions and human activity there is intensifying and diversifying. "*These changes are creating geopolitical risks, risks for the safety of humanity and risks for environmental protection in the Arctic and Antarctic*", explains **Anne Choquet-Sauvin**, **teacher and researcher in law at the European Institute for Marine Studies** (**IUEM**). "*The polar regions have a particular allure and some people see climate change as an opportunity to increase their use as shipping routes. This comes with risks for the environment, especially with the use of heavy fuel oil, though this is fortunately already banned in the Antarctic and is soon to be in the Arctic as well. Then there is the issue of tourism...*"

THE BREST NETWORK

Here at the tip of Brittany can be found a wealth of facilities and expertise relevant to the polar zones. "*We have the* ***French Polar Institute****, the* ***IUEM****, the* ***Shom*** *(****French Hydrographic and Oceanographic Service****), the* ***French Navy****, the* ***Maritime Prefecture of the Atlantic*** *with its expertise in the polar regions,* ***Océanopolis****, the* ***Cedre*** *(****Centre of Documentation, Research and Experimentation on Accidental Water Pollution****), etc.*", **Anne Choquet-Sauvin** notes. "***Campus mondial de la mer*** *boasts a wide range of knowledge and research capacity in the polar sector. As I see it",* she asserts, *"Brest is the only city in France that can claim to be host to such a polar microcosm*".



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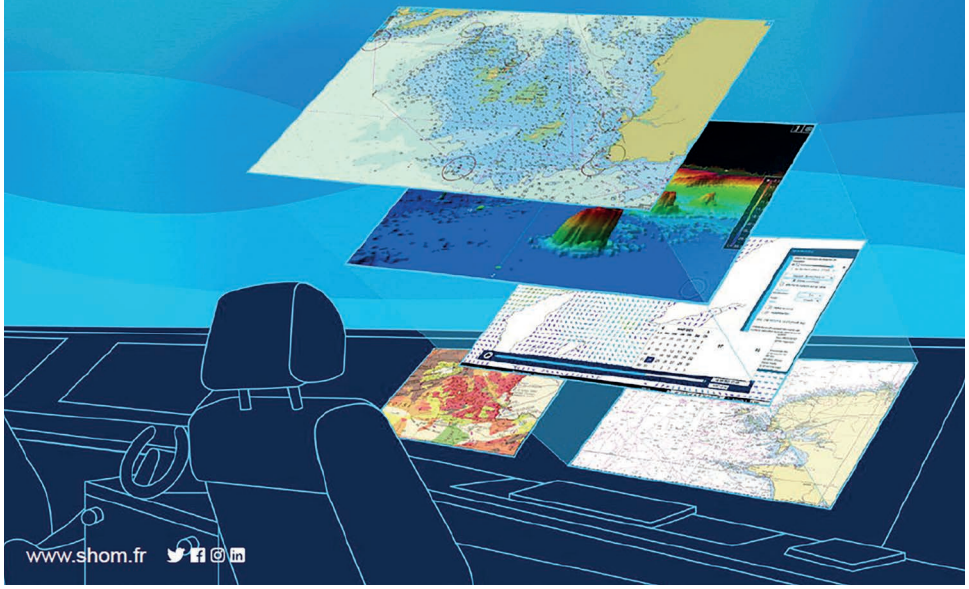

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SHOM APPLIES THE S-100 STANDARD

ELECTRONIC NAVIGATION WILL SOON BE SUBJECT TO **S-100**, AN INTERNATIONAL FRAMEWORK FOR HARMONISING AND ENHANCING DIGITAL MARINE CHARTS.

