



**6 January 2023**

[Tethys](#) is an online knowledge hub that facilitates the exchange and dissemination of information on the environmental effects of wind and marine energy. The bi-weekly *Tethys Blast* highlights new publications in the [Tethys Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. Email [tethys@pnnl.gov](mailto:tethys@pnnl.gov) to contribute!

---

[Announcements](#)  
[Upcoming Events](#)

[Marine Energy Documents](#)  
[Wind Energy Documents](#)

[Marine Energy News](#)  
[Wind Energy News](#)

---

## Announcements

[New Tethys Story](#)

**[Developing Non-lethal Survey Methods for Marine Species and Habitat in Wind Farm Lease Areas](#) by Liese Siemann, Tasha O’Hara, Luisa Garcia, and Farrell Davis (CFF)**

The Department of Energy (DOE) Wind Energy Technologies Office recently announced \$13.5 million for four projects that will provide critical environmental and wildlife data to aid offshore wind development. As part of this effort, Coonamessett Farm Foundation (CFF) has just started leading what will be a five-year research project that will support monitoring efforts on the Atlantic Coast. Read more in the latest *Tethys Story* [here](#).

[Atlantic Offshore Wind Environmental Research Recommendations](#)

On behalf of the [Regional Synthesis Workgroup](#), the [Biodiversity Research Institute](#) and the [U.S. Offshore Wind Synthesis of Environmental Effects Research \(SEER\)](#) team has created a database that compiles and synthesizes data gaps and research needs from existing sources relevant to the environmental effects of offshore wind energy development on the U.S. Atlantic Coast. View the complete database, as well as a shorter summary version, on *Tethys* [here](#).

## BOEM Seeks Public Comment

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking public comments on the draft Environmental Impact Statements for the [Empire Wind Project](#) (due 17 January 2023), the [Coastal Virginia Offshore Wind and Sunrise Wind projects](#) (due 14 February 2023), and the [New England Wind project](#) (due 21 February 2023).

## Calls for Abstracts

The [Call for Abstracts](#) for [OCEANS 2023 Limerick Conference & Exhibition](#) has been extended through 10 January 2023. The event will take place on 5-8 June 2023 in Limerick, Ireland.

The [Call for Abstracts](#) for the [Marine Energy Wales Conference 2023](#) is now open through 16 January 2023. The conference will take place 21-22 March 2023 in Swansea, UK.

The [Call for Abstracts](#) for the [15<sup>th</sup> European Wave and Tidal Energy Conference Series \(EWTEC 2023\)](#) is now open through 28 January 2023. Full papers will be due 27 May 2023. EWTEC will take place on 3-7 September 2023 in Bilbao, Spain.

## Funding & Testing Opportunities

The U.S. DOE Wind Energy Technologies Office has released a [funding opportunity](#) to lower costs and address barriers to deployment of wind energy. Topic areas include social science research and bat deterrent technology development. Concept papers are due 20 January and applications are due 10 March 2023.

The European Commission has launched two new [Calls for Proposals](#) under the European Maritime, Fisheries and Aquaculture Fund aimed at supporting careers and regional projects for a sustainable blue economy in EU sea basins. Proposals are due 31 January 2023.

The New York State Energy Research and Development Authority (NYSERDA) recently announced that nearly \$2.5 million is available to [support environmental and fisheries research](#), and may be related to offshore wind energy development. Applications are due 13 March 2023.

The European Commission has also launched the third call for large-scale projects under the [European Union Innovation Fund](#). The call is open until 16 March 2023 for projects located in European Union Member States, Iceland, and Norway.

Spain's Ministry for the Ecological Transition and the Demographic Challenge recently published the first call for aid from the [Renmarinas Demos Program](#) to promote test platforms and the demonstration of new prototypes in the field of marine renewable energy. Applications will be accepted between 31 January and 24 March 2023.

The Basque Energy Agency has published the [Call for Tenders](#) for its "TurboWave" Pre-Commercial Public Procurement program for the development of air turbines that will be

implemented in the Mutriku wave power plant. The Call will open 16 February 2023. An informational webinar will be held on 26 January 2023 at 9:00am UTC.

### Student & Employment Opportunities

The Responsible Offshore Science Alliance (ROSA) is seeking an [Executive Director](#) with deep knowledge and experience in cooperative and collaborative fisheries and offshore wind energy research. Applications are due 12 January 2023.

The Center for Ocean Engineering at the University of New Hampshire is inviting applications for a tenure-track position at the [Assistant, Associate, or Full Professor](#) rank who can contribute to ocean renewable energy research and other focus areas. Applications are due 22 January 2023.

