# 9 June 2023

[Tethys](#) is a knowledge hub with information and resources on the environmental effects of wind and marine energy. The bi-weekly Tethys Blast highlights announcements and upcoming events; new documents in the [Knowledge Base](#); and international energy news. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. [Email us](#) to contribute!

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## Announcements

New Tethys Story

### [Producing Predictive Species Density Maps in Potential Wind Energy Development Areas](#)
**by Lisa Ballance and Barbara Lagerquist (Oregon State University)**

The Department of Energy (DOE) Wind Technologies Office recently announced $15 million for five projects that will provide critical environmental and wildlife data to aid offshore wind development. As part of that effort, the Marine Mammal Institute at Oregon State University began the MOSAIC (Marine Offshore Species Assessments to Inform Clean energy) project to conduct environmental research to inform the development of offshore wind energy along the U.S. Pacific Coast. Read more in the latest Tethys Story [here](#).

New Marine Energy Video Game

Pacific Northwest National Laboratory (PNNL) recently launched a [Marine Energy Adventure Game: Collision Risk](#)! Choose your own adventure and experience what it's like to be a fish encountering an underwater tidal turbine! Check out other fun resources on OES-Environmental's new [Marine Renewable Energy Educational Resources](#) page.

Tethys Wind User Review

We want your feedback! Please complete this year's short Tethys Wind User Review survey by 9 June 2023 to help us understand how the wind-wildlife community uses Tethys and determine how we can continue to expand and improve the site!

Collegiate Wind Competition

The U.S. DOE is now accepting applications from interdisciplinary teams of undergraduate and graduate students for the 2024 Collegiate Wind Competition. The competition will take place in three phases over the course of the 2023-2024 school year and will culminate at a final event in spring 2024. Interested schools should apply by 15 June 2023.

BOEM Seeking Comments

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking public comments on its Gulf of Maine Call for Information and Nominations for commercial wind energy development (due 12 June 2023) and the draft Environmental Impact Statement for two wind energy projects offshore New Jersey (due 3 July 2023).

Calls for Abstracts

The Call for Extended Abstracts for the Pan American Marine Energy Conference (PAMEC 2024) is now open through 26 June 2023. PAMEC 2024 will take place on 22-24 January 2024 in Barranquilla, Columbia.

The Call for Short Abstracts for the 3rd International Congress on Marine Energy CEMIE-Océano is now open through 30 June 2023. Extended abstracts will be due by 18 August 2023. The conference will take place 5-7 September 2023 in Puerto Morelos, Mexico.

The Call for Abstracts for the International Conference on Oceanography and 19th French-Japanese Symposium of Oceanography (COAST CAEN) is open through 7 July 2023. The event will take place on 24-27 October 2023 in Caen, France.

Funding & Testing Opportunities

TetraSpar Demonstrator ApS and its shareholders Shell, TEPCO RP, RWE, and Stiesdal Offshore recently announced the TetraSpar Innovation Challenge, which welcomes solutions that can be demonstrated under real-life conditions on the TetraSpar Demonstrator floating wind turbine at the Marine Energy Test Centre in Norway. Applications are due 18 June 2023.

The U.S. DOE Water Power Technologies Office (WPTO) has released a funding opportunity to support projects focused on advancing the tidal and current energy industry, including a community-led development project. Concept papers are due by 13 July 2023.

The U.S. Ocean Energy Safety Institute has launched a Request for Proposals focused on marine and offshore wind energy solutions that enhance safety, security, and sustainability. Submissions are due 19 June 2023 (for marine energy) and 24 July 2023 (for wind energy).

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the DOE's WPTO, is now accepting [Request for Technical Support (RFTS) 10](#) applications until 7 July 2023. Applications for Open Water Support may be submitted at any time and will be reviewed as soon as possible.

The California Ocean Protection Council (OPC) recently launched an [Offshore Wind Environmental Monitoring Guidance Request for Proposals](#). OPC is seeking applications to develop comprehensive environmental monitoring guidance for offshore wind development in California. Full proposals are due 31 July 2023.

The Horizon Europe Framework Programme recently launched a [Call for Proposals](#) focused on the development of critical technologies to improve the lifetime, efficient decommissioning, and circularity of offshore and onshore wind energy systems. Proposals are due 5 September 2023.

Student & Employment Opportunities

The University of Maine is advertising an opportunity to study the interactions of floating offshore wind energy with marine ecosystems and fisheries in the Gulf of Maine and California as a [master's or Ph.D. student](#) (in Marine Biology or Oceanography).