"*In the past, sailors would navigate using paper charts. In the 1990s, these were converted into digital vector charts*", notes **Nathalie Leidinger**, head of the innovation lab run by **Shom** (**the French Hydrographic and Oceanographic Service**). As member of the **International Hydrographic Organization** (**IHO**), Nathalie is the **S-100** implementation lead for France. "*In future, electronic charts will contain several layers of real-time data. Increasingly precise and reliable data have become essential for everyone, given the challenges of ever-busier maritime traffic and larger vessels. The* ***International Maritime Organization*** *(****IMO****) defines e-navigation as 'the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore', and the* ***S-100*** *standard provides a framework for this system*".

S-100, which should become operational from 2026, not only includes electronic navigational charts (**ENCs**); it also covers high-density bathymetric data and information on water depth and real-time ocean currents - "*additional, interoperable layers*". Just what is at stake here? "*Improving safety and security, environmental protection and protection against cyber attacks*", Nathalie replies. "*A further benefit is the ability to optimise navigation, reducing fuel consumption while ensuring just-in-time port arrivals*". **Shom** is already an official provider of **ENCs**, and is now preparing for the transition to **S-100** by integrating new data and participating in various discussions with industrial manufacturers of embedded systems, in particular via the **French Maritime Cluster** (**Cluster Maritime Français**).

INFO + www.shom.fr

AANCHAL JAIN DECLARES WAR ON PLASTICS

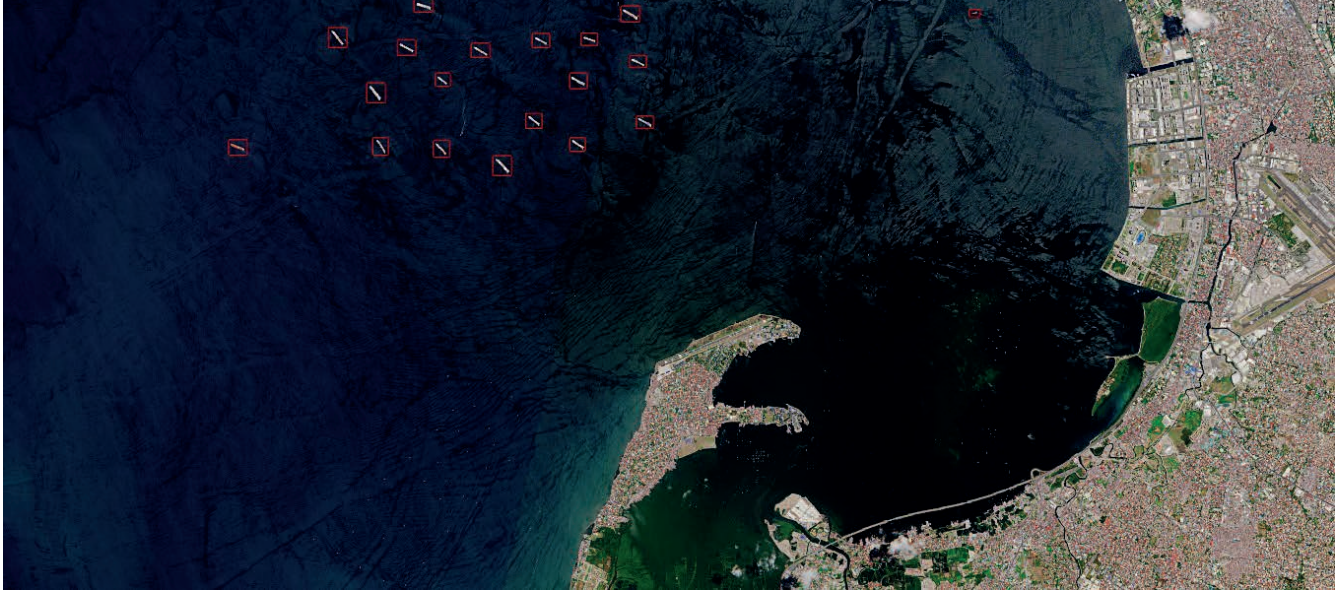
AANCHAL JAIN LEFT INDIA TO STUDY IN FRANCE. OVER THE COURSE OF HER INTERNSHIPS AND WORK TRIPS SHE HAS VISITED ICELAND, THE UNITED STATES AND SOUTH AFRICA ON A MISSION TO TACKLE PLASTIC POLLUTION IN OUR OCEAN.

