



1 April 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!

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Announcements

OES-Environmental Survey

OES-Environmental is conducting a short, online [survey](#) to collect any existing information relevant to the environmental effects of marine renewable energy development in tropical and Southern Hemisphere countries. Please complete the survey by 30 April 2022, and share it with any colleagues that may be able to provide additional information.

MHKiT Survey

The [Marine and Hydrokinetic Toolkit \(MHKiT\)](#) team is conducting a short, online [survey](#) that will be used to shape future development, both in terms of architecture and content. MHKiT is an open-source marine energy software, developed in Python and MATLAB, that includes modules for ingesting, quality controlling, and managing data. Complete the survey by 8 April 2022.

OPIN Support

The Ocean Power Innovation Network (OPIN), an international network based in Europe, is offering a free, high-level [Technology Assessment Process](#) for small and medium-sized enterprises. OPIN is also offering support for [Collaborative Innovation Groups](#) working to solve

specific problems which are barriers to deployment of ocean energy and offer opportunities for new products, services, or markets. Applications for both are due 10 April 2022.

ETIPP Applications

The US Department of Energy (DOE) is accepting applications from remote, island, and islanded communities for technical assistance to transform their energy systems and increase energy resilience through the [Energy Transitions Initiative Partnership Project \(ETIPP\)](#). [Applications](#) are due 15 April 2022.

BECS Proposals

The International Network on Offshore Renewable Energy's (INORE) [2022 Call for Blue Energy Collaborative Scholarships \(BECS\) Proposals](#) is now open through 15 April 2022. Sponsored by Ocean Energy Systems (OES), the BECS grant aims to advance research and promote collaboration amongst early-career professionals from diverse disciplines and nations.

BLUE DEAL

Interreg Mediterranean's BLUE DEAL project is launching "[BLUE DEAL for the Future](#)", an International Blue Energy contest, created to raise awareness and involve future generations in building a blue future. Participation is open to High School Institutions from European Members States and Instrument for Pre-accession Assistance countries. Proposals are due 30 April 2022.

NOAA Fisheries & BOEM Seeking Comments

The US National Oceanic and Atmospheric Administration (NOAA) Fisheries and Bureau of Ocean Energy Management (BOEM) recently released a [Draft Federal Survey Mitigation Implementation Strategy](#) that describes the approach NOAA Fisheries and BOEM will use to mitigate the impacts of offshore wind energy on NOAA Fisheries surveys in Northeast and Mid-Atlantic regions. The agencies are [seeking public comment](#) on the strategy until 6 May 2022.

Calls for Abstracts

The [Call for Research Posters](#) for Seanergy 2022 is now open. Poster information (name, organization, and poster title) is due 1 April, posters are due 2 May, and abstracts are due 13 May 2022. [Seanergy 2022](#) will take place 15-17 June 2022 in Le Harve-Normandy, France.

The [Call for Abstracts](#) for the North American Wind Energy Academy (NAWEA) Symposium and International Conference on Future Technologies in Wind Energy (WindTech) is now open through 15 April 2022. The [NAWEA/WindTech 2022 Conference](#) will take place on 20-22 September 2022 in Delaware, US.

The [Call for Abstracts](#) for the International Conference on Ocean Energy (ICOE) and Ocean Energy Europe (OEE)'s annual event has been extended to 22 April 2022. The Basque Energy Cluster and OEE will host [ICOE-OEE 2022](#) on 18-20 October 2022 in San Sebastián, Spain.

The [Call for Abstracts](#) for the [Pan-American Marine Energy Conference](#) (PAMEC 2022) has been extended to 15 April 2022. PAMEC is scheduled for 19-22 June 2022 in Ensenada, Mexico, with workshops on 17-18 June 2022. This international meeting is a great opportunity for graduate students to present their research to international colleagues.

Funding & Testing Opportunities

€12.2 million (£10 million) of the Energy Entrepreneurs Fund (EEF) from the UK government have been attributed to energy innovators to accelerate the development of green technologies (from TRL 3-8). [Applications](#) are welcomed to promote innovations from all sectors until May 11th 2022, 2:00 pm BST

The Horizon Europe Framework Programme launched a funding opportunity titled, [“Demonstration of innovative materials, supply cycles, recycling technologies to increase the overall circularity of wind energy technology and to reduce the primary use of critical raw materials”](#). Proposals are due 26 April 2022, 5:00 pm CET.

