



## 5 February 2021

[Tethys](#) is an online knowledge base that facilitates the exchange and dissemination of information on the environmental effects of wind and marine renewable energy (MRE). 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. If you have specific content you would like circulated to the greater wind and MRE communities, please send it to [tethys@pnnl.gov](mailto:tethys@pnnl.gov) for consideration.

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### Announcements

#### [PacWave Request for Information](#)

The PacWave and Pacific Marine Energy Center (PMEC) team has released a [Request for Information](#) (RFI) to solicit feedback from wave energy technology developers and stakeholders on how the PacWave facility can best support testing needs. Responses are due by 2:00pm PST (10:00pm UTC) on 12 February 2021.

#### [ETIPP Community Technical Assistance](#)

The National Renewable Energy Laboratory (NREL) is now accepting community technical assistance applications for the [Energy Transitions Initiative Partnership Project \(ETIPP\)](#), a partnership among U.S. Department of Energy (DOE) offices, national labs, and community organizations that will provide resources and access to on-the-ground support for remote and island communities in the U.S. seeking to transform their energy systems and lower their vulnerability to energy disruptions. Applications are due by 15 February 2021.

## Ocean Observing Prize

The U.S. DOE and National Oceanic and Atmospheric Administration (NOAA) are accepting applications for the [DEVELOP Competition](#) within the [Ocean Observing Prize](#)—a multi-stage prize that challenges innovators to integrate MRE with ocean observation platforms. The DEVELOP Competition comprises three contests—Design, Build, and Splash. Submissions for the Design Contest close at 5:00pm EST on 16 February 2021.

## Calls for Abstracts

[WindEurope ElectricCity](#) has extended the deadline for its [Call for Abstracts](#) to 31 March 2021. The new onshore and offshore wind event will be held on 23-25 November 2021 in Copenhagen, Denmark.

The [8th PRIMaRE \(Partnership for Research in Marine Renewable Energy\) Conference](#) is now accepting abstract submissions. Submissions are due by 30 April 2021. The 8<sup>th</sup> PRIMaRE Conference will be held online on 29-30 June 2021.

## Call for Papers

*Animals* is currently inviting submissions for a Special Issue entitled "[Bat Biology in Relation to Wind Energy Development](#)". This Special Issue focuses on advancements in the methodologies used to assess bat populations, technologies used to study bat activity and behavior, and physiological characteristics that relate to how bats respond to various stimuli (e.g., audio, visual, electromagnetic) that may serve as either attractors or deterrents to wind turbines. Manuscript submissions are due 30 September 2021.

## Funding/Testing Opportunities

The European Commission has released a [Blue Economy Call for Proposals](#) to help advance market-readiness of new products, services, or processes, including MRE projects. Proposals are due by 5:00pm CEST (3:00pm UTC) on 16 February 2021.

The U.S. DOE recently announced up to \$14.5 million for environmental research to support U.S. offshore wind development. This [Funding Opportunity Announcement](#) will support regionally-focused, coordinated research efforts to increase understanding of the environmental impacts of offshore wind, as well as projects that advance and validate tools to monitor and minimize impacts. Concept papers are due by 5:00pm EST (10:00pm UTC) on 1 March 2021.

## Student/Employment Opportunity

Pacific Northwest National Laboratory (PNNL) is currently seeking a [Coastal and Marine Sciences Technical Intern](#) to join projects within one of three focus areas: (1) understanding the national laboratories' role and the unique place they have to accelerate work in coastal and marine ecosystems; (2) research and development of technologies focused on monitoring coastal

ecosystems; and (3) MRE technologies and powering the blue economy. Applications are due by 25 February 2021.

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## Upcoming Events

### Upcoming Webinars

NREL and PNNL will host a [webinar](#) to discuss the new phase for Task 34 of the International Energy Agency's Wind Technical Collaborative Program, also known as WREN (Working Together to Resolve the Environmental Effects of Wind Energy), and to discuss and provide a demonstration of *Tethys*. Join NREL and PNNL from 8:00-9:00am PST (4:00-5:00pm UTC) on 9 February 2021 to learn how WREN and *Tethys* are supporting the wind community by facilitating the knowledge sharing needed to advance wind energy development in an environmentally responsible manner. Register [here](#).