Aanchal Jain has been working at the **University of Brest** for a year now. She is a research engineer within the **AMURE** combined research unit, part of a European project on the marine environment. "*My job is to estimate the cost of the marine waste that breaks down in French waters. The project began in 2010 and aims to measure changes in this pollution as well as analysing public policy. The efforts being made to combat pollution are clear, and spending on ever-more technical projects has increased significantly.*" Aanchal has made marine waste her specialism since she studied the environmental economy in Nantes in 2018. "*I worked with* ***IUCN*** *-* ***the International Union for Conservation of Nature*** *- and other bodies on marine plastics, seeking solutions to reduce their impact and identify the sources of these materials. I travelled a lot: to South Africa, Switzerland and Iceland, to study coastal regions and to understand the behaviour of plastics.*"

PLASTIC IS A GLOBAL PROBLEM

Why is Aanchal particularly interested in plastic pollution? "*Traditionally in India we don't use any disposable plastic, or very little. But here I see families who get through eight bottles a day! It's important to be aware of this pollution because, even if we clean up, the world will still produce more plastic.*" Having written two papers on the subject, Aanchal Jain wants to take it further: for her PhD thesis.

"*I want to create an economic model for plastic waste management in France: how it is generated, how it is processed, and how much ends up in the ocean*". She will also participate in a parallel session on the subject during **Sea Tech Week®** - the event organised by **Technopôle Brest-Iroise** between 26 and 30 September at Brest Expo. "*I'll be presenting my research on the costs and benefits of cleaning up beaches in Cape Town, South Africa.*"



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AEROSPACE HELPS THE MARITIME SECTOR

THE EUROPEAN SPACE AGENCY (**ESA**) IS PROMOTING THE USE OF SPATIAL DATA: GEOLOCATION, EARTH OBSERVATION AND SATELLITE COMMUNICATIONS CAN OPEN UP NEW OPPORTUNITIES FOR MARITIME TRANSPORT. THE INCUBATOR AT **ESA BIC NORD FRANCE** IS WORKING WITH THE SPACE AGENCY TO SUPPORT AND ACCELERATE PROJECTS LINKED TO THE AEROSPACE INDUSTRY.

Alexia Freigneaux told us: "*The **ESA** and the **French National Centre for Space Studies** (**CNES**) want to enrich other sectors by developing the use of satellite data: **Copernicus** for earth observation and **Galileo** for navigation*". Alexia leads on the **ESA BIC** (**Business Incubation Centre**) **Nord France**, one of the agency's 24 incubators. Created in 2018, the centre covers six northern French regions, and **Technopôle Brest-Iroise** is the designated support structure for Brittany. Alexia said, "*We hear from shipyards and ports wanting to reduce their environmental impact and their vessels' energy consumption: this can be achieved by optimising routing. Increasing numbers of satellites can supply valuable data on sea temperature, winds, waves and currents*". Vessels can be guided more effectively along the best itineraries by combining geolocation and earth observation data.