The Environmental Research Institute is seeking a [Postdoctoral Researcher or Research Fellow](#) to investigate the ecosystem effects of offshore wind by developing and deploying autonomous multi-sensor platforms using hydroacoustics. Applications are due 12 June 2023.

The University of Aberdeen is advertising a [funded PhD project](#) (for UK students only) focused on characterizing and simulating entanglement scenarios between various types of fishing gear and floating offshore wind technology. Applications are due 14 June 2023.

Crown Estate Scotland is seeking to appoint a [Consultant to Manage Wave and Tidal Operators Panel](#) who will act as a technical authority to support decision making on how the Panel should progress and day-to-day management activities. Applications are due 19 June 2023.

Pembrokeshire Coastal Forum is hiring a [Communications Coordinator – Marine Energy](#) who will work with the Marine Energy Wales team and deliver the marketing and communications strategy for the pre-consented Marine Energy Test Area. Applications are due 19 June 2023.

Net Zero Atlantic is seeking a fulltime [Project Manager](#) to oversee a community capacity building project that is being delivered in mainland Nova Scotia and Cape Breton. Applications are due 19 June 2023.

Natural Power is seeking a [Principal Consultant](#) who will be responsible for providing expertise in environmental permitting and compliance of wind energy projects to assist clients in the use of smart curtailment technology as a mitigation measure. Applications are due 28 June 2023.

Natural Power is also seeking an [Environmental Systems Engineer](#) to provide engineering expertise and operational support for the Natural Power EchoSense system. Applications are due 28 June 2023.

France Energies Marines is seeking a [Research Engineer](#) in atmospheric modelling who will be responsible for setting up projects on the theme of characterizing the wind conditions of offshore renewable energy sites. Applications are due 2 July 2023.

PNNL is seeking a [Coastal Modeler](#) with a strong background in coastal oceanography and estuarine hydrodynamics and modeling experience with state-of-the-art coastal ocean models. Applications are due 7 July 2023.

The University of Strathclyde is advertising a [PhD studentship position](#) that will contribute to the project: AI-Based Approaches for Ocean Forecast and Development of Ensemble Ocean Climate Data. Applications are due 31 August 2023.

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# Upcoming Events

<u>Upcoming Webinars</u>

The Regional Wildlife Science Collaborative for Offshore Wind ([RWSC](#)) is hosting a webinar on 22 June 2023 at 1:00pm EDT (5:00pm UTC) to share information about the launch of the RWSC Draft Science Plan. Register [here](#).

The International Energy Agency's Ocean Energy Systems (IEA-OES) is hosting a webinar, "[Ocean Energy Outlook in Europe](#)", on 27 June 2023 at 11:00am UTC. During the webinar, OES speakers will provide valuable insights into the ocean energy landscape in Europe, including the latest developments, challenges, and opportunities. Register [here](#).

The U.S. Offshore Wind Synthesis of Environmental Effects Research (SEER) project is hosting a webinar, "[Recent Advances in Autonomous Environmental Monitoring Technologies to Support Offshore Wind Energy Development](#)", from 9:00-10am PDT (UTC) on 6 July 2023. Register [here](#).

The National Oceanic and Atmospheric Administration National Marine Protected Areas Center and Open Communications for the Ocean are hosting a webinar, "Developing Offshore Wind in US Waters Part 1: The Planning and Regulatory Framework", from 10:00-11:00am MDT (4:00-5:00pm UTC) on 19 July 2023. Register [here](#).

As part of its [Learning from the Experts series](#), the New York State Energy Research and Development Authority (NYSERDA) is hosting a webinar, "Overseeing Offshore Wind from Design through Decommissioning", from 1:00-2:00pm EDT (5:00-6:00pm UTC) on 14 June 2023. Register [here](#).

NYSERDA is also hosting a webinar, "Environmental Data Management and Offshore Wind", from 1:00-2:00pm EDT (5:00-6:00pm UTC) on 19 July 2023. During the webinar, experts from Bureau of Safety and Environmental Enforcement (BSEE) will discuss BSEE's offshore wind regulatory authority from design through decommissioning. Register here.

Upcoming Workshops

As part of the Ocean Renewable Energy Conference (OREC 2023), OES-Environmental is hosting a workshop on 22 June 2023 to identify the key components of effective and efficient programs for environmental monitoring around marine energy projects, and explore whether there are elements that could be standardized among projects nationwide and worldwide. OREC will take place on 21-22 June 2023 in Portland, Oregon, U.S.

