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[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 for consideration.

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Announcements

WREN Webinar Recording Available

The recording and presentations from the 17th WREN (Working Together to Resolve Environmental Effects of Wind Energy) webinar, “Experiences from conducting environmental research at land-based and offshore wind energy facilities,” are [now available](#) on *Tethys*.

Request for Information

Pacific Northwest National Laboratory (PNNL) is requesting information from offshore wind stakeholders on the uses and capabilities for an instrumentation test buoy that may be procured by the U.S. Department of Energy (DOE) Wind Energy Technologies Office (WETO). WETO is considering procuring an instrumentation test buoy to support the offshore industry in the U.S. Beyond metocean physical measurements, there is significant interest in developing buoy-mounted environmental sensors to increase our understanding of potential environmental effects of offshore wind. Responses to this Request for Information (RFI) must be submitted electronically to buoyloanprogram@pnnl.gov no later than 5:00pm PT (12:00am UTC+1) on 31 July 2020. More information on the RFI can be found [here](#).

Vineyard Wind Comment Period

The U.S. Bureau of Ocean Energy Management (BOEM) has completed a [Supplement](#) to its Draft Environmental Impact Statement (EIS) for the proposed Vineyard Wind I offshore energy project and is requesting public comment. Submit written comments [here](#) by 27 July 2020.

Call for Abstracts

The American Geophysical Union (AGU) is now accepting abstracts for the [AGU Fall Meeting 2020](#), which will be held virtually from 7-11 December 2020. Please consider submitting an abstract to [Session GC065 \(Renewable Energy: Marine and Hydrokinetic\)](#), which will focus on the science, technology, and policy issues of MRE, including wave, current, tidal, riverine, and ocean thermal energy conversion. Studies focusing on environmental effects, environmental monitoring, and risk evaluation are all of interest and international and early career researchers are particularly encouraged to submit. This session will be held in coordination with [Session GC066 \(Renewable Energy: Solar and Energy Integration\)](#) and [Session GC067 \(Renewable Energy: Wind Energy\)](#). Abstracts submissions are due 29 July 2020.

Funding/Testing Opportunities

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, is accepting applications for its [1st Request for Technical Support](#) application period. Applications are due by 5:00pm PDT (9:00pm UTC) on 31 July 2020.

The Wind Wildlife Research Fund released a [Request for Proposals](#) for research projects on bats and wind energy to start in early 2021. The Fund seeks research projects designed to increase our understanding of bat behavior and ecology that influences temporal, spatial, and interspecific variation in collision risk and response to minimization strategies. Pre-proposals are due by 11:59pm PDT (6:59am UTC+1) on 31 August 2020.

Interreg North-West Europe's [Ocean DEMO](#) (Demonstration Programme for Ocean Energy Pilot Farms and Supporting Technologies) project recently opened its [3rd Call for Applications](#). Successful applicants will receive free access to test their ocean energy products and services in real sea environments at the project's network of test centers. Applications close 18 September 2020 at 7:00pm CEST (5:00pm UTC). An [informational webinar](#) is now available.

The National Offshore Wind Research and Development Consortium recently [announced](#) the topics for its planned second solicitation of industry-prioritized research and development of U.S. offshore wind. The solicitation will be released 31 July 2020 and will feature three rounds:

- Round 1: Enabling Large Scale Wind Turbines (applications due 21 September 2020)
- Round 2: Support Structure Innovation; Supply Chain Development (applications due 5 October 2020)
- Round 3: Electrical Systems and Innovation; Mitigation of Use Conflicts (applications due 19 October 2020)

Employment Opportunity

The Atmospheric Sciences and Global Change Division at PNNL is seeking a Research Scientist (Job ID: 310975) to advance their wind energy research portfolio through a combination of scientific activities and program development, as well as an Early Career Scientist (Job ID: 310967) interested in developing new scientific insights into complex terrain and marine atmospheric boundary layers for applications to wind energy. View these and other opportunities at PNNL [here](#).

Vineyard Wind is seeking a Site Condition Survey Manager, who will be responsible for managing environmental, geophysical, and geotechnical programs from field campaigns to data delivery. View this and other opportunities at Vineyard Wind [here](#).

Upcoming Events

Upcoming Webinar

The Bureau of Ocean Energy Management (BOEM) will be presenting a [webinar](#) on the [OceanReports](#) tool on 28 July 2020 at 1:00pm EDT (5:00pm UTC). OceanReports is a publicly available web-based application that allows users to select an area anywhere in the U.S. Exclusive Economic Zone and obtain over 70 unique infographics with analyses of the location. Register [here](#).

The National Wind Coordinating Collaborative (NWCC) will be hosting a [webinar](#) on 20 August 2020 at 1:00pm EDT (5:00pm UTC). In this webinar, U.S. Geological Survey (USGS) researchers will present preliminary results of two projects examining early-stage technologies aimed at minimizing the potential impacts of wind turbines on wildlife. Register [here](#).

Upcoming Conferences

The [Ecological Society of America \(ESA\) 2020 Annual Meeting](#) will be held online from 3- 6 August 2020. The registration deadline is 23 July 2020.

