



22 January 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 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.

[NWCC to Retire](#)

The National Wind Coordinating Collaborative (NWCC) will be retiring after 27 years serving the wind energy and wildlife community. Starting February 2021, you can find NWCC resources, including publications, webinar recordings, Wind Wildlife Research Meeting information, and more on [Tethys](#) and the American Wind Wildlife Institute (AWWI) [website](#).

[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.

Funding/Testing Opportunities

The European Commission has released a [Call for Proposals](#) focused on innovative land-based and offshore renewable energy technologies and their integration into the energy system. Submissions are due by 5:00pm CEST (3:00pm UTC) on 26 January 2021.

The European Commission has also recently announced 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 Opportunities

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.

Upcoming Events

Upcoming Course

WavEC Offshore Renewables will be hosting an online course entitled, "[Computational Fluid Dynamics \(CFD\) for Sustainable Ocean Solutions: Course I](#)", on 8-11 February 2021. The

course is the first in a series sponsored by the University of Tokyo and the University of São Paulo, and will introduce several CFD crucial subjects. Register [here](#) by 4 February 2021.

Upcoming Workshop

The Okinawa Prefecture will be hosting the [11th Okinawa Hawai'i Clean Energy Workshop](#) online from 25 January to 19 February 2021. Presentation videos will be available throughout the workshop, and three panel discussions on presentation themes, including ocean energy and resource use, will also take place in real time via webinar. Register for free [here](#).

Upcoming Webinars

NREL and PNNL will be hosting 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 be hosting 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 Offshore Energy Research Association (OERA) will be hosting 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](#).

The U.S. Bureau of Ocean Energy Management (BOEM) and the Oregon Department of Land Conservation and Development's introductory webinar on the [Oregon Offshore Wind Mapping Tool \(OROWindMap\)](#) has been rescheduled to 11 March 2021 from 10:00-11:30am PT (6:00-7:30pm UTC). OROWindMap is a planning tool within the [West Coast Ocean Data Portal](#) that accesses relevant datasets and provides data visualization capabilities to inform the planning process for offshore wind energy leasing in federal waters offshore Oregon. Register [here](#).

The [MHK Environmental Toolkit for Permitting and Licensing](#) project team, led by Kearns & West, will be hosting a series of webinars and other engagement opportunities in February and March 2021 to demonstrate the toolkit, gather feedback, and share experts' understanding of potential impacts. Learn more about the Toolkit, register for the upcoming engagement opportunities, and view recordings of previous workshops [here](#).

Upcoming Conferences

The Portuguese Renewable Energy Association (APREN), together with the Wind Energy and Biodiversity Summit (WIBIS), will be hosting an online conference, [Redesigning Wind Energy for the Next Era](#), on 27-28 January 2021. Register [here](#).

The [Marine Energy Wales Conference 2021](#) will be held online on 27-29 January 2021. The event will bring together MRE technology developers, project developers, the supply chain, academia, and the public sector to discuss how Wales can become a global leader. Register [here](#).

New Documents on *Tethys*

Marine Renewable Energy

[Pan American Marine Energy Conference 2020 Book of Abstracts](#) – Rojas & Meza 2020

The Pan American Marine Energy Conference (PAMEC) is intended to bring together researchers in marine renewable energy in the Americas (including the Caribbean) and foster the development of marine renewable energy through collaboration among researchers, developers, and suppliers. This book includes the contributions presented at the first PAMEC, which are collected in the following topics: resource assessment, environment, current and emerging technology, storage and integration, and building social and policy support.

[Towards a Tidal Farm in Banks Strait, Tasmania: Influence of Tidal Array on Hydrodynamics](#) – Auguste et al. 2020

The development of tidal energy in Australia is still a challenge with few studies performed on the characterisation of the resource, due to the difficulty to acquire data and uncertainties about the influence of this anthropogenic activity on the marine environment. Changes in flow could lead to alterations in sediment transport and have further influence on the marine habitat. A case study in a promising area, Banks Strait, was created using high resolution 2D and 3D models validated against in situ data to investigate changes to hydrodynamic conditions with two scenarios of tidal farms.