The Interreg North-West Europe Programme has launched its first [Call for Projects](#) in the 2021-2027 period, and is looking for transnational cooperation initiatives that can deliver concrete results for the North-West Europe area. The Call for Projects will close on 15 June 2022, 12:00 pm CET.

Student & Employment Opportunities

The National University of Ireland, Galway (NUI Galway) has opened [five fully-funded PhD positions in tidal energy research](#) as part of the NUI Galway Global Challenges Program to achieve the “Good Environmental Status” in coastal and marine waters. Enrolment will start in September 2022. Closing date for applications is May 9th 2022.

Upcoming Events

Upcoming Webinars

Net Zero Atlantic is hosting a webinar, [“Tidal velocity measurements at turbine rotor height and with turbine blade resolution”](#), from 1:00-2:00pm ADT (4:00-5:00pm UTC) on 21 April 2022. The webinar will discuss the *Vectron*, a wide-baseline, converging-beam acoustic Doppler profiler developed to enable velocity measurements at tidal energy sites. Register [here](#).

Pacific Northwest National Laboratory’s Triton Initiative is hosting the next webinar in its *Triton Talks* series on 21 April 2022 from 11:00am-12:00pm PDT (6:00-7:00pm UTC). Scientist and Science Communicator Cailene Gunn will dive into the strategies, successes, and lessons learned from the first year of implementing Triton’s communications framework. Register [here](#).

Ocean Energy Systems (OES) is hosting a public webinar, “[Study of Offshore Aquaculture as a Market for Ocean Renewable Energy](#)” on 26 April 2022 from 12:00 – 1:00pm PDT (7:00 – 8:00pm UTC) that will provide an overview of the findings in the “Study of Offshore Aquaculture as a Market for Ocean Renewable Energy” report, which will be published in April by OES. Register [here](#).

Upcoming Workshop

The Marine Offshore Renewable Energy Lab (MOREnergy Lab), in collaboration with the Centre for Ocean Energy Research (COER) Maynooth, is hosting the [7th Wave Energy Workshop](#) on 29 April 2022 in Turin, Italy. The workshop will cover a range of topics across wave energy conversion, with a broad focus on hydrodynamic modelling, control, and wave energy technology enhancement. Register [here](#).

Upcoming Conferences

The [6th Conference on Wind Energy and Wildlife Impacts](#) will take place 4-8 April 2022 in Egmond aan Zee, Amsterdam. View the final programme [here](#). Register [here](#).

The Business Network for Offshore Wind’s [2022 International Partnering Forum](#) will take place 26-28 April 2020 in Atlantic City, US. View the full agenda [here](#). Register [here](#).

The [Wave Energy Scotland Annual Conference](#) will take place on 3 May 2022 in Edinburgh, Scotland. The full agenda is coming soon. Register for free [here](#).

The University Marine Energy Research Community (UMERC) and the Marine Energy Technology Symposium (METS) will jointly sponsor [UMERC+METS 2022 Conference](#) in Portland OR, September 13th-14th 2022. Submit your abstract [here](#). The conference will be held in conjunction with the [Ocean Renewable Energy Conference \(OREC\) 2022](#) on September 14th-15th 2022, which also provides an opportunity to meet with marine energy developers and stakeholders.

The [European Sustainable Energy Week](#) will gather both on site and online participants for policy-driven discussions, 26-30 September 2022

New Documents on *Tethys*

Marine Energy

[IEA-OES Annual Report: An Overview of Ocean Energy Activities in 2021 – Ocean Energy Systems \(OES\) 2022](#)

IEA-OES is a Technology Collaboration Programme (TCP) on Ocean Energy Systems under the International Energy Agency (IEA). The work of the IEA-OES covers all forms of energy generation in which sea water forms the motive power through its physical and

chemical properties, i.e. wave, tidal range, tidal and ocean currents, ocean thermal energy conversion and salinity gradients. IEA-OES connects organisations and individuals working in the ocean energy sector to accelerate the viability, uptake and acceptance of ocean energy systems in an environmentally acceptable manner. This Annual Report presents an overview of progress made by the IEA-OES in 2021, including summaries of ongoing projects and updated country reviews prepared by the Delegates.