The Business Network for Offshore Wind's [2020 International Partnering Forum](#) will be held online 18-20 August 2020 with an Opening Plenary, virtual exhibit hall, CareerMatch job fair, poster sessions, and more. Register [here](#).

New Documents on *Tethys*

Marine Renewable Energy

[Prospective of development of large-scale tidal current turbine array: An example numerical investigation of Zhejiang, China](#) – Deng et al. 2020

Despite the rapid development of tidal current energy, understanding of its potential environmental impacts is still far from complete, especially for the region with considerable input of freshwater and sediment. To address such issues, the Zhejiang area, one of the top tidal sites in the world, is taken as an example and a three-dimensional two-way-nested model was constructed. The embedded array of 5 turbines, 50 turbines, and 200 turbines are estimated to produce an average power of 0.9 MW, 7.8 MW, and 22.1 MW, respectively.

Offshore multi-purpose platforms for a Blue Growth: A technological, environmental and socio-economic review – Abhinav et al. 2020

Multi-purpose platforms (MPPs) can be defined as offshore platforms serving the needs of multiple offshore industries (energy and aquaculture), aim at exploiting the synergies and managing the tensions arising when closely co-locating systems from these industries. The aim of the present study is to provide a multidisciplinary state of the art review on, whenever possible, multi-purpose platforms, complementing it with single-purpose and/or single discipline literature reviews when not possible.

Mapping of Benthic Habitats at Marine Renewable Energy Sites Using Multibeam Echosounder and Sediment Profile Imaging Technologies – Revelas et al. 2020

The goal of this work was to develop a consistent and semi-automated seafloor survey method for generating high-resolution, benthic habitat maps for environmental assessments and monitoring of marine renewable energy sites. Sediment profile and plan view imaging (SPI/PV) technology was combined with multibeam bathymetry and acoustic backscatter methods to demonstrate a rapid, cost-effective benthic mapping protocol. Multibeam echosounder (MBES) acoustic and SPI/PV surveys were conducted at three coastal areas off the U.S. west coast, including the PacWave South energy test site off of Newport, Oregon.

Wind Energy

Characterization of impact pile driving signals during installation of offshore wind turbine foundations – Amaral et al. 2020

Impact pile driving creates intense, impulsive sound that radiates into the surrounding environment. Measurements were made during pile driving of raked piles to secure jacket foundation structures to the seabed in waters off the northeastern coast of the U.S. at ranges between 500 m and 15 km. These measurements were analyzed to investigate variations in rise time, decay time, pulse duration, kurtosis, and sound received levels as a function of range and azimuth. Variations in the radiated sound field along opposing azimuths resulted in differences in measured sound exposure levels of up to 10 dB and greater due to the pile rake as the sound propagated in range.

[Wind Turbine Interactions with Wildlife and Their Habitats: A Summary of Research Results and Priority Questions \(2020 Update\)](#) – American Wind Wildlife Institute (AWWI)

Wind energy provides environmental benefits including ability to generate electricity without carbon emissions, water use, or emissions of water and air pollutants. However, the siting and operation of wind energy can present a risk of adverse impacts to wildlife, particularly individual birds and bats. This document summarizes publicly available information about the adverse impacts of land-based wind power on wildlife in North America and the status of our knowledge regarding how to avoid or minimize these impacts. The information in this summary is updated and undergoes expert review annually to incorporate new results as they become publicly available.

[A systematic review and meta-analysis of GIS use to reveal trends in offshore wind energy research and offer insights on best practices](#) – Peters et al. 2020

Offshore wind energy (OWE) is offering an increasingly important contribution to low-carbon energy production to offset anthropogenic global warming due to technological advances that increase the viability of this relatively new industry. This systematic review provides a direct assessment of OWE research trends by examining tactics and data employed by a common research tool: Geographic Information Systems (GIS). Clarivate Analytics and Elsevier databases were searched, providing 2668 results that were assessed statistically.

News & Press Releases

Marine Renewable Energy

[The revolutionary boat powered by the ocean](#) – BBC

The Philippines' traditional three-hulled boat is being redesigned, to draw its power not from fossil fuels, but from the energy of the waves. This seacraft is the brainchild of Jonathan Salvador – a marine engineer and owner of shipbuilding company Metallica Marine Consultancy, Fabrication and Services – who was inspired by the conventional bangka's design. Construction of the hybrid trimaran started in 2018 and was set for completion by early 2020, in a collaborative effort between the Metallica shipbuilding company and Aklan State University. Despite difficulties, the team aims to finish the ship by the end of 2020, with a three-month sea trial scheduled for the first quarter of 2021.

[Oscilla Power plans to demonstrate utility-scale ocean wave energy in India](#) – PR Newswire

Oscilla Power Inc. announced that they are now in the planning stages of a demonstration of their 1 MW 'Triton' ocean wave energy system in Southern India. The particular location targeted for this utility-scale project is adjacent to Vizhinjam International Seaport, near Thiruvananthapuram, in the state of Kerala. This region has been identified as having one of the highest wave energy intensities in India. As a whole, the annual

average incident wave energy intensity in India is about 60 GW, and about 5-10 GW of this may be practically utilizable.

