



**2 April 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**

### Marine Energy Collegiate Competition

The U.S. Department of Energy's (DOE) [Marine Energy Collegiate Competition \(MECC\) 2022: Powering the Blue Economy](#) will open for applications on 5 April 2021. The MECC encourages multidisciplinary teams of undergraduate and graduate students to unlock the power of the ocean, rivers, and tides to develop, design, and test the technologies that build resilient coastal communities and provide power at sea. Applications will close 7 May 2021.

### WREN Horizon Scan

The International Energy Agency (IEA) Wind Task 34, also known as [WREN](#) (Working Together to Resolve Environmental Effects of Wind Energy), is conducting a horizon scan of priority environmental issues for land-based and offshore wind energy over the next 5 to 10 years. WREN seeks expertise and geographic perspectives from a wide range of stakeholders. The results of the horizon scan will be publicly disseminated to help facilitate knowledge transfer and international collaboration. For more information, please review the [announcement](#).

### WREN Webinar Recording Available

WREN recently hosted a webinar on raptor behaviour and physiology as it relates to wind energy development. View the webinar recording on *Tethys* [here](#).

### EuropeWave Prior Information Notice

Wave energy developers interested in participating in [EuropeWave](#)'s Pre-Commercial Procurement can now register their interest, ask questions, and provide feedback. The tender will open in June 2021. A [Prior Information Notice](#) has been published online and a free [webinar](#) will be held on 14 April 2021 at 9:00am UTC to provide an overview of the project and explain the innovative 'stage-gate' design of the procurement process.

### MTS Scholarships Available

The Marine Technology Society (MTS) is accepting [applications](#) for scholarships available to students attending full-time marine-related undergraduate and graduate programs. Applications are due 15 April 2021.

### Calls for Abstracts

The North American Wind Energy Academy (NAWEA) and Center for the Research in Wind (CReW) are accepting abstracts for the NAWEA Symposium and International Conference on Future Technologies in Wind Energy (WindTech) through 16 April 2021. [NAWEA/WindTech 2021](#) will take place in Newark, Delaware on 22-24 September 2021.

The Marine Alliance For Science and Technology For Scotland (MASTS), in partnership with the INfluence of man-made Structures In The Ecosystem (INSITE) programme, recently opened the Call for Abstracts for [Structures in the Marine Environment \(SIME2021\)](#). SIME2021 will take place 17-18 June 2021 online and will focus on the impact that the presence or removal of man-made structures may have on biological marine ecosystems. Abstracts are due by 4:00pm BST (3:00pm UTC) on 16 April 2021.

MTS and IEEE (Institute of Electrical and Electronics Engineers) Oceanic Engineering Society are now accepting abstract submissions for the [Global OCEANS 2021 Conference & Exhibition](#). OCEANS 2021 will take place 20-23 September 2021 in San Diego, California (US) and virtually. Abstracts are due 19 April 2021.

The Partnership for Research In Marine Renewable Energy (PRIMaRE) is now accepting abstracts for the [8<sup>th</sup> PRIMaRE Conference](#). Submissions are due by 30 April 2021. The 8th PRIMaRE Conference will take place online on 29-30 June 2021.

### Funding/Testing Opportunities

The U.S. DOE has allocated \$100 million in funding through the Advanced Research Projects Agency-Energy's (ARPA-E) 2021 [OPEN Funding Opportunity](#) to support the development of

potentially disruptive new technologies across the full spectrum of energy applications. Concept papers are due by 9:30am EDT (1:30pm UTC) on 6 April 2021.

INORE (the International Network on Offshore Renewable Energy) recently announced the 2021 [Call for BECS \(Blue Energy Collaborative Scholarships\) proposals](#) sponsored by OES (Ocean Energy Systems). The BECS grant, up to €1000, will enable collaboration between INOREans and can be put towards travel expenses and accommodation, or to fund remote work. The call closes on 9 April 2021.

The Interreg Atlantic Area's Blue-GIFT has extended the deadline for the [Third Call for Applications](#) to test MRE technologies at the project's test sites. This access will allow developers to perform low cost tests and validation of their floating offshore wind, wave, tidal, or floating solar energy technologies in real sea environments. Applications now close at 5:00pm UTC on 23 April 2021.

The [Testing Expertise and Access for Marine Energy Research \(TEAMER\) program](#), sponsored by the U.S. DOE and directed by the Pacific Ocean Energy Trust (POET), will begin accepting applications for its Request for Technical Support (RFTS) 3 on 9 April 2021. RFTS 3 applications will be accepted through 9 May 2021.