Natural Power is recruiting a [Principal Environmental Consultant \(Offshore Ornithology / Marine Mammals\)](#) to join its team in Dublin, Ireland and support consultancy work for offshore wind projects. Applications are due 25 January 2023.

The Environmental Research Institute (ERI) is recruiting for a [Research Fellow in Renewable Energy and the Environment](#) to advance understanding of the biophysical interactions of marine and offshore renewable energy with the environment. Applications are due 3 February 2023.

ERI is also recruiting for a [Research Fellow in Marine Sensing](#) to support design, development, and deployment of autonomous marine multi-sensor platforms to investigate the environmental effects of marine and offshore renewable energy. Applications are due 3 February 2023.

The University of Hull is inviting applications for a [PhD project](#) on fishing and very large scale offshore wind deployment in the North Sea. Applications are due 10 February 2023.

---

## Upcoming Events

### Upcoming Webinars

OES-Environmental is hosting a webinar from 3:30-5:00pm UTC on 19 January 2023 to share tools for designing and siting MRE projects with environmental effects in mind. This webinar will highlight OES-Environmental's [Management Measures Tool](#), AZTI's [Wave Energy Converter - Environmental Risk Assessment \(WEC-ERA\) Tool](#), and the [Marine Energy Environmental Toolkit for Permitting and Licensing](#) developed by Kearns & West. Register [here](#).

NYSERDA's Offshore Wind team is hosting a webinar, "Bird Monitoring Methodology for Offshore Wind", as part of its [Learning from the Experts webinar series](#). The webinar will take place from 1:00-2:00pm EST (6:00-7:00pm UTC) on 11 January 2023.

The National Renewable Energy Laboratory and Renewable Energy Wildlife Institute are hosting a *Technology and Innovation in Wind Energy and Wildlife webinar series* to explore the evolution of turbine technology. The first webinar, "[The Future of Wind Energy Technology and](#)

[Wildlife Considerations](#)", will take place from 3:00-4:00pm EST (8:00-9:00pm UTC) on 26 January 2023. Register [here](#).

### Upcoming Conferences

The Marine Alliance For Science and Technology For Scotland is hosting the 5th Symposium of the Scottish Marine Energy Research Programme (ScotMER) from 31 January to 2 February 2023 online. Register for free [here](#).

The Pacific Ocean Energy Trust (POET) is hosting the [Northwest Offshore Wind Conference 2023](#) from 28 February to 1 March 2023 in Portland, Oregon, U.S. Register [here](#).

American Clean Power (ACP) is hosting the [ACP Project Siting and Environmental Compliance 2023](#) from 28-29 March 2023 in Albuquerque, New Mexico, U.S.

---

## **New Documents on *Tethys***

### **Marine Energy**

#### **[Modeling the impact of innovation in marine energy generation-related technologies on carbon dioxide emissions in South Korea](#) – Jiang & Khattak 2023**

South Korea has invested extensively in developing revolutionary marine and ocean technologies to accomplish renewable energy goals. Despite that, the available literature offers no insight into the environmental benefits of innovation in marine energy generation, distribution, or transmission-related technologies (IMET). This study examines the nexus between carbon dioxide emissions (CO<sub>2e</sub>) and IMET in South Korea (1990Q1-2018Q4). Control variables include international collaboration in green technology development (ICGD), gross domestic product (per capita) (GDPPC), expansionary commercial policy (ECP), and renewable energy use (REC).

#### **[Modelling of a Wave Energy Converter Impact on Coastal Erosion, a Case Study for Palm Beach-Azur, Algeria](#) – Moradi et al. 2022**

The study aims to use wave energy converters (WEC) to generate clean energy and reduce coastline erosion. The results of this study show that in the presence of wave energy converters, the wave height decreased by 0.3 m, and sediment deposition increased by 0.8 m. Thus, sand deposit prediction demonstrates that the presence of WEC decreases marine erosion and contributes to an accumulation of sediments on the coast. Moreover, this confirms that WECs can serve a dual role of extracting marine energy by converting it into electrical energy and as a defence against marine erosion. Therefore, WECs justify their efficiency both in energy production and economic and environmental profitability due to coastal protection.