The Marine Alliance for Science and Technology Scotland (MASTS) will host a webinar on electromagnetic fields from subsea cables and their effects on marine species at 1:00pm UTC on 10 February 2021. Register for this and other webinars in the MASTS Webinar Series [here](#).

The New York State Energy Research and Development Authority's (NYSERDA's) offshore wind team will host a public webinar on 10 February 2021 from 2:00-3:30pm EST (7:00-8:30pm UTC). The webinar will include details on the two recently awarded offshore wind projects, Empire Wind 2 and Beacon Wind, as well as updates on new studies, ongoing research, stakeholder engagement, and the National Offshore Wind Research and Development Consortium. Register [here](#).

The Offshore Renewable Energy (ORE) Catapult will host an online panel event entitled [Visions of Europe's Tidal Energy Future](#) from 3:00-4:30pm GMT on 11 February 2021. The panel will discuss the socio-economic, environmental, and commercial prospects for tidal energy in the UK and Europe, as well as the EnFAIT (Enabling Future Arrays in Tidal) and ELEMENT (Effective Lifetime Extension in the Marine Environment for Tidal Energy) projects. Register [here](#).

The Nova Scotia Offshore Energy Research Association (OERA) will host a webinar entitled, "[Maritime Regional Wind Energy Resources: Determining preferred regions for additional onshore and offshore wind energy development](#)" from 1:00-2:00pm AST (5:00-6:00pm UTC) on 11 February 2021. Register [here](#).

In collaboration with the Tidal Stream Industry Energiser (TIGER) project, the Multi-model Investigation of Tidal Energy Converter Reliability (MONITOR) project will host a [webinar](#) from 11:00am-12:30pm GMT on 24 February 2021. The event will focus on improvements to reliability modelling for tidal turbines, drawing on numerical and laboratory models, as well as real case studies. Register [here](#).

The U.S. DOE's Water Power Technologies Office (WPTO) will host its Semiannual Stakeholder Webinar from 3:30-5:00pm ET (8:30-10:00pm UTC) on 1 March 2021. During the

webinar, program managers and technical leads from across WPTO will provide updates on WPTO activities, partnerships, and programs, and discuss upcoming priorities. Register [here](#).

### Upcoming Conference

The [International Conference on Ocean Energy \(ICOE\)](#) will take place online from 28-30 April 2021. The theme for ICOE 2021 is “Energizing a Powerful Blue Economy”. Register [here](#) by 31 March 2021 for early bird rates.

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

### **Marine Renewable Energy**

#### **[Tidal turbines in the estuarine environment: From identifying optimal location to environmental impact](#) – Ross et al. 2021**

Estuaries that feature large tidal ranges have recently received attention for their potential to generate energy by tidal stream turbines. As estuaries are delicate ecosystems and often have large human populations residing on their shores, determining where to place the turbines and how they will impact the hydrodynamics and sediment transport of these systems is vital to their successful implementation. The aim of this study is to provide a framework for assessing an estuary for turbine placement, including determining how the turbines will impact the environment (focusing on the physics), and examining other items that could peripherally affect the tidal turbine farm location or impact.

#### **[Life Cycle Assessment for the ISWEC Wave Energy Device](#) – Di Muro et al. 2020**

In recent years, wave renewable energy is becoming established as one of the crucial components of a diversified and successful energy mix. The Inertial Sea Wave Energy Converter (ISWEC) is a mature technology, especially designed for closed seas, as the Mediterranean Sea, which has already been deployed in full-scale. At this stage of development, since the technology has been proven successful, it is crucial to assess its environmental impact. A life cycle assessment has been performed on the ISWEC including all relevant phases, from raw material extraction, to construction, assembly, transportation, use and final dismantling.

#### **[Orkney Islands Marine Region: State of the Environment Assessment](#) – Orkney Islands Council 2021**

The Orkney Islands Marine Region: State of the Environment Assessment provides a summary of the pressures affecting Orkney’s marine and coastal environment. It includes ecological, social and economic factors, and the associated pressures and trends. The assessment presents a snapshot in time of the current environmental issues, as of November 2020, and the current status of the key economic sectors, including offshore wind and marine renewable energy.