Modelling the influence of Tidal Energy Converters on sediment dynamics in Banks Strait, Tasmania – Auguste et al. 2022

As the tidal energy industry grows, developers are interested in the influence that large scale arrays might have on their surrounding environment including hydrodynamic and sediment. Understanding of local and regional sediment dynamics is an important element for environment impact and site assessments, as changes in sediment processes could alter bed ecosystems. In Australia, the Banks Strait located in the Northeast of Tasmania has been identified as a promising site for tidal energy. Very large sand waves have been observed near the area suitable for tidal turbines installation and they may interfere with human activities. Building from previous work, a 2D regional scale model investigated the influence of different tidal farms on the morphology of Banks Strait and especially the sand waves.

Automated Detection, Classification and Counting of Fish in Fish Passages With Deep Learning – Kandimalla et al. 2022

The Ocean Aware project, led by Innovasea and funded through Canada's Ocean Supercluster, is developing a fish passage observation platform to monitor fish without the use of traditional tags. This will provide an alternative to standard tracking technology, such as acoustic telemetry fish tracking, which are often not appropriate for tracking at-risk fish species protected by legislation. Rather, the observation platform uses a combination of sensors including acoustic devices, visual and active sonar, and optical cameras. This will enable more in-depth scientific research and better support regulatory monitoring of at-risk fish species in fish passages or marine energy sites. Analysis of this data will require a robust and accurate method to automatically detect fish, count fish, and classify by species in real-time using both sonar and optical cameras.

Wind Energy

Coastal onshore wind turbines lead to habitat loss for bats in Northern Germany – Reusch et al. 2022

Wind energy production is particularly rewarding along coastlines, yet coastlines are often important as migratory corridors for wildlife. This creates a conflict between energy production from renewable sources and conservation goals, which needs to be considered during environmental planning. To shed light on the spatial interactions of a high collision risk bat species with coastal wind turbines (WT), we analysed 32 tracks of 11 common noctule bats (*Nyctalus noctula*) in Northern Germany with miniaturized global

positioning system units yielding 6266 locations. We used three spatial models to infer on the preferred and avoided landscape features in interaction with WT. We found 3.4% of all locations close to WT, with bats preferring areas with high levels of impervious surface, identified as farmhouses.

[Co-existence in practice: a collaborative study of the effects of the Westernmost Rough offshore wind development on the size distribution and catch rates of a commercially important lobster \(*Homarus gammarus*\) population](#) – Roach et al. 2022

The global expansion of offshore windfarms (OWF), whilst seen as a tool to combat climate change, can often be of concern to fishing communities already challenged by spatial restrictions. Static gear fisheries, due to their strong fidelity to specific sites, can be particularly affected by spatial conflict with OWF. Here we investigate, using four sampling efforts over a six-year period, the effects of the development of the Westernmost Rough OWF (UK) on a commercially important European Lobster (*Homarus gammarus*) population. A collaborative study was developed and conducted by the local fishery and the developer. A baseline potting survey was conducted ~ every 4 days over the summer months of 2013 (pre-construction) and post-construction surveys were conducted in 2015, 2017, and 2019.

[In the shadow of wind energy: Predicting community exposure and annoyance to wind turbine shadow flicker in the United States](#) – Haac et al. 2022

The moving shadows caused by wind turbines, referred to as “shadow flicker” (“SF”), are known to generate annoyance in a subset of the exposed population. However, the relationship between the level of modeled SF exposure and the population's perceived SF and SF annoyance is poorly understood. Improved understanding of SF exposure impacts could provide a basis for exposure thresholds and, in turn, potentially improve community acceptance of and experience with wind power projects. This study modeled SF exposure at nearly 35,000 residences across 61 wind projects in the United States, 747 of which were also survey respondents. Using these results, we analyzed the factors that led to perceived SF and self-reported SF annoyance.

News & Press Releases

Marine Energy

[€37m to turn the tide towards renewable energy](#) – Ocean Energy Europe

Climate Change Minister Julie James confirmed the funding would be given to Menter Môn for the Morlais infrastructure project. The Morlais Infrastructure development aims to further the development of tidal power generation technologies by providing grid connectivity.

[Bermuda and Seabased sign agreement for site of 40MW wave energy power park - Seabased](#)

Fresh on the heels of COP26, Bermuda is leading in the energy transition by inaugurating the third vertical of renewable energy: blue ocean power. On 22 November in Hamilton, Bermuda, Deputy Premier and Minister of Home Affairs Hon. Walter Roban JP, MP, announced an agreement to move forward on the development of what promises to be the world's first utility-scale commercial ocean wave power park. With a 40MW capacity, the park will fuel the island's grid, providing roughly 10% of Bermuda's energy needs.

