



19 August 2022

[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 to contribute!

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

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

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

Announcements

New WREN Tool

Working Together to Resolve Environmental Effects of Wind Energy ([WREN](#)) is developing a free, online Wind Energy Monitoring and Mitigation Technologies Tool to serve as a reference of available technologies for monitoring and mitigating the environmental effects of land-based and offshore wind energy development. To officially launch the Tool, WREN is hosting a short, [instructional webinar](#) on 21 September 2022 from 8:00-8:30am PDT (3:00-3:30pm UTC).

Register [here](#). If you would like to submit your technology for inclusion in the Tool, please complete [this submission form](#).

REDi Video

The U.S. Department of Energy Water Power Technologies Office and National Renewable Energy Laboratory recently launched Renewable Energy Discovery (REDi) Island, an educational 3D-animated experience. Watch the [REDi Tidal Town](#) video to learn more about how tidal energy technologies may help power coastal and remote communities.

BOEM Seeking Comments

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking comments on the [Draft Fisheries Mitigation Guidance](#) (due 22 August 2022), the Draft Environmental Impact Statement for a proposed wind energy project offshore [New Jersey](#) (due 23 August), the Notice of Intent to prepare a Programmatic Environmental Impact Statement for the [New York Bight](#) Lease Areas (due 30 August), and two draft Wind Energy Areas in the [Gulf of Mexico](#) (due 2 September).

Calls for Abstracts

The American Meteorological Society (AMS) has opened the [Call for Abstracts](#) for the [103rd AMS Annual Meeting](#). Submission deadlines vary for the conferences and symposia, but most abstracts are due 24 August 2022. The event will place 8-12 January 2023 in Denver, U.S.

The [Call for Abstracts](#) for the [Floating Wind Solutions \(FWS\) Conference & Exhibition 2023](#) is now open through 2 September 2022. FWS 2023 will take place from 31 January to 1 February 2022 in Houston, U.S.

Energy Technology Partnership (ETP), an alliance of 14 Scottish universities, has opened the [Call for Abstracts](#) for the [ETP Annual Conference 2022](#) through 16 September 2022. The ETP Conference will take place on 1 November 2022 in Edinburgh, Scotland.

WindEurope has opened the [Call for Abstracts](#) for the [WindEurope Annual Event 2023](#) through 30 September 2022. The event will take place 25-27 April 2023 in Copenhagen, Denmark.

The European Energy Research Alliance (EERA) has opened the [Call for Abstracts](#) for the [EERA DeepWind Conference](#) through 15 October 2022. The conference will take place 18-20 January 2023 in Trondheim, Norway.

Funding & Testing Opportunities

The European Commission has launched the Innovation Fund's second [Call for Small Scale Projects](#) in renewable energy, energy-intensive industries including substitute products, energy storage, and carbon capture, use and storage. Applications are due 31 August 2022.

The U.S. Testing and Expertise for Marine Energy Research (TEAMER) program is now accepting [Request For Technical Support \(RFTS\) 8](#) applications through 14 October 2022. Developers can apply for support in numerical modeling and analysis, bench/lab or tank/flume testing, and open water activities. Visit the [TEAMER website](#) for RFTS updates.

The California Energy Commission (CEC) has released a solicitation entitled "[Advancing Environmental Monitoring Technologies for Floating Offshore Wind](#)". The CEC is hosting an online [Pre-Application Workshop](#) from 10:00am-12:00pm PDT (5:00-7:00pm UTC) on 1 September 2022. Applications are due 17 October 2022.

The European Commission has launched the [LIFE Programme 2022 Calls for Project Proposals](#) for nature conservation, environmental protection, climate action, and clean energy transition projects. Application deadlines vary, but most are due between September and November 2022.

The U.S. Department of Energy Office of Energy Efficiency and Renewable Energy, on behalf of the Water Power Technologies Office, recently released a [Notice of Intent](#) to issue a Funding Opportunity Announcement entitled “Marine Energy Systems Innovation at Sea”.

Student & Employment Opportunities

Natural Power is looking for a [Commercial Manager - Environmental Technology](#) to identify and pursue new opportunities to deploy the Natural Power Detection and Active Response Curtailment (DARC) system, and to work with the Environmental Technology team to create proposals, negotiate contracts, and execute projects. Applications are due 19 August 2022.