The Portal and Repository for Information on Marine Renewable Energy (PRIMRE) team is also hosting a workshop at OREC 2023 focused on Marine Energy Data: PRIMRE, Data Pipelines, and the Marine Energy Environmental Toolkit. Additional details coming soon.

Upcoming Conference

The Supergen Offshore Renewable Energy Hub is hosting its Early Career Researcher Forum on 11 July 2023 and the Supergen ORE Annual Assembly on 12 July 2023 in Southampton, England. Register for the Forum here, and for the Assembly here.

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# New Documents on Tethys

*Tethys hosts thousands of documents on the environmental effects of marine and wind (land-based and offshore) energy, including journal articles, conference papers, and reports.*

## Marine Energy

**Imaging-sonar observations of salmonid interactions with a vertical axis instream turbine** – **Bender et al. 2023**

> During the spring of 2018, juvenile individuals of two salmonid species, Atlantic salmon and brown trout were released upstream a vertical axis instream turbine in the river Dal (Dalälven) in eastern Sweden. The aim of this study was to investigate the swimming behavior of the salmonids around a small-scale prototype vertical axis instream turbine. The swimming pattern and the possible response of avoiding the vertical axis instream turbine were documented with a multi beam sonar. A control area, next to the turbine, was used as reference. No consistent results were shown for trout as they were passing the control area with a statistically high variation, and specimens were rarely observed in proximity of the turbine, neither if the turbine was operating nor at stand still.

**Public perceptions of wave energy development on the west coast of North America: Risks, benefits, and coastal attachment** – **Stelmach et al. 2023**

Marine renewable energy has the potential to contribute greatly in the coming decades, as the more predictable nature of wave energy can support the resiliency of the power grid and complement solar and inland wind generation. Yet, the broad deployment of marine energy technologies like wave energy will depend on public support, making it critical to identify the relevant factors associated with public attitudes and risk/benefit perceptions. This paper draws on social representations theory to specifically examine perceptions of wave energy on the west coast of North America, a site chosen because of the high suitability for wave energy generation and the fact that one of only three wave energy test sites in the world is under development off the coast of Oregon.

[Probability of Atlantic Salmon Post-Smolts Encountering a Tidal Turbine Installation in Minas Passage, Bay of Fundy](#) – **Sanderson et al. 2023**

Tidal stream energy is a renewable energy resource that might be developed to offset carbon emissions. A tidal energy demonstration (TED) area has been designated in Minas Passage, Bay of Fundy, for testing and installing marine hydrokinetic (MHK) turbines. Regulations require quantification of the potential for MHK turbine installations to harm local populations of marine animals. Here, we use acoustic telemetry to quantify the probability that post-smolt inner Bay of Fundy salmon encounter a turbine installation at the TED area. Previous work has quantified the detection efficiency of Innovasea HR acoustic tags as a function of the current speed and range from a moored HR2 receiver and also demonstrated that drifters carrying HR tags will be effectively detected when the drifter track crosses the array of HR2 receivers in Minas Passage.

# Wind Energy

[Residency and habitat use of European lobster (Homarus gammarus) within an offshore wind farm](#) – **Thatcher et al. 2023**

For the first time we examined the movements and habitat utilization of a temperate decapod, the European Lobster Homarus gammarus, using acoustic telemetry within an offshore wind farm (OWF). Innovasea V9 acoustic transmitters were externally attached to 33 individuals (carapace length = 87–113 mm) at three turbine locations within an offshore wind farm in the Irish Sea. Individuals were found to exhibit high residency to the tagging sites, with over half of tagged lobsters present at the tagging sites for 70% of the study period. Individual home ranges and core territories were calculated using 95% and 50% kernel density, respectively. Over 50% of all detections were recorded within 35 m of the scour protection.

[Modeling migration and movement of gray bats](#) – **Holliday et al. 2023**

To initiate a preliminary understanding of movement patterns of gray bats (*Myotis grisescens*), we gathered all occurrence and band recovery data available within the range of the species to model movement. By weighting the pathways using the population of winter and summer locations (i.e., cave roosts), we created a heat map demonstrating the

likelihood of landscape use by gray bats including nightly foraging, migration, and roost switching. The resulting map highlighted 2 major areas of use during spring and fall migration: 3 high likelihood pathways through central Tennessee and 1 primary migration route between northern Arkansas and central Missouri, USA. Although future data could influence the accuracy of this map, the representation in its current form can be used to anticipate bat presence when considering industrial development such as wind turbine siting.