## Wind Energy

### [Eagle fatalities are reduced by automated curtailment of wind turbines](#) – McClure et al. 2021

We test the efficacy of an automated curtailment system—a camera system that detects flying objects, classifies them and decides whether to curtail individual turbines to avoid potential collision—in reducing counts of fatalities of eagles, at Top of the World Windpower Facility in Wyoming, USA. We perform a before–after–control–impact study, comparing the number of eagle fatalities observed at the treatment site with those at a nearby (15 km) control site without automated curtailment, both before and after the implementation of automated curtailment at the treatment site. In total, there was an 82% (75%–89%) reduction in the fatality rate at the treatment site relative to the control site.

### [Multi-modal Approach for Benthic Impact Assessments in Moraine Habitats: a Case Study at the Block Island Wind Farm](#) – Guarinello & Carey 2020

Benthic assessment techniques utilized in soft sediment areas are of limited utility in glacial moraine habitats that are structurally complex and largely composed of hard substrata. We present a multi-modal approach consisting of multibeam bathymetry, video, and still imagery that collectively provides the knowledge base necessary to perform impact assessments in these habitats. Baseline and post-construction surveys were conducted adjacent to the Block Island Wind Farm to develop and test these methodologies within the context of offshore wind development, specifically for detecting and documenting anchoring-related impacts to moraine habitats.

### [What's love got to do with it? Understanding local cognitive and affective responses to wind power projects](#) – Russell & Firestone 2021

Negative perceptions of renewable energy development can lead to protest, resulting in project delay or failure. Alternatively, good communication and sensitivity to community feelings are pathways to success. While literature referencing the social aspects of wind power siting have become widespread, analyses which include individuals' affect or emotional dimensions are rarer. We use a US national cross-sectional data set of 1705 individuals who live within 8 km of a wind turbine collected in a research project led by Lawrence Berkeley National Lab in a random probability-based phone, mail, and online survey in 2016.

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## News & Press Releases

### Marine Renewable Energy

#### [Sustainable Marine Unveils 'Next-gen Platform' ahead of World-leading Tidal Energy Project](#) – Sustainable Marine Energy

Sustainable Marine is forging ahead with plans to deliver the world's first floating tidal energy array after unveiling its next-generation platform in Nova Scotia, Canada. Construction of the pioneering new 420kW PLAT-I 6.40 floating tidal energy platform was recently completed at A.F. Theriault & Son Ltd. in Meteghan, Nova Scotia and launched recently in the Bay of Fundy, which experiences the highest tides on earth. It will undergo commissioning and testing in Grand Passage and will then be moved to the FORCE (Fundy Ocean Research Centre for Energy) site as part of the first phase of the ground-breaking Pempa'q In-stream Tidal Energy Project.

### **EU Projects Tackle Barriers to Wave Energy Development – Maritime Journal**

The key objective of the Wave Energy in Southern Europe (WESE) and Streamlining the Assessment of Environmental Effects of Wave Energy (SafeWAVE) projects – funded through the European Maritime and Fisheries Fund – is to address a range of non-technological barriers that could hinder the future development of wave energy in the EU. These include those related to: environmental risk and uncertainty about the potential environmental impacts of wave energy developments, the need for a coordinated Maritime Spatial Planning approach, the lengthy and complex consenting processes, and opposition to future wave energy deployments amongst communities.

### **Creating 'water of life' from the power of the sea – Nova Innovation**

Nova Innovation has announced a ground-breaking project to produce Scotch whisky distilled by tidal power in the Sound of Islay. Nova Innovation will install a series of underwater turbines between the isles of Islay and Jura in Scotland's Inner Hebrides, creating clean, renewable power generated by the tide that will displace fossil fuels used on the islands, and power local whisky distilleries. The revolutionary 3MW 'Oran na Mara' project – Gaelic for 'song of the sea' – follows the success of Nova's tidal power scheme at Bluemull Sound that has been powering homes, businesses, and the grid in Shetland since 2016.