The U.S. Northeast Sea Grant Consortium, in partnership with the National Oceanic and Atmospheric Administration's Northeast Fisheries Science Center and the U.S. DOE's Wind Energy Technologies Office and Water Power Technologies Office, is [seeking proposals](#) to improve understanding of the effects of ocean renewable energy development on coastal communities, including the fishing industry. Pre-proposals from eligible Northeast researchers are due 14 May 2021 and full proposals are due 16 July 2021 by 5:00pm EDT (9:00pm UTC).

#### Student/Employment Opportunities

The Environmental Research Institute (ERI) at the University of the Highlands and Islands (UHI) is recruiting for a [Research Fellow in Marine Renewable Energy and the Environment](#) to join the multi-disciplinary team working across engineering, marine sensing, hydrodynamics and robotics to study environmental and bio-physical interactions. Applications are due 5 April 2021.

Vineyard Wind is looking for a specialized [State Permitting Manager](#) to join its team in Boston, Massachusetts (US). The position will support a variety of areas within permitting and supplement biological areas of expertise.

The University of Manchester's Department of Mechanical, Aerospace and Civil Engineering has a [funded PhD project](#) available focused on numerical modelling of the environmental impact of offshore wind farms.

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## Upcoming Events

### Upcoming Webinars

The U.S. DOE Water Power Technologies Office is hosting a [R&D Deep Dive Webinar Series](#) to share updates on tools, analysis, and emerging technologies to advance marine energy. Register [here](#) for “Introduction to Working with the U.S. Department of Energy: A Deep Dive into Hydropower and Marine Energy Opportunities for Students, Researchers, and Faculty” on 6 April at 1:00pm EDT (5:00pm UTC).

The Ocean Exchange and MTS are hosting a joint webinar series entitled, *Engaging with the Blue Economy*. The next webinar in the series will focus on mobile power generation energy and will take place at 11:00am EDT (3:00pm UTC) on 7 April 2021. Register [here](#).

As part of its *Learning from the Experts* series, the New York State Energy Research and Development Authority’s (NYSERDA) Offshore Wind Team is hosting a webinar on 7 April 2021 at 1:00pm EDT (5:00pm UTC). During the webinar, Walt Musial with the National Renewable Energy Laboratory will provide an introduction to offshore wind technologies. Register [here](#).

The DOSITS (Discovery of Sound in the Sea) Team is hosting a free, four-part [webinar series](#) on underwater sound. The first webinar, “Passive Acoustic Monitoring Overview – Applications for Marine Mammals and Fishes”, will take place at 12:00pm EDT (4:00pm UTC) on 8 April 2021. Register [here](#).

The International Energy Agency’s (IEA’s OES is hosting a webinar series focused on ocean energy projects and key policies on IEA-OES Member Countries. The first webinar, “[Ocean Energy Outlook in U.S.A, Canada and Mexico](#)”, will take place from 4:00-5:00pm UTC on 14 April 2021. Register [here](#).

The Portal and Repository for Information on Marine Renewable Energy ([PRIMRE](#)) is hosting two webinars for the Marine Energy Data Pipeline team, led by the Pacific Northwest National Laboratory, to discuss data standards and introduce the development of the new marine energy data pipeline. The first webinar, “Marine Energy Data Standards”, will take place at 11:00am PDT (6:00pm UTC) on April 20, 2021 and will focus on recently developed [data standards](#). Register [here](#). The second webinar, “Marine Energy Data Pipeline”, will take place at 11:00am PDT (6:00pm UTC) on May 11, 2021 and will focus on the demonstration of the open source time series data utility that can be used to convert raw data to standardized format. Register [here](#).

### Upcoming Conferences

Energía Marina and its Marine Energy Research & Innovation Center (MERIC) are organizing an online international conference, [Chile Riding the Blue Energy Wave](#), on 12-13 April 2021. Register for free [here](#).

[Scottish Renewables' Offshore Wind Conference 2021](#) will take place online on 21-22 April 2021. Book a delegate pass [here](#).

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

### **Marine Renewable Energy**

#### **[Wave Farms Impact on the Coastal Processes - A Case Study Area in the Portuguese Nearshore](#) – Onea et al. 2021**

The aim of the present work is to identify the expected nearshore and offshore impact of a marine energy farm that would be implemented in the coastal environment of Portugal. Several layouts of Wave Dragon devices were considered, the distance between each system being gradually adjusted. By processing 27-years of combined wave data coming from the European Space Agency and ERA5, the most relevant conditions have been identified. The centre of each farm layout was set to approximately 3.5 km from the coast, where a more significant attenuation of wave heights in the middle of the target area was noticed, which can go up to 16% in the case of extreme events.

#### **[Renewable energy production in a Mexican biosphere reserve: Assessing the potential using a multidisciplinary approach](#) – Wojtarowski et al. 2021**

In Mexico, the CEMIE-Océano (Mexican Center for Ocean Energy Innovation) is exploring potential locations for marine energy production while assessing social perception and protecting the environment. The goals of this study were to: a) calculate potential renewable energy production in the north of the Yucatan Peninsula; b) understand the perception of the local inhabitants towards the installation and operation of ocean energy devices and c) estimate the potential environmental impacts in the Río Lagartos Biosphere Reserve, considering keystone or unique/endemic species.