Oregon State University is seeking a [Safety and Compliance Officer](#) to join the PacWave team and ensure compliance with all safety and environmental regulations and requirements through the construction and operational phases of the project. Applications are due 24 August 2022.

France Energies Marines is inviting applications for a:

- [Research Engineer](#) to help increase the Institute’s skills and set up research and development projects related to characterizing offshore renewable energy sites using satellite remote sensing. Applications are due 28 August 2022.
- [PhD candidate](#) to focus on providing predictions of potential impacts of offshore windfarms under contrasted climate change and fishing pressure scenarios. Applications are due 30 August 2022.
- [Research Engineer/Post-doctorate](#) to contribute to a project that aims to standardize tools for monitoring marine megafauna at the scale of offshore windfarms. Applications are due 30 August 2022.

The Department of Terrestrial Ecology at Norwegian Institute for Nature Research (NINA) is seeking a [Research Scientist](#) to support on-going research on onshore and offshore wind energy, power lines, and their effects on the environment. Applications are due 31 August 2022.

Natural Resources Wales seeking a [Specialist Marine and Coastal Physical Science Advisor](#) who can advise on a range of policies and plans, including coastal adaptation, impacts of development of offshore renewable energy, and nature based solutions. Applications due 4 September 2022.

European Marine Energy Centre is looking for a [Marine Bio-Acoustician](#) to develop and support delivery of its environmental monitoring services, including acoustics, for clients and within national and internationally funded projects. Applications are due 9 September 2022.

Pacific Northwest National Laboratory is seeking a [Postdoctoral Researcher](#) to conduct coastal modeling, including for numerical predictions of waves, tidal streams, ocean currents, and salinity gradients for marine energy assessments. Applications are due 14 September 2022.

Environmental Research Institute is recruiting for a [Research Fellow in Electronic Engineering](#) to lead development, upgrade, and deployment of autonomous marine multi-sensor platforms to

investigate the environmental effects of large-scale offshore renewable energy. Applications are due 19 September 2022.

Columbia Power (C·Power) is looking for an [Electrical Engineer](#) with power electronics and/or power systems experience who can help the company continuously improve its Autonomous Offshore Power Systems (AOPS) and bring its products to market.

Upcoming Events

Upcoming Webinars

National Renewable Energy Laboratory (NREL) has rescheduled its webinar, “New Functionality and Water Power Technologies Office Wave Hindcast Data in the [Marine Energy Atlas](#)”, to 30 August 2022 from 11:00am-12:00pm MDT (5:00-6:00pm UTC). Register [here](#).

NREL is also hosting a webinar, “Understanding Bat Interactions with Wind Turbines”, on 30 August 2022 from 12:00-1:00pm EDT (4:00-5:00pm UTC). The webinar will introduce three projects, led by Bowman, the Electric Power Research Institute, and Stantec Consulting Services, focused on using thermal video cameras to monitor bat behavior at wind turbines. Register [here](#).

Pacific Northwest National Laboratory’s [Triton Initiative](#) is hosting the seventh and final webinar in its *Triton Talks* series on 1 September 2022 from 11:00am-12:00pm PDT (6:00-7:00pm UTC). During the webinar, the Triton Team will discuss changes in habitat, marine energy sustainability, and life cycle assessments. Register [here](#). View past webinars [here](#).

The Hawai’i State Energy Office and RENEW REBUILD HAWAII are hosting an online panel discussion on Ocean Thermal Energy Conversion (OTEC) on 2 September 2022 from 2:00-4:00pm HST (5:00-7:00pm UTC). Register [here](#).

The Portal and Repository for Information on Marine Renewable Energy ([PRIMRE](#)) is hosting a webinar to highlight the release of the new [Marine Energy Projects Database](#), which provides a catalog of devices, projects, and test sites around the world, on 20 September 2022 from 8:00-9:00am PDT (3:00-4:00pm UTC). Register [here](#).

OES-Environmental is hosting a webinar, “From Science to Consenting: OES-Environmental 2022 Highlights”, on 22 September 2022 from 8:00-9:00am PDT (3:00-4:00pm UTC). During the webinar, the OES-Environmental team will provide updates on [risk retirement](#), guidance documents, and outreach efforts, and will detail current focus areas for research. Register [here](#).