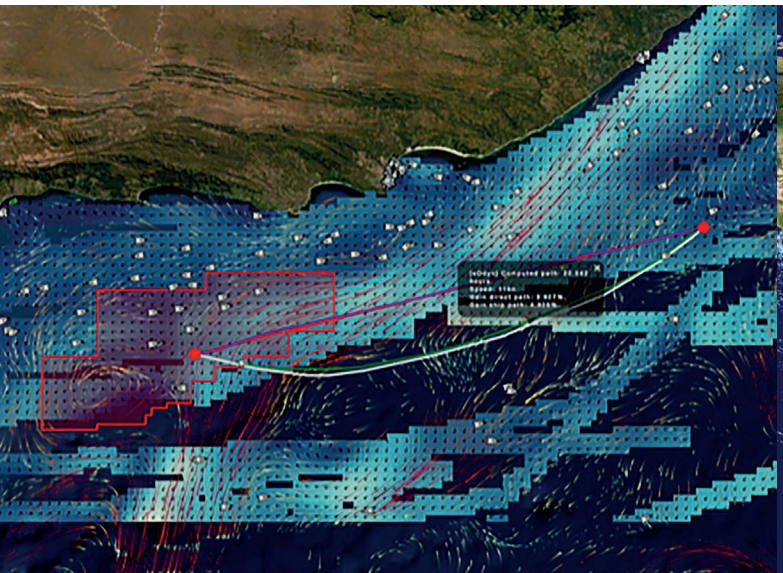
USING CURRENTS TO IMPROVE ROUTING

eOdyn, established in 2015, is a company specialising in ocean currents. We spoke to its **president**, **Yann Guichoux**, based in Brest: "*The unique technology we've developed uses satellite data to observe currents at a global scale in quasi-real-time, while analysing vessels' behaviour and drift. It has many applications, and we estimate that making use of currents could lead to fuel savings of 5%*". These applications include detecting vortex structures for the **French Navy**'s anti-submarine operations, identifying extreme currents for offshore energy operations, and selecting optimum maritime transport routes. With the aim of improving our understanding of the ocean's behaviour, the company has partnered with **ESA BIC Nord France** and is also working with the research community, especially the **French National Institute for Ocean Science** (**Ifremer**) and the **French Hydrographic and Oceanographic Service** (**Shom**).

GETTING THE BEST USE OUT OF AEROSPACE DATA

Aerospace data can be used in many different disciplines and can benefit multiple industries such as agriculture, health, the environment, logistics, and of course maritime transport. **ESA BIC Nord France** is supporting start-ups like **eOdyn** so they can step up their use of this data. **Alexia Freigneaux** explained, "*75% of the companies we support are already using satellite data – either geolocation, communication or Earth observation data – and they want to diversify their markets. The remaining 25% are companies whose main activity already relates to aerospace.*" In Brest alone, **ESA BIC Nord France** has already provided support for five companies, of which four have a maritime connection: "*This is site-specific and accurately reflects the dynamic maritime sector here*", Alexia went on to explain. With new satellites being launched, there is huge development potential: "*Aerospace has a lot to offer, especially in terms of limiting the impact our activities have on the environment.*"

INFO + www.esabicnord.fr
www.e-odyn.com



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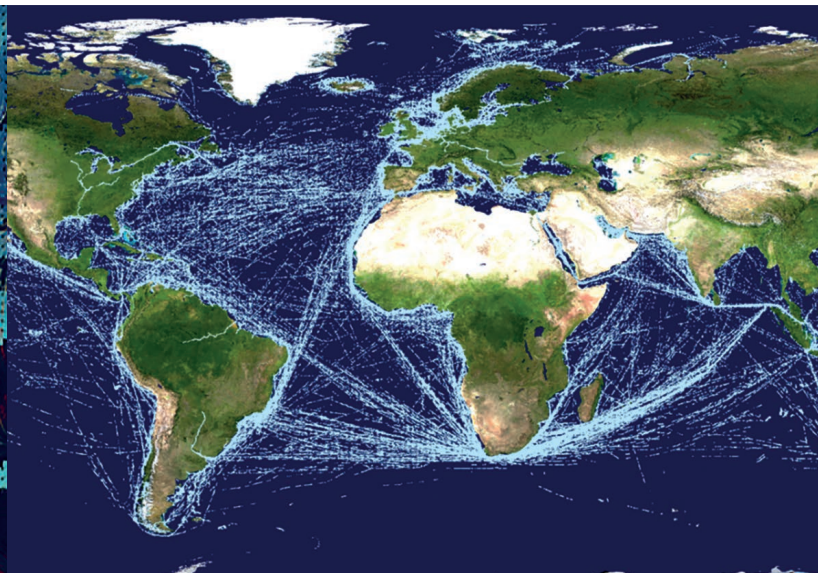