**[Towards Digital Twins of the Oceans: The Potential of Machine Learning for Monitoring the Impacts of Offshore Wind Farms on Marine Environments](#)** – **Schneider et al. 2023**

With an increasing number of offshore wind farms, monitoring and evaluating the effects of the wind turbines on the marine environment have become important tasks. Here we conducted a feasibility study with the focus on monitoring these effects by utilizing different machine learning methods. A multi-source dataset for a study site in the North Sea is created by combining satellite data, local in situ data and a hydrodynamic model. The machine learning algorithm DTWkNN, which is based on dynamic time warping and k-nearest neighbor, is used for multivariate time series data imputation. Subsequently, unsupervised anomaly detection is performed to identify possible inferences in the dynamic and interdepending marine environment around the offshore wind farm.

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# News & Press Releases

## Marine Energy

**[Environmental Monitoring Program begins with WavEC.](#)** – **CorPower Ocean**

CorPower Ocean is working in collaboration with WavEC Offshore Renewables to deliver an extensive Environmental Monitoring Program to verify the environmental impact of its wave energy technology. Phase one involving underwater noise baseline campaigns has been concluded at the HiWave-5 Wave Energy Park, off the coast of Aguçadoura, in northern Portugal. The work involved analysis of ambient noise in the project area prior to installation. Two campaigns were carried out during January and May 2022, to record noise during two different seasons of the year. Acoustic data was collected using three autonomous hydrophones installed 20m from the seabed. Results will be used as benchmark against underwater noise levels during the C4 operation.

**[Water Power Technologies Office Announces $1.2 Million for New and Continuing Marine Energy Projects at U.S. National Laboratories](#)** – **DOE WPTO**

The U.S. DOE WPTO announced $1.215 million for 23 projects to further marine energy research and development at DOE's national laboratories. These projects will advance marine energy technologies and their roles in achieving both national and local clean energy goals. Researchers at the National Renewable Energy Laboratory (NREL), Oak Ridge National Laboratory (ORNL), Pacific Northwest National Laboratory (PNNL), and

Sandia National Laboratories (Sandia) will lead these projects. The projects announced are "Seedlings" funded under WPTO's Seedlings and Saplings program to encourage and support new and innovative research ideas at DOE national laboratories. Projects start as Seedlings and are eligible for up to $100,000. Promising Seedling projects are then eligible to become Saplings with funding of $150,000 to $500,000.

**[Jacobs completes underground infrastructure engineering for US wave energy test site](#)** – **Offshore Energy**

Jacobs, a technical professional services company, has completed the underground infrastructure engineering for the PacWave South site, the first full-scale wave energy test facility in the United States. The PacWave South project in Seal Rock, Oregon, will be the first pre-permitted, full-scale test facility for wave energy devices in the United States, developed jointly by the US DOE, the State of Oregon, and Oregon State University. PacWave South will be able to accommodate up to 20 wave energy converters of various designs to be tested in real-world, open-sea conditions seven miles off Oregon's coast. The project is expected to be built and energized by 2024, the developers said earlier.

**[1.2 million for promising Blue Energy project](#)** – **REDStack**

Gedeputeerde Staten are making more than 1.2 million euros available for scaling up the innovative Blue Energy project on the Afsluitdijk. The money will be used to upgrade the existing pilot on the Afsluitdijk to a 16.5 kW Blue Energy installation. In addition, the money will be used to develop an ecologically sound water intake and water pretreatment system. Earlier this year, the Wadden Fund assessed the project positively and an IKW-Wadden Fund grant of nearly €5 million was awarded. The Blue Energy pilot project is located on the Friesian side of the Afsluitdijk. Here the initiators (REDstack, Deltares and NIOZ) built a small pilot plant for generating "blue" electricity in 2014. Several parties, including the province and the IKW, supported the project from the beginning. The positive results of this promising technique are now the basis for further funding.

**[Sabella welcomes drivetrains for TIGER project tidal turbines](#)** – **Offshore Energy**

French company Sabella has received the first parts for its tidal energy turbines, which will be deployed by Morbihan Hydro Energies as part of the EU-backed TIGER project. The drivetrains for the two tidal energy turbines, developed as part of the TIGER project, were delivered to Sabella's assembly facility in Brest by the Swedish bearing and seal manufacturing company SKF. They will form part of two 250kW tidal energy turbines that will be deployed in the Gulf of Morbihan, offshore Brittany region in France. The deployment will be conducted by Morbihan Hydro Energies, a collaborative company established by 56 Energies and Sabella, which received the official authorization for the deployment and testing of the turbines for a period of three years. The test site will also allow the project to carry out environmental monitoring and identify ways to reduce costs while exploiting local carbon-free energy as well.