#### **[Potential sites for the use of ocean energy in the Mexican Caribbean](#) – Chavez et al. 2023**

Increasing demand for electricity and the need for sustainable energy sources, make ocean energy a viable alternative for its generation in coastal regions. In this study, wave, marine currents and thermal gradient resources were evaluated to identify potential sites for energy harvesting in the Mexican Caribbean. From a techno-economic review of the literature, a marine current turbine from Nova Innovation 100 kW, an OWC (350 kW), and an OTEC (1 MW) plant were considered, examining theoretical energy potentials and the Levelized Cost of Energy (LCOE) of each. A potential environmental impact assessment was also carried out, including a study of the regulatory framework and the socio-economic conditions in the region.

## Wind Energy

### [Wind farms dry surface soil in temporal and spatial variation](#) – Wang et al. 2023

Wind energy is renewable and clean; however, the long-term operation of wind turbines can affect local climates. Soil moisture affects ecosystem balance, so determining the impact of wind farms on soil moisture is important. However, there has been little research on this, and only the impacts of wind farms on climate and vegetation have been considered. This study focuses on wind farms located in the grasslands of China. We analyzed changes in soil moisture in different wind directions and seasons and then judged the impacts of wind turbine operation on soil moisture. Our research shows that the operation of wind turbines will cause significant drying of soil, and this drought effect differs significantly according to season and wind direction.

### [A review to inform the assessment of the risk of collision and displacement in petrels and shearwaters from offshore wind developments in Scotland](#) – Deakin et al. 2022

Here we present a review of the published literature to collate and synthesise the existing evidence base for the assessment of the impacts of offshore wind farms and associated activities on three focal species: Manx Shearwater *Puffinus puffinus*, European Storm-petrel *Hydrobates pelagicus* and Leach's Storm-petrel *Hydrobates leucorhous*. We have included less detailed accounts for two additional procellariiform species: Northern Fulmar *Fulmaris glacialis* and Sooty Shearwater *Ardenna grisea*. We identify critical gaps in existing knowledge, outline the challenges to filling data gaps, and make recommendations for possible approaches for improving the existing evidence base.

### [The presence of wind turbines repels bats in boreal forests](#) – Gaultier et al. 2023

Impacts of wind power on bats are usually evidenced by the recorded fatalities, while other impacts are not well understood or considered during project planning. However, wind turbines may affect use of the surrounding habitats by bats. Little is known about such impact, especially in the European boreal biogeographical region. We studied the consequences of operating wind turbines on the presence and activity of bats in forests. We simultaneously monitored bat acoustic activity at 84 sampling sites placed at 200 m

intervals from 0 to 1.000 m (2 recorders per distance class), over four months and at seven Finnish wind farms located in forested habitats.

---

## **News & Press Releases**

### **Marine Energy**

#### **[Minesto doubles production capacity with successful installation of second foundation in the Faroe Islands](#) – Minesto**

Minesto has successfully completed additional offshore infrastructure installation in Vestmannaund, Faroe Islands, to double electricity production from two Dragon 4 (100kW) tidal energy power plants in an array set-up. A second foundation, subsea cable and onshore interface have been successfully installed, and the subsea infrastructure is ready for a second kite installation and electricity production. The installations have been carried out with small vessels together with experienced partners to further reduce costs of installation and marine operations for large-scale build-out. The seasonal operating window for infrastructure installation has also been extended by conducting these operations in winter.

#### **[CorPower C4 WEC at quayside ‘launchpad’](#) – CorPower Ocean**

CorPower Ocean’s first commercial scale C4 Wave Energy Converter (WEC) is getting ready for deployment at the Aguçadoura site in northern Portugal. Following integration and testing in CorPower Ocean’s machine hall within the port of Viana do Castelo, the device has now been moved out to our quayside ‘launchpad’. The mooring and tidal regulation units have been attached to the C4 WEC and a sequence of Pre-Deployment Checks have been performed, successfully verifying all system functions. In line with a suitable weather window, the C4 system will be towed out and deployed at the Aguçadoura marine energy site located 30km south of the port.

#### **[Risk Assessment Program completes year three](#) – Fundy Ocean Research Center for Energy (FORCE)**

Some of the Bay of Fundy’s most exciting research continued this year in a large, collaborative effort to better understand how fish move through the Minas Passage and calculate the risk that they may encounter a tidal energy device. Now completing its third year, the Risk Assessment Program for tidal energy (RAP) is a collaborative effort between Acadia University, FORCE, Marine Renewables Canada, Mi’kmaq Conservation Group, Confederacy of Mainland Mi’kmaq, Ocean Tracking Network at Dalhousie University, and local fishers to observe the distribution and movement of nine different species of fish in the Bay of Fundy ecosystem.