### **Mocean Energy Edges Closer to EMEC Deployment – EMEC**

Edinburgh wave energy developer, Mocean Energy, is gearing up to deploy its scale prototype, Blue X wave energy converter at the European Marine Energy Centre (EMEC) in Orkney, Scotland. The Blue X has been fabricated at Fife fabricators AJS Production and has been funded by Wave Energy Scotland's Novel WEC programme. It is a floating hinged raft with a unique geometry that improves performance and increases survivability by diving through the largest waves. The Blue X has been transported to Forth Ports Rosyth where the technology will be fully assembled, ballasted and wet tested. Once complete the device will be shipped from Aberdeen to Orkney.

### **Verdant Power's New York City Tidal Turbines Exceed Expectations – Verdant Power**

Verdant Power's one-half scale demonstration project, of a grid-connected array of three, five-meter diameter rotor tidal power turbines, has performed excellently and exceeded expectations during the three months since deployment. The turbines, deployed on a single TriFrame™ mount at the Roosevelt Island Tidal Energy (RITE) Project site in the East River, have performed at 100 percent availability. This high reliability is critical to cost-competitive green energy. The array has generated 100 MWh in only 85 days of continuous operation, a record for marine energy production in the United States.

## **Wind Energy**

### **[BOEM to Resume Environmental Review of Vineyard Wind's Proposed Project](#) – Bureau of Ocean Energy Management (BOEM)**

In support of the Biden administration's goal to address climate change and promote offshore renewable energy production, BOEM recently announced that it intends to resume the environmental review of Vineyard Wind's proposed offshore wind project. The proposed project would be located approximately 12 nautical miles offshore Martha's Vineyard and 12 nautical miles offshore Nantucket in the northern portion of its lease area. Vineyard Wind had paused the Department's consideration of its proposal while it reviewed whether the use of Haliade-X turbines warranted any modifications to their Construction and Operations Plan.

### **[Onshore wind energy scores lowest ever price under new Spanish auction design](#) – WindEurope**

In its National Energy and Climate Plan the Spanish Government pledged to increase Spain's installed onshore wind energy capacity by 22 GW from today's 28 GW to 50 GW by 2030. To facilitate this large-scale expansion of onshore wind and to guarantee the necessary revenue stabilization for investors, the Government decided to change the auction design for renewable energies. Spain auctioned a total of 3 GW of renewable energy capacity in its January 2021 tender, which resulted in the lowest ever prices for onshore wind energy in Europe. The wind bids ranged from €20/MWh to €28.89/MWh.

### **[Sustainable and low-cost installation of monopile foundations for future very large wind turbines](#) – GROW**

Within 5 years, the GROW research project SIMOX (Sustainable Installation of XXL Monopiles) aims to have innovative technologies for the installation of large wind turbines commercially available. By testing multiple techniques, SIMOX will develop new and necessary technical and environmental knowledge. Such techniques must enable the installation and decommissioning of XXL monopiles for very large offshore wind turbines in a sustainable, cost-effective, societally and environmentally acceptable manner. The Netherlands Enterprise Agency recently decided to support this project.

### **[Global 'wind atlas' propels sustainable energy](#) – Cornell Chronicle**

Cornell wind energy scientists have released a new global wind atlas – a digital compendium filled with documented extreme wind speeds for all parts of the world – to help engineers select the turbines in any given region and accelerate the development of sustainable energy. This wind atlas is the first publicly available, uniform and geospatially explicit (datasets tied to locations) description of extreme wind speeds, according to the research, “A Global Assessment of Extreme Wind Speeds For Wind Energy Applications,” published in Nature Energy. Before, in many locations, extreme wind-load estimates on projects were uncertain due to limited on-site measurements.

### [Denmark gives nod to offshore energy hub](#) – reNEWS

Denmark has reached a landmark agreement on the construction of an energy hub in the North Sea, which will further integrate European grids and accommodate more offshore wind planned in nearby waters. The energy hub will be an artificially constructed island located 80 km from the shore of the peninsula Jutland and will be developed via public-private partnership model, with the Danish state owning the majority of the island. The energy hub will function as an offshore power plant gathering and distributing green electricity from hundreds of wind turbines surrounding the island and transporting the power to consumers in countries surrounding the North Sea.