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THE CLUSTER MARITIME FRANÇAIS: VOICE OF THE FRENCH MARITIME COMMUNITY

THE **FRENCH MARITIME CLUSTER** (**CLUSTER MARITIME FRANÇAIS - CMF**) HELPS TO STRENGTHEN ALL SECTORS OF THE MARITIME ECONOMY BY SETTING OUT A CENTRAL STRATEGIC VISION. **CMF** THEREFORE PROMOTES FRANCE'S MARITIME ECONOMY AND GEOGRAPHICAL ATTRACTIONS, AS WELL AS MARITIME HOME-GROWN INNOVATION.

Created in 2006, the **Cluster** brings together stakeholders from across the maritime ecosystem – from throughout industry to services and all sorts of maritime activity. All sizes of company, competitiveness clusters, business associations and federations, research labs and institutes, education and training institutions, local authorities and businesses, as well as the **French Navy**, are represented in the **CMF**. Of the Cluster's 470 member organisations, around 20 are based in Brest. As **Frédéric Moncany de Saint-Aignan**, **CMF**'s president, points out, "*As a maritime platform, Brest represents a significant part of the maritime ecosystem. A number of important initiatives are being pursued at the* ***Campus mondial de la mer*** *in particular, including the* ***Ocean Hackathon®****, which we have been supporting for several years, and which we helped set up in New Caledonia*".

SUSTAINABLE, RESPONSIBLE DEVELOPMENT

Although it is not a lobbying organisation as such, **CMF** uses its influence to reconcile different marine activities. It supports its members in pursuing sustainable, responsible development in the course of their activities and projects, whether in France or overseas. **CMF**'s campaigns cover three broad areas of activity: institutional communication, operational synergy and advocacy work.

"*Synergy groups, which were created in response to specific needs our members identified, let people work on particular issues such as removing regulatory and technological barriers, including internationally, and studying the deep sea*", **CMF**'s president explains. "*The energy transition is one of the main challenges, of course. There is no one single solution for decarbonising the maritime supply chain; we need to combine several approaches. Everyone in the sector is moving towards this ambitious goal together*".

In parallel with such issues, **CMF** is helping to promote the sector and the various employment opportunities it can offer. There is particular emphasis on encouraging more women into the maritime industries and improving the gender balance in the sector through the '**Elles de l'Océan**' initiative, the creation of a '**Focus on workplace equality**' observatory and the publication of good practice guides.

The **Cluster** also contributes to the work of the **Marine Energy Observatory**, which produces an annual economic assessment of the sector. "*France boasts several world leaders in the maritime sector*", the president notes, "*whether in shipbuilding, logistics or services. There are a whole panoply of different actors with broad and varied interests who all interact within our sector*" underlines **Frédéric Moncany de Saint-Aignan**.

INFO + www.cluster-maritime.fr

FORESIGHT

BREST TO HOST **EUROPEAN MARITIME DAY 2023**

IN MAY 2023, **EUROPEAN MARITIME DAY** (**EMD**) WILL PROVIDE THE LATEST ACKNOWLEDGEMENT OF BREST AND BRITTANY FOR THEIR EXPERTISE IN MARITIME MATTERS, AND STRENGTHEN THE LONG-ESTABLISHED RELATIONSHIPS OF TRUST THAT HAVE BEEN BUILT THROUGHOUT THE EUROPEAN UNION. BREST WILL BE THE FIRST FRENCH MARITIME LOCATION TO HOST THIS MAJOR ANNUAL MEETING OF THE **EUROPEAN MARITIME COMMUNITY** SINCE IT WAS ESTABLISHED IN 2008.