Del Mar Oceanographic and RBR Sign Strategic Collaboration Agreement – RBR

Del Mar Oceanographic (DMO) and RBR are pleased to announce the signing of a collaboration agreement for the provision of Wirewalkers with RBR CTDs and sensors in Australia and New Zealand. The DMO Wirewalker, originally designed at Scripps Institution of Oceanography, is a field-proven vertically profiling instrument platform powered by ocean waves. Attached to a free-drifting or moored buoy, the Wirewalker ratchets downward along a suspension wire under wave power. At a predetermined depth, the ratchet releases and the profiler then ascends at its terminal velocity (~0.5m/s), completely decoupled from sea-surface motion.

Companies secure £1.4 million to develop quick connection systems for wave energy – Wave Energy Scotland

Four projects, led by Apollo, Blackfish Engineering Design, Nova Innovation and Quocean, will share just under £1.4 million for projects that aim to bring down the cost of wave power. The teams have secured funding from Wave Energy Scotland (WES) to develop quick connection systems to improve the installation efficiency and infrastructure of wave power devices. The teams aim to develop their designs during the second stage of the programme, working with partners to test and model the technology prior to scale testing in the future.

EMEC Supports KIOST Tidal Test Site in Korea – EMEC

The Korea Institute of Ocean Science and Technology (KIOST) has contracted the European Marine Energy Centre (EMEC) to support the development of its tidal energy test site at Jang-Juk Strait near Jindo Island, Korea. The signed agreement strengthens the relationship between the two organizations and sees EMEC use its experience and knowledge as a tidal test site operator to advance the Korean test site development. KIOST are developing a grid-connected tidal energy test site development on the Jang-Juk Strait in the southwestern sea of Korea. The Korea Tidal Current Energy Centre site, which will have a 4.5 MW grid capacity, is expected to be operational by 2022.

Wind Energy

World-first bid to grow 'food of the future' seaweed at offshore wind farm – Recharge

A world-first effort to grow seaweed at an offshore wind farm will launch off Belgium this year. The Norther wind farm in the North Sea will host the two-year Wier & Wind project that will deploy seaweed production equipment between its 44 MHI Vestas turbines. The European Union-backed Dutch-Belgian initiative says seaweed farming could optimise otherwise unused space at the ever-larger offshore wind projects being built off Europe and beyond. Seaweed specialist and project partner AtSeaNova claimed

demand for seaweed is set to rocket, thanks to its sustainable, healthy credentials and versatility.

Japan's new draft bill to outline 30 new offshore wind sites – Offshore Energy

Japanese government is drafting a bill that would facilitate identifying new development sites for 1 GW of installed offshore wind capacity per year from 2021 to 2031. With three or four project sites identified each year, starting from April 2021 until 2030/2031, a total of 10 GW of potential generation sites are expected to be identified for further development by the end of the next decade. Earlier this month, Japan's government identified ten "offshore wind promotion zones" which have projects proposed to be built and have already reached a certain preparatory stage.

Oil & Gas Technology Centre and Offshore Renewable Energy Catapult Create Alliance to Fast-Track Energy Transition – Offshore Renewable Energy Catapult

Two leading energy technology and innovation organisations have announced a five-year collaboration to deliver next generation energy technologies and accelerate the United Kingdom's transition to a net zero future. The Energy Transition Alliance (ETA), formed by The Oil & Gas Technology Centre (OGTC) and the Offshore Renewable Energy (ORE) Catapult, will collaborate with the energy industry to drive a focused, funded programme to develop advanced technologies, including the next generation of hydrogen production and floating offshore wind.

Governor Cuomo Announces Largest Combined Solicitations for Renewable Energy Ever Issued in the U.S. to Combat Climate Change – New York State Energy Research and Development Authority

Governor Andrew M. Cuomo announced the largest combined clean energy solicitations ever issued in the U.S., seeking up to 4,000 megawatts of renewable capacity to combat climate change. New York's second offshore wind solicitation seeks up to 2,500 megawatts of projects, the largest in the nation's history, in addition to last year's solicitation which resulted in nearly 1,700 megawatts awarded. The solicitation includes a multi-port strategy and requirement for offshore wind generators to partner with any of the 11 prequalified New York ports to stage, construct, manufacture key components, or coordinate operations and maintenance activities.

Open-Source Renewable Energy Potential (reV) Model Offers Endless Potential – National Renewable Energy Laboratory (NREL)

What can the Renewable Energy Potential (reV) model calculate when it comes to renewable energy potential? Just about everything. This novel modeling framework includes highly dynamic, user-defined modules that function at different spatial and temporal resolutions, allowing users to assess resource potential, technical potential, and supply curves at varying levels of detail for photovoltaic, concentrating solar power, and wind turbine technologies. Available open source as of February 2020, the reV model

was developed by researchers from NREL to align previously disparate analyses for resource modeling, technical potential, and renewable energy cost supply curves.