#### **[Multi-Disciplinary and Multi-Scale Assessment of Marine Renewable Energy Structure in a Tidal System](#) – Raoux et al. 2021**

This paper, focusing on wind and tidal energy, discusses how the implementation of Marine Renewable Energy (MRE) converters influences biodiversity, and vice versa, through biofouling and reef effects. The research on these topics, performed at the Continental and Coastal Morphodynamic laboratory (M2C) (UNICAEN, France), is presented through a multi-disciplinary approach by i) studying the hydrodynamic conditions and the macrofauna in Alderney Race, ii) studying the biofouling effects on tidal turbines and their influence on the turbulent wake, iii) assessing the hydro-sedimentary impacts induced by the offshore wind farm, like scouring, and iv) taking an ecosystem approach on MRE, such as the reef effect.

## Wind Energy

### [Proceedings from the State of the Science and Technology for Minimizing Impacts to Bats from Wind Energy – Hein & Straw 2021](#)

The U.S. Department of Energy Wind Energy Technologies Office, and the National Renewable Energy Laboratory convened a workshop entitled the *State of the Science and Technology for Minimizing Impacts to Bats from Wind Energy* on Nov. 13–14, 2019. The workshop included plenary presentations, panels, and breakout sessions to share data and stakeholder perspectives and engage participants. This workshop took a holistic approach and discussed all aspects associated with advancing deterrent technologies and curtailment strategies, including the technological, biological, economic, and regulatory barriers faced by the wind energy and wildlife community.

### [Sustainable co-location solutions for offshore wind farms and fisheries need to account for socio-ecological trade-offs – Stelzenmüller et al. 2021](#)

In the North Sea, the sprawl of offshore wind farms (OWFs) is regulated by marine spatial planning (MSP) and results in an increasing loss of space for other sectors such as fisheries. Understanding fisheries benefits of OWFs and mitigating the loss of fishing grounds is key for co-location solutions in MSP. For the German exclusive economic zone (EEZ) of the North Sea we conducted a novel socio-ecological assessment of fisheries benefits which combines exploring potential spill-over from an OWF with an experimental brown crab (*Cancer pagurus*) pot fishery and an economic viability analysis of such a fishery. We arrayed a total of 205 baited pots along transects from an OWF located near the island of Helgoland.

### [Research on carbon emission reduction benefit of wind power project based on life cycle assessment theory – Li et al. 2020](#)

This paper carries out a comprehensive analysis of the carbon emissions during the whole life cycle of a wind power project according to the life-cycle assessment theory, and both the construction of the wind farm project and the corresponding networking project are taken into consideration. Then, the life cycle inventory of the wind power project is delivered to carry out the calculation of carbon emissions during the project's whole life cycle. Finally, the 49.5 MW wind power project in Shi-san-jian-fang area of Xinjiang is employed for empirical analysis to discuss the project's carbon intensity and the potential of emission reductions.

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## News & Press Releases

### Marine Renewable Energy

#### [€1M Project to Showcase Economic Value of Ocean Energy in Europe – Aquatera](#)

Aquatera Ltd, the EVOLVE consortium and Scottish Enterprise are excited to launch the Economic Value of Ocean Energy (EVOLVE) project, which is an EU Ocean ERA-NET Cofund collaboration. EVOLVE will examine the overall market value of the inclusion of ocean energy in European energy systems. The project aims to produce quantifiable outputs to illustrate the benefits associated with integrating ocean energy in low carbon energy systems across the regions of north west Europe. Continued engagement throughout the project will ensure that the results produced are relevant and useful to a wide range of stakeholders including technology and project developers, regulators, policy makers, electricity system operators and project investors.

### **AI Innovation by DeepSense drives Pathway Program success – Offshore Energy Research Association (OERA)**

The DeepSense team at Dalhousie University is making marine environmental monitoring for tidal energy projects easier, more reliable and more effective by creating customized software solutions as part of the Pathway Program – a technology development and testing initiative. The DeepSense team has created *Echofilter* – a new software that uses artificial intelligence and machine learning methods to automate processing of environmental monitoring results from echosounders, a type of sonar that uses sound to detect fish and other marine life.

### **Carnegie’s Vision for New Wave Power Product Presented at the Blue Economy CRC Participants Workshop – Carnegie Clean Energy**

Carnegie Clean Energy recently announced the unveiling of Carnegie’s vision for a new wave power product at the Blue Economy Cooperative Research Centre at the Annual Participant Workshop in Brisbane that was held on 24th – 26th of March 2021. The new product concept is a spin-off from CETO that incorporates aspects of Carnegie’s core CETO technology and know-how into a novel wave-powered system for use in offshore energy demand applications. The first market for this product may be aquaculture barges and vessels that require energy for offshore operations.