Having been held in Ravenna, Italy, this year, **EMD** will be at **Brest Expo** on 24 and 25 May 2023. High-level sessions will address major challenges associated with the ocean, the blue economy, innovation and transition. Workshops will be held in parallel and will be open to all voluntary organisations in the maritime sector, whether public institutions, research bodies or businesses. There will also be the opportunity to exhibit, and **Campus mondial de la mer** is already taking a lead on organising this.

Other associated events and initiatives will be on offer, with the aim of promoting 'ocean literacy' and celebrating the ocean. These include waterside walks, as well as cultural and educational events. The **Ateliers des Capucins** will host the gala evening on 24 May. **Océanopolis** and **70.8** (the new marine marine innovation and technologies gallery), among other organisations, will showcase Brest's rich maritime and industrial heritage and also look to the future.

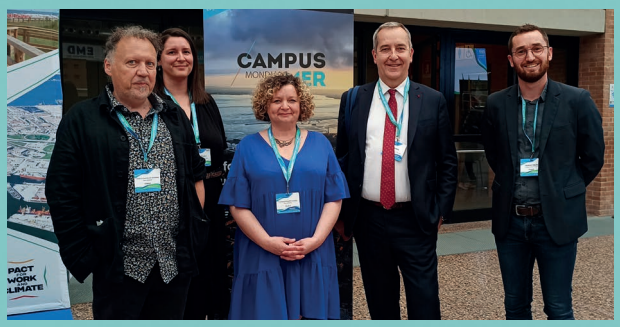
PROMOTING THE MARITIME EXCELLENCE OF BREST AND BRITTANY

Tristan Le Guillou de Penanros and **Gildas Borel** from **Brest métropole** are responsible for European policy and cooperation on land and at sea. They told us: "*The various maritime events held in Brest aim to highlight our growing maritime strengths. We hold **Sea Tech Week®** every two years and most recently hosted the One Ocean Summit*".

INFO+ **Brest métropole contacts: Strategy and planning, Tristan Le Guillou de Penanros and Gildas Borel.**

This growth dynamic is underpinned by the amazing concentration of marine and maritime facilities and expertise in Brest, Roscoff and Concarneau. These are brought together by **Campus mondial de la mer**, covering areas including maritime security, marine renewable energy, marine biology and observation, and shipbuilding and repair.

Around a thousand people will attend the event over the two days. **Tristan Le Guillou de Penanros** concludes: "*Besides the role it plays in promoting maritime excellence from Brest and Brittany, this type of event helps strengthen ties with the **European Union** and EU policy. I'm thinking, for example, of the recent inclusion of Brest as a core port in the **Trans-European Transport Network (TEN-T)**, extending the Atlantic corridor to Nantes and Brest*".



From left to right: Tristan Le Guillou de Penanros from Brest métropole, Anaïs Turpault from Pôle Mer Bretagne Atlantique; Frédérique Bonnard Le Floc'h, Vice President of Brest métropole with responsibility for European policy; Denis Robin, France's Secretary-General for the Sea; Jérémie Bazin from Technopôle Brest-Iroise and coordinator of Campus mondial de la mer.

SAVE THE DATE

Ocean Hackathon® 2022

2-4 December 2022 in Brest and 12 other cities around the world

Ocean Hackathon® is a 48 hours non-stop challenge to develop a prototype in team and to think about its use, based on digital data related to the ocean. At the end of the weekend, one team will be elected to participate in the international Grand Finale to be held in Brest in early 2023 and may win one of the prizes offered by our Ambassadors.

More information on **ocean-hackathon.fr**

European Maritime Day

24-25 May 2023 in Brest

For the first time since the launch of the **European Maritime Day** in 2008, France will host this event, further demonstrating Brest's and Brittany's high level of expertise in marine science and technology, and their commitment to Europe.

More information on **maritime-day.ec.europa.eu**

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