PRIMRE is also hosting a webinar, “Wave Hindcast Webinar: High-resolution regional hindcast datasets for wave energy resource characterization in US coastal waters”, on 27 September 2022 from 8:00-9:00am PDT (3:00-4:00pm UTC). During this webinar, the Marine Energy Resource Characterization Team will discuss the overall effort and highlight some technical details and challenges. Register [here](#).

Upcoming Conferences

The University of the Highlands and Islands and Heriot Watt University are hosting the [Environmental Interactions of Marine Renewables \(EIMR 2022\)](#) conference online on 4-6 October 2022. Register [here](#). Student ticket prices available.

The South African Wind Energy Association is hosting the [5th Annual Wind Energy Academic Conference \(WindAc Africa\)](#) on 11-13 October 2022 in Cape Town, South Africa.

New Documents on *Tethys*

Marine Energy

[Echofilter: A Deep Learning Segmentation Model Improves the Automation, Standardization, and Timeliness for Post-Processing Echosounder Data in Tidal Energy Streams](#) – Lowe et al. 2022

Understanding the abundance and distribution of fish in tidal energy streams is important for assessing the risks presented by the introduction of tidal energy devices into the habitat. However, tidal current flows suitable for tidal energy development are often highly turbulent and entrain air into the water, complicating the interpretation of echosounder data. Using a case study at a tidal energy demonstration site in the Bay of Fundy, we describe the development and application of deep machine learning models with a U-Net based architecture that produce a pronounced and substantial improvement in the automated detection of the extent to which entrained air has penetrated the water column. Our model, Echofilter, was found to be highly responsive to the dynamic range of turbulence conditions and sensitive to the fine-scale nuances in the boundary position.

[A Framework for Effective Science Communication and Outreach Strategies and Dissemination of Research Findings for Marine Energy Projects](#) – Gunn et al. 2022

The Triton Initiative researches and provides recommendations for environmental monitoring technologies and methods to inform industry stakeholders with the data necessary to permit the testing of marine energy systems. Effective dissemination of the research findings is essential for improving the accessibility of data to stakeholders who may use the results to inform policy decisions, yet few frameworks for conducting science communications for marine energy projects exist. In this paper, we present tools, channels, and tactics for developing a science communication framework for marine energy projects, or similar areas of study, using the Triton Initiative's pilot science communication program as a case study.

[ORJIP Ocean Energy Information Note: Background Information](#) – Offshore Renewables Joint Industry Programme (ORJIP)

The waters around Wales' 1,200 km of coastline also contain a rich renewable energy resource with up to 6 GW of generating capacity for wave and tidal stream energy. Wales is well positioned to play a globally leading role in these industries. To capitalise on this opportunity, it is important that wave and tidal energy develops in a way that is both economically feasible and environmentally sustainable. This requires an appropriate level of understanding of how marine renewable energy projects interact with marine animals and habitats. A [series of technical, topic specific Information Notes](#) has been co-produced by a Science and Evidence Advisory Group to provide a shared understanding of how the best available science and evidence is currently applied to key consenting issues.

Wind Energy

[Reviewing the ecological impacts of offshore wind farms](#) – Galparsoro et al. 2022

Offshore wind energy is widely regarded as one of the most credible sources for increasing renewable energy production towards a resilient and decarbonised energy supply. However, current expectations for the expansion of energy production from offshore wind may lead to significant environmental impacts. Assessing ecological risks to marine ecosystems from electricity production from wind is both timely and vital. It will support the adoption of management measures that minimize impacts and the environmental sustainability of the offshore wind energy sector.

[Curtailment as a successful method for reducing bat mortality at a southern Australian wind farm](#) – Bennett et al. 2022

Wind energy is a rapidly expanding renewable technology with massive global investments; however, operating turbines are associated with bat strikes globally, and evidence suggests that without intervention, wind farm collisions could drive some common species to extinction. One widely regarded method for reducing strike mortality is operational mitigation, or curtailment, where turbine operation is restricted at low wind speeds. Despite an increasing number of studies in the Northern Hemisphere demonstrating curtailment effectiveness, no empirical studies have yet been conducted in Australia. This paper reports the findings of a curtailment study implemented at the Cape Nelson North wind farm in southwest Victoria, Australia.