[Enhancing local support for tidal energy projects in developing countries: Case study in Flores Timur Regency, Indonesia](#) – Ramachandran et al. 2020

As information about tidal energy is not easily available, public views toward it are not well known, making it challenging for the project developers to strategize implementation strategies. Moreover, the limited studies focusing on such social aspects of tidal energy come from advanced countries, highlighting the lack of focus on cases from developing countries. Our study fulfills this gap by providing a case study focusing on the social aspects of tidal energy in a developing country, which can be utilized by developers for designing their public engagement strategies.

Wind Energy

[A predictive model for improving placement of wind turbines to minimise collision risk potential for a large soaring raptor](#) – Murgatroyd et al. 2021

To reduce the likelihood of raptor collisions, turbines should be placed at locations which are least used by sensitive species. Using GPS tracking data together with a digital elevation model we build and cross-validate a simple generalisable model, to classify the spatial likelihood of wind turbine collisions for resident adult Verreaux's eagles in any landscape where there are known nests. We apply our methods to operational developments in South Africa to validate the model and demonstrate its ability in predicting actual collision mortalities.

[The Interaction Between Resource Species and Electromagnetic Fields Associated with Electricity Production by Offshore Wind Farms](#) – Hutchison et al. 2020

As offshore wind energy production increases, the number of subsea cables will proliferate along with associated electromagnetic field (EMF) emissions. Understanding how EMF interactions (a potential pressure) affect resource species (receptor) requires an improved knowledge base to aid management decisions. Within the framework of a potential effect on a receptor, we review key aspects of assessing EMF exposure. From the vantage point of the receptor species, we consider how their perception of EMF varies through time as a consequence of species' sensory biology, life history theory, and movement ecology.

[Offshore Wind Energy and the Fishing Industry in the Northeastern USA](#) – Pol & Ford 2020

The offshore wind industry in the northeastern United States is on the verge of developing more than a 21 GW capacity in the next few years. This chapter describes the types and methods of outreach used to communicate with fishing stakeholders and the resulting level of engagement of the fishing stakeholders in Massachusetts. It assesses how successful fishing stakeholder engagement has been in Massachusetts as of September 2019. At the federal level, the permitting process for development mandates stakeholder outreach via public comment and also during subsequent appeals processes.

News & Press Releases

Marine Renewable Energy

[BOEM Offers First Renewable Energy Research Lease in Federal Offshore Waters Along the U.S. West Coast](#) – BOEM

On January 19, 2021, the Bureau of Ocean Energy Management (BOEM) offered the first marine renewable energy research lease in Federal waters off the U.S. West Coast. The Federal marine hydrokinetic energy (MHK) research lease was offered to Oregon State University (OSU) for the PacWave South project, a proposed open ocean wave energy test center, to be located approximately six nautical miles off Newport, Oregon. Lease issuance by BOEM is a prerequisite for a license from Federal Energy Regulatory Commission (FERC), which is the Federal Agency that would approve project construction and operations.

QED Naval acquires world's largest tidal turbine array – Tidal Stream Industry Energiser (TIGER)

QED Naval Ltd and HydroWing are delighted to announce a new collaborative European joint venture and with it the acquisition of Holland's premier tidal turbines business, Tocardo. As inventor and manufacturer of the world's largest commercial tidal array installation, Tocardo has an unbeaten track record of continuous tidal power production with turbines in the water, connected and run. Tocardo will continue to deliver its renowned turbines and investing to develop more powerful and cost effective tidal turbines. This will be done in partnership with QED Naval and HydroWing who bring a combined 40 years marine design, development and operations experience.

Wave Swell Energy's UniWave200 is Installed at King Island – Wave Swell Energy

Wave Swell Energy's 200 kW demonstration of its unique wave energy technology, the UniWave200 device, was successfully deployed early on the morning of January 10, 2021, at Grassy Harbour on King Island. The unit is now sitting on the seabed in its planned location, approximately 100 metres from shore in 5.75 metres of water depth. The commissioning phase will take place over the coming weeks, with the device expected to be connected to Hydro Tasmania's hybrid grid during Q1, 2021. Once operating and providing electricity, King Island will be the first remote island grid in the world to be powered by three separate renewables – waves, wind, and solar. Check out a video of the full deployment [here!](#)

WEP+ Project Biofouling of Marine Energy Environments in the Canary Islands – Aquatera

As part of ongoing commitments to produce electricity from marine renewable energy sources, the Canaries waters have been targeted for large-scale deployment of MRE and offshore wind devices. While biofouling has been a recognized problem for centuries, deployment of these technologies in the sea create several unique issues. Through the WEP+ project, Aquatera, Heriot-Watt University's International Centre for Island Technology, the University of La Laguna, and Las Palmas de Gran Canaria are working together to address these issues. They are looking carefully at how and where biofouling occurs and its impact on the MRE and offshore wind sectors.