# Wind Energy

[BOEM Completes Environmental Review of Offshore Wind Leasing in the Gulf of Mexico](#)
– **BOEM**

> As part of the Biden-Harris administration's goal of permitting 30 gigawatts of offshore wind energy capacity by 2030, BOEM recently issued a final environmental assessment (EA) on potential impacts from offshore wind leasing on the U.S. Outer Continental Shelf in the Gulf of Mexico, a key milestone towards the potential first-ever offshore wind lease sale in the Gulf. Based on the analysis in the EA, BOEM has issued a finding of no significant impacts to environmental resources. The announcement was made possible by the work of Gulf of Mexico Intergovernmental Renewable Energy Task Force, a collaboration between Tribal, Federal, state, and local government agencies to use the best available science and indigenous knowledge to minimize conflicts between ocean uses. BOEM will continue to meet with the task force as the process moves forward.

[Celtic Sea surveys to get underway this summer as The Crown Estate signs new contracts](#) –
**The Crown Estate**

> Specialist survey vessels are set to embark on a series of studies in the Celtic Sea, after The Crown Estate signed new contracts as part of a programme to gather valuable data which could help support and accelerate the development of new floating wind farms. The news comes as the UK Government undertakes further work to resolve spatial considerations and policy drivers relating to competing demands on the seabed in the Celtic Sea. In 2021 The Crown Estate set out plans to explore viable options for a potential leasing opportunity for the first commercial-scale floating wind projects to be located in the Celtic Sea off the coast of Wales and the South West of England. A key part of this approach has been to de-risk the development process as far as possible by undertaking research and engagement to enable a future leasing round and provide a clear pathway to the deployment of floating wind in the UK.

[UAE and Egypt Advance Development of Africa's Biggest Wind Farm](#) – **Masdar**

> Abu Dhabi Future Energy Company PJSC – Masdar, one of the world's leading clean energy companies, along with Infinity Power, Africa's largest renewable energy developer, and Hassan Allam Utilities, a sustainable infrastructure focused investment platform, signed an agreement with Egypt's New and Renewable Energy Authority to secure land to build a 10-gigawatt (GW) capacity onshore wind farm in Egypt, set to be one of the largest in the world, with a project value of over US$ 10 billion. The landmark wind project will produce 47,790 GWh of clean energy per year and reduce around 9 percent of Egypt's annual carbon emissions by displacing 23.8 million tonnes of carbon dioxide annually.  The wind farm will also help Egypt meet its strategic objective of sourcing 42 percent of its energy from renewables by 2030.

[**Building Offshore Renewables in Newfoundland and Labrador and Nova Scotia**](#) – **Government of Canada**

The offshore renewable energy sector presents a generational economic opportunity for Canada, with the global offshore wind market alone forecast to attract one trillion dollars in global investment by 2040. The Government of Canada is helping Newfoundland and Labrador and Nova Scotia seize this generational economic opportunity. Today, the Honourable Jonathan Wilkinson, Minister of Natural Resources, in partnership with the Governments of Nova Scotia and Newfoundland and Labrador, introduced amendments to expand the mandates of the two historic Atlantic Accord Acts. These amendments will set the legislative framework for offshore renewable energy, enabling Newfoundland and Labrador and Nova Scotia to capitalize on their existing strengths and accelerate offshore wind development off Canada's East Coast.

[**Denmark and Germany sign Bornholm Energy Island agreement, first legally binding cooperation on joint offshore renewable energy project in EU**](#) – **Offshore Energy**

German Federal Minister for Economic Affairs and Climate Action, Robert Habeck, and Danish Minister for Climate, Energy and Utilities, Lars Aagaard, have signed an agreement for the Bornholm Energy Island in the Baltic Sea. This is the first legally binding cooperation agreement in Europe on a joint offshore energy project under the EU Renewable Energy Directive. The new EU Renewable Energy Directive (RED), agreed upon by the member states in March, also includes cross-border projects. Under the EU RED, in this regard, each member state must develop a legally binding framework for cross-border cooperation projects. Denmark and Germany have now met this requirement with the signed intergovernmental agreement.