[Spatial and Temporal Characteristics of California Commercial Fisheries from 2005 to 2019 and Potential Overlap with Offshore Wind Energy Development](#) – Wang et al. 2022

As climate change accelerates and fisheries management continues to evolve, California's commercial fisheries are changing. To improve the understanding of recent California fisheries dynamics, we compiled and analyzed commercial landings receipts to characterize temporal and spatial variation in landing and value of key fisheries groups within the exclusive economic zone across the state from 2005 to 2019. We found that California fisheries continue a shift first observed in the 1980s from higher-biomass, lower-value species, such as coastal pelagic species and market squid, toward lower-biomass, higher-value species, such as Dungeness crab *Cancer magister* and groundfish.

A case study analysis found groundfish to be the dominant fisheries in the two areas that have been identified as priorities for potential offshore wind development in central and northern California.

News & Press Releases

Marine Energy

[Bombora completes tank testing of a floating hybrid energy platform](#) – Bombora Wave Power

As part of the EuropeWave Programme, Bombora Wave Power (Bombora) has successfully completed tank testing of a floating foundation system suitable for the InSPIRE solution, where mWave technology is combined with a wind turbine onto a single floating offshore platform. An adapted version of the semi-submersible INSPIRE platform, developed in partnership with TechnipFMC, underwent tank testing evaluations to confirm the system loads and dynamics at the FloWave test facility at the University of Edinburgh. The InSPIRE Project brings together Bombora's patented multi-megawatt mWave™ technology which converts wave energy into electricity, with TechnipFMC's unique technologies and experience in delivering complex integrated Engineering, Procurement, Construction and Installation (iEPCI™) projects offshore.

[Oscilla Power, University of Hawaii and State of Hawaii Test New Wave Energy-powered Emergency Communications System](#) – Oscilla Power

Wave energy developer Oscilla Power and the State of Hawaii and University of Hawaii are testing a new way to provide 24-7 access to emergency communications systems for island residents. The approach involves the installation of communication equipment installed on and powered by Oscilla Power's Triton-C wave energy float. Hawaii's unique topography presents a challenge for emergency communication systems. With valleys and waterways separating counties, there are blind spots for communication signals and it is not practical to install a vastly expensive communication facility on every single ridge. This makes it difficult for officers to call for backup during enforcement and rescue activities, and the public is similarly unable to reach out for help when assistance is needed.

[DOE and NOAA Announce Winners of Ocean Observing Prize BUILD Contest to Advance Hurricane-Monitoring Systems](#) – U.S. DOE

The U.S. Department of Energy (DOE) and the National Oceanic and Atmospheric Administration (NOAA) recently announced the winners of \$500,000 in the BUILD Contest, the second phase in the Powering the Blue Economy™: Ocean Observing Prize DEVELOP Competition. The prize challenges competitors to develop solutions that use marine energy to power hurricane-monitoring systems. In June, the competitors tested their early-stage prototypes in the Maneuvering and Seakeeping Basin (MASK)—also

known as the U.S. Navy's indoor ocean—at the Naval Surface Warfare Center's facility in Carderock, Maryland. The basin holds more than 12 million gallons of water and can simulate diverse wave conditions, helping uncover the capabilities of new wave-powered technologies.

Wello and BIDC sign commercial agreement – Wello Oy

Finnish wave technology provider Wello Oy and the Barbadian Barbados Investment and Development Corporation (BIDC) (now Export Barbados (BIDC)) signed an agreement for deployment of a 5 MW wave energy farm in Barbados. Export Barbados (BIDC) is an agency of the Barbados Government, whose mandate is to contribute to the diversification and growth of its local economy through new investment, increased exports, and employment creation by fostering the development of competitive business enterprises. Wello, is a Finnish company with over a decade of experience in wave energy conversion technology. In November Wello visited Barbados to visit and review different locations where the wave site could be deployed, and Consett Bay was selected. The project kick-off will commence immediately; both Wello and BIDC want to see wave energy deployed as soon as possible.