### **C-Power Expands Renewable, Autonomous Offshore Power System With RigNet’s Data and Communication Solutions – Columbia Power Technologies, Inc. (C-Power)**

C-Power and RigNet, Inc., a leading provider of ultra-secure telecommunications and intelligent networking solutions, recently announced a collaboration in which RigNet will provide a comprehensive set of data and communications solutions for C-Power’s autonomous offshore power systems (AOPS). The solutions will provide upstream and downstream data transfer to and from payloads operating with an AOPS platform. C-Power’s AOPS provide in-situ power, energy storage, and real-time data and communications support that will advance the marine economy toward a future of autonomous, connected and resident technologies.

### **Minesto announces power production performance aligned with simulated predictions – Minesto**

As part of the continued operations programme in its tidal energy project in the Faroe Islands, Minesto has made significant progress related to electricity generation to grid. The company's DG100 power plant has reached peak power production performance above 110 kW with average power produced over a tidal cycle aligned with predictions in simulation runs. During March, a second DG100 kite system has been delivered to the Faroe Islands and successfully run in electricity production mode. The unit, named "Drekin" after the local word for dragon, incorporates upgrades to improve performance and reliability based on experiences with the first unit.

## **Wind Energy**

### **[Energy Secretary Granholm Announces Ambitious New 30GW Offshore Wind Deployment Target by 2030](#) – U.S. DOE**

Secretary of Energy Jennifer M. Granholm recently joined the Secretaries of the Interior and Commerce at a White House roundtable meeting to announce a national goal to deploy 30 gigawatt (GW) of offshore wind by 2030. This effort will support approximately 77,000 jobs in industry and surrounding communities, generate electricity to power over 10 million American homes, and cut 78 million metric tons of carbon dioxide emissions. The goal will spur \$12 billion in capital investment annually, leading to the construction of up to 10 new manufacturing plants for offshore wind turbine components, new ships to install wind turbines, and up to \$500 million in port upgrades.

### **[Hywind Scotland remains the UK's best performing offshore wind farm](#) – Equinor**

For its third consecutive year, Hywind Scotland – the world's first floating offshore wind farm – reaches the highest average capacity factor for any wind farm in the UK. With an average capacity factor of 57.1% in the twelve month period to March 2020, the floating offshore wind farm set a new record in the UK. During its first two years of operation, the wind farm achieved an average capacity factor of 54%. That compares to an offshore wind average in the U.K. of around 40%. The capacity factor is the ratio of actual energy output over a given period of time, to the maximum possible output. A higher capacity factor means lower intermittency and higher value.

### **[Global wind industry unites to address climate emergency ahead of COP26](#) – Global Wind Energy Council**

Leading wind energy corporates and associations from around the world have today launched the Global Wind Energy Coalition for COP26. Convened by the Global Wind Energy Council (GWEC), the voice of the global wind industry and RenewableUK (RUK), the wind energy trade association for the UK, the Global Wind Energy Coalition will carry out a series of activities to help governments, economies and communities to raise ambition and remove barriers to the massive scaling up in investments in wind power in order to reach Net Zero targets and stop dangerous global warming.



## **BOEM Announces Environmental Review of Proposed Wind Energy Facility Offshore New Jersey – Bureau of Ocean Energy Management (BOEM)**

BOEM recently announced a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Construction and Operations Plan submitted by Ocean Wind LLC that would allow it to construct and operate an 1,100 megawatt wind energy facility offshore New Jersey. The publication of the NOI opens a 30-day public comment period. During this time, BOEM will hold three virtual public scoping meetings and accept comments to inform preparation of the EIS. The announcement came during a White House forum in which Secretary of the Interior Deb Haaland, and the Secretaries of Energy, Commerce, and Transportation, met with representatives from states, the offshore wind industry, and members of the labor community to identify challenges and solutions facing this new industry.

## **First Commercial Double-Digit MW Wind Turbines Head Offshore China – Offshore Wind**

Chinese wind turbine manufacturer Dongfang Electric Corporation (DEC) has shipped out the first 10 MW units built for the Changle Waihai offshore wind farm project. In total, DEC will deliver 30 of its 10 MW typhoon-resistant wind turbines for the Changle Waihai wind farm. 10 turbines will be installed at Changle Waihai Area A, and 20 at Changle Waihai Area C. Both areas are scheduled to be put into operation before October this year. The Changle Waihai wind farm, developed by China Three Gorges and Fujian Energy Group, will be the first commercial project in the world to feature wind turbines with an individual rated output of 10 MW or more.