Wavepiston installs a wave energy converter at PLOCAN's test site – Blue-GIFT

The Danish company Wavepiston has installed the first full-scale modules, of its wave energy converter at the test site of the Oceanic Platform of the Canary Islands (PLOCAN). Their device allows the conversion of wave motion into electricity and desalinated water. The system comprises a chain of wave energy collectors stretched between two anchored buoys. The plates of the collectors move when waves roll along the system, pumping pressurised sea water into a pipe leading to a turbine or a reverse osmosis system, in order to obtain energy or desalinated water. The current set-up is a pre-installation where they are testing two energy collectors. The first full string with 24 energy collectors is planned to be installed in the autumn.

Wind Energy

[Ørsted takes final investment decision on first renewable hydrogen project](#) – Ørsted

Ørsted has taken final investment decision on the Danish demonstration project H2RES, which will use offshore wind energy to produce renewable hydrogen. The project is expected to produce its first hydrogen in late 2021 and will be Ørsted's first renewable hydrogen project in operation. H2RES will have a capacity of 2 MW. The facility will produce up to around 1,000 kg of renewable hydrogen daily, which will be used to fuel road transport in Greater Copenhagen and on Zealand. The H2RES project will investigate how to best combine an electrolyser with the fluctuating power supply from offshore wind, using Ørsted's two 3.6 MW offshore wind turbines at Avedøre Holme.

[BOEM to explore Californian offshore wind sites](#) – reNEWS

The US Interior Department's Bureau of Ocean Energy Management (BOEM) is to carry out assessments on potential offshore wind lease areas off the Pacific coast. The agency has filed a Notice of Intent (NOI) to prepare two environmental studies under the National Environmental Policy Act on the Pacific Outer Continental Shelf off the coast of northern and central California. The step paves the way for future commercial wind lease issuance off the coast of the California counties of Humboldt and San Luis Obispo. Publication of the NOI also opens a 45-day public comment period. During this time, BOEM will accept written comments and virtual public scoping meetings will be held.

[Meet VindØ – The World's First Energy Island](#) – Offshore Wind

The VindØ consortium has revealed its vision of the world's first energy island. The VindØ consortium comprises two of Denmark's largest pension funds, PensionDanmark and PFA, and Denmark's largest utility company, Anel. The artificial island, made of submersible concrete boxes, is to be built in the Danish part of the North Sea, around 100 kilometres from land. The island is to be established by 2030, at the latest, and connect 3 GW of offshore wind. Over time, the island will connect 10 GW offshore wind and host energy storage and Power-to-X as well as accommodation, O&M facilities, and HVDC converters for transmission and interconnectors. Check out the video animation [here!](#)

[A Monster Wind Turbine Is Upending an Industry](#) – The New York Times

Twirling above a strip of land at the mouth of Rotterdam's harbor is a wind turbine so large it is difficult to photograph. The turning diameter of its rotor is longer than two American football fields end to end. Later models will be taller than any building on the mainland of Western Europe. Packed with sensors gathering data on wind speeds, electricity output and stresses on its components, the giant whirling machine in the Netherlands is a test model for a new series of giant offshore wind turbines planned by General Electric.

[China Blows Past Clean Energy Record With Wind Capacity Jump](#) – Bloomberg

China blew past its previous record for renewable energy installations last year with a massive -- and surprising -- addition of wind power. The National Energy Administration said in a press release on Wednesday that China added almost 72 gigawatts of wind power in 2020, more than double the previous record. The country also added about 48 gigawatts of solar, the most since 2017, and about 13 gigawatts of hydropower. China's previous record for new renewables capacity across all technologies was about 83 gigawatts in 2017, according to BloombergNEF.