MPS to Demo Wave Energy Array at EMEC – MPS

Marine Power Systems (MPS) has signed up to demonstrate a multi-megawatt wave energy array at the European Marine Energy Centre (EMEC) in Orkney, Scotland. The Swansea-based marine energy developer will bring its first commercial scale array demonstration to two berths at EMEC's Billia Croo wave test site, off the west coast of Orkney, in 2025-2026. MPS's PelaGen wave energy converter (WEC) design has a unique wave energy capture mechanism enabling energy to be harnessed during the heave and surge of a wave. Each device is designed to capture over a megawatt of power. The PelaGen WECs will be deployed on MPS's modular floating platform, PelaFlex. Based on a tetrahedral design to provide enhanced stability, the platform has a low overall steel mass with only 10 primary, and 4 distinct, parts. PelaFlex has been designed to deliver low cost across the entire product lifecycle.

Wind Energy

Biden-Harris Administration Continues Offshore Wind Momentum, Announces Next Steps for Gulf of Maine – U.S. Department of the Interior

As part of the Biden-Harris administration's goal of deploying 30 gigawatts of offshore wind energy capacity by 2030, the Department of the Interior today announced next steps to bring the opportunity of offshore wind energy to the Gulf of Maine. The Bureau of Ocean Energy Management (BOEM) has made available a Request for Interest (RFI) and Request for Competitive Interest (RFCI) in the Federal Register for public comment. The RFI is the first step in BOEM's commercial planning and leasing process to identify the offshore locations that appear most suitable for development, taking into consideration potential impacts to other resources and ocean users. The purpose of the

RFI is to gauge interest in the development of commercial wind energy leases within the RFI Area, which consists of about 13,713,800 acres in the Gulf of Maine.

New offshore wind leasing opens: INTOG aims to encourage innovation and decarbonise North Sea – Crown Estate Scotland

Crown Estate Scotland recently opened the Innovation and Targeted Oil and Gas (INTOG) offshore wind leasing process. This pioneering leasing round will help meet the emissions reduction targets agreed last year between government and industry in the North Sea Transition Deal and will help position offshore wind as a primary feature of the energy transition. Offshore wind developers are being invited to put forward project proposals for the leasing of seabed to reduce North Sea emissions and boost innovation. The areas of seabed which developers can apply for are set out in the Scottish Government's Initial Plan Framework. Developers can apply for the rights to build small-scale innovative offshore wind projects, of less than 100MW, and projects which will provide green electricity to oil and gas infrastructure to reduce their carbon emissions.

Sweden: Making up lost ground on offshore wind – WindEurope

Over the last few months the Swedish Government has made important announcements on offshore wind. Sweden does not yet use the full offshore wind potential its large coastlines offer. But they want to make up the lost ground. And the wind industry is lining up impressive gigawatt-scale projects in Swedish waters. Sweden is Europe's biggest net exporter of electricity, largely due to the availability of onshore wind energy. The country now has the fifth most onshore wind capacity in Europe. By the end of the year they'll have 14 GW. The Government is now planning to move to a more centralised system of offshore wind planning. They have identified three areas "suited for" offshore wind: in the Gulf of Bothnia in northern Sweden, the Baltic Sea and the Kattegat sea area.

CEC Adopts Historic California Offshore Wind Goals, Enough to Power Upwards of 25 Million Homes – CEC

The California Energy Commission (CEC) adopted a report establishing offshore wind goals and moving the state one step closer to development of the clean energy resource off California's coast. Preliminary findings in the report set planning goals of 2,000-5,000 megawatts (MW) of offshore wind by 2030 and 25,000 MW by 2045, enough electricity to power 3.75 million initially and 25 million homes by mid-century. The CEC developed the report in coordination with federal, state, and local agencies and stakeholders including Tribal governments, fisheries and other ocean users. It is the first of several products the CEC must prepare to create a strategic plan for offshore wind energy development as required by Assembly Bill 525. It reflects the latest available research on technical potential.

SSE Renewables, Microsoft and Avanade are creating digital twins that could reshape windfarms and the environment around them – Microsoft

The way windfarms are built could be changed forever by a new project that uses real-time data to understand the effect turbines have on local wildlife and ecosystems. SSE Renewables, Microsoft and Avanade are working together to create Azure Digital Twins of offshore windfarms and their local environment, which they hope will encourage the sector to develop renewable energy solutions that have a positive impact on ecosystems. A digital twin is an exact replica of an object in the physical world that can be studied and changed to help improve the real-life version. Avanade will work with SSE Renewables to deploy Microsoft's technology and monitor changes in the atmosphere, reefs and marine and bird life around windfarms. The huge amount of data from monitoring devices will be stored in Microsoft's Azure cloud platform.