#### **[Quocean Demonstrate their Q-Connect Technology](#) – Quocean**

Quocean's adaptable marine quick-connection system has completed full-system demonstration tests at Hydrus's Facility in Brechin, Scotland. Edinburgh based, marine engineering consultants, Quocean, have been welcoming visitors and potential clients to view a full-system demonstration of their Q-Connect system at Hydrus's fabrication facility. The visitors included Wave Energy Scotland who funded the development of the system through their Quick Connection Systems call. The Q-Connect is a modular and adaptable Quick Connection System (QCS) that provides rapid mechanical and electrical connection of a marine energy device to its mooring and electrical infrastructure.

### **Final battery order placed for tide-turning FORWARD2030 project – Offshore Energy**

Engie's Laborelec has placed the final order for a storage solution to Entech Smart Energies as part of the FORWARD2030 project, whose aim is to develop a multi-vector energy system and further advance floating tidal energy technology. The final order for a 1.2MW/1.5MWh Lithium-ion battery marks a key step in taking the EU-funded multi-vector energy project forward, according to developers. Made under the 'Energy Management and Array' work package, the order is the culmination of 18 months of intensive work and study, led and conducted by Laborelec, with the support of consortium partners, in particular the European Marine Energy Centre (EMEC) and Orbital Marine Power, which is leading the project.

## **Wind Energy**

### **Equinor marks 5 years of operations at world's first floating wind farm – Equinor**

Hywind Scotland, the world's first floating offshore wind farm, has passed five years in operation since its commissioning in 2017. Hywind Scotland, located off the coast of Peterhead, Scotland, is the world's first floating offshore wind farm and the world's best-performing offshore wind farm, achieving a capacity factor of 54% over its five years of operations. Importantly, Hywind Scotland has run to high safety standards, marking five years of no loss time injuries during its operation. With a capacity of 30 MW generated by 5 turbines, Hywind Scotland utilises the Hywind floating spar-substructure concept. The wind farm generates enough electricity to power the equivalent of 34,000 UK homes.

### **Australia Designates First Offshore Wind Zone, Gives Star of the South Major Project Status – Offshore Wind**

The Albanese and Andrews Governments, together with Wellington Shire Council, local community members, and industry have formally declared the Bass Strait off Gippsland as Australia's first offshore wind zone and awarded Major Project Status to the Start of the South offshore wind farm. The declared area in Gippsland, Victoria, covers about 15,000 square kilometres offshore and runs from Lakes Entrance in the east to south of Wilsons Promontory in the west. The windy Bass Strait off Gippsland, and the strong grid across Gippsland and the La Trobe Valley, mean this area has the potential to support more than 10 GW of year-round wind energy generation.

## **Japan's First Large Offshore Wind Farm Starts Operations – The Maritime Executive**

Japan's first large-scale offshore wind farm went into commercial service on December 22 with a second neighboring site expected to also commence operations shortly. While the projects are small in scale, and near shore, they are seen as a milestone as the country moves forward with plans for its green energy transition. Japan has increased its goal for offshore wind energy as it looks to expand its use of renewable energy and cut its dependence on coal, which currently accounts for a third of the country's power source. The target for wind is 10 GW by 2030 and 30 to 45 GW by 2040. Marubeni Corporation, which is the largest investor in the Akita Offshore Wind Corporation, announced that the Noshiro Port wind farm has commenced commercial operations.

## **Firth of Forth wind farm: Plans for one of world's biggest wind farms with 307 offshore turbines – Edinburgh News**

The plans lodged by energy giant SSE have the potential to create 6,000 full time equivalent jobs. A planning application to Angus Council for the Berwick Bank "super project" outlines a wind farm of up to 307 offshore turbines at a site east of Fife in the outer Firth of Forth. It could be up and running as early as 2026, and have a lifespan of up to 35 years. The giant array – an amalgamation of earlier Berwick Bank and Marr Bank proposals covering 1,313 square kilometres – is already at an advanced stage of development after 10 years of research and analysis. A grid connection has already been secured at Branxton, near Torness, in East Lothian.

## **Mingyang launches 8.5MW onshore wind turbine – reNEWS**

Mingyang Smart Energy has launched what it says is the world's biggest onshore wind turbine. The new MySE 8.5-216 has an 8.5MW capacity and a rotor diameter of 216 metres, according to the firm, and can generate 200,000 kWh of power each day. Mingyang added that, for example, in a 1GW wind farm, the construction cost and LCoE savings potential of this new turbine is 10% higher than the 6MW model due to fewer turbines required and lower balance of plant cost. To ensure the turbine's reliability and adaptability, key components such as powertrain, high-performance blades and sand-proof nacelle will be exhaustively tested both in-house and at third-party facilities.