SAE Successfully Re-deploys World's Most Powerful Tidal Turbine – Simec Atlantis Energy (SAE)

SAE is pleased to announce the successful re-deployment of its AR1500, 1.5MW turbine, at its MeyGen site. The turbine has been out of the water for upgrade and maintenance work. It is now back generating green, predictable electricity, with no visual impact. The MeyGen site is the largest fully consented tidal stream site in the world and SAE is continuing to work with Government and industry partners to unlock its full potential, delivering a 400MW green and predictable power station. With two of the four turbines now fully operational SAE is continuing work on the re-deployment of the other turbines, which are out the water for maintenance and repair, and expect them to be back in the water within the next 12 months.

Sustainable Marine gets busy on tidal power connection in Nova Scotia – Offshore Energy

Sustainable Marine has intensified operations to connect its floating tidal energy platform to the Canadian power grid. Sustainable Marine's staff is preparing to connect the subsea cable to the PLAT-I 6.40 floating tidal energy platform, expected to take place later in the week. Having restarted the operations in Grand Passage in January 2022, Sustainable Marine completed the installation of the cable that will connect the platform to its substation early in February. The 420kW PLAT-I 6.40 platform will be deployed at the Fundy Ocean Research Centre for Energy (FORCE) site as part of the first phase of the Pempa'q In-stream Tidal Energy Project. The total project will deliver up to 9MW of electricity to the Nova Scotia grid, which is expected to reduce greenhouse gas emissions by 17,000 tonnes of carbon dioxide a year and power around 3000 homes in Nova Scotia.

Crown Estate invests in Welsh tidal demo zone – reNEWS

The Crown Estate is to invest over £1m in a Welsh tidal stream energy demonstration project site, located off the coast of Anglesey in north Wales. The Morlais tidal stream demonstration zone, being developed by Menter Mon, covers an area of 35 sq km in the Irish Sea and aims to attract developers and investors to Anglesey, to develop early-scale tidal energy projects. The Crown Estate's £1.2m investment will support the project to deliver its environmental monitoring and mitigation package (EMMP). In addition, Mentor Mon has awarded Jones Bros Civil Engineering a contract worth £23.5m to build onshore infrastructure for Anglesey marine energy project, Morlais. The announcement comes at the same time as confirmation of £31m by the European Regional Development fund through the Welsh Government for the first phase of construction work.

Wind Energy

[Biden-Harris Administration Announces Wind Energy Lease Sale Offshore the Carolinas](#) – US Department of the Interior

The Department of the Interior recently announced that the Bureau of Ocean Energy Management (BOEM) has completed its environmental review and will hold a wind energy auction for two lease areas offshore the Carolinas on May 11. The lease areas cover 110,091 acres in the Carolina Long Bay area that, if developed, could result in at least 1.3 gigawatts of offshore wind energy, enough to power nearly 500,000 homes. The announcement is part of President Biden's agenda to grow a clean energy economy that harnesses offshore wind projects to strengthen U.S. energy independence, create good-paying jobs, and lower energy bills for consumers. The Carolina Long Bay offshore wind energy auction will allow offshore wind developers to bid on one or both of the lease areas within the Wilmington East Wind Energy Area.

[Shell Unveils 17 GW Offshore Wind Plans in Brazil](#) – Offshore Wind

Shell has applied for environmental investigation licences for six offshore wind projects in Brazil with the country's Institute for the Environment and Natural Resources (IBAMA). The six projects have a total installed capacity of 17 GW. The company submitted an Activity Characterisation Form (FCA) to IBAMA last week, seeking approval to undertake environmental impact assessment to support project development and, subsequently, investment and construction. The studies, expected to begin this year, will be carried out for Shell's wind projects planned to be built in waters offshore the states of Piauí, Ceará, Rio Grande do Norte, Espírito Santo, Rio de Janeiro, and Rio Grande do Sul. Brazil's Ministry of Mines and Energy will be in charge of carrying out the studies, selecting the offshore wind zones, as well as organising subsequent auctions.

[Invenergy and GE Renewable Energy Celebrate Completion of the Largest Wind Project Constructed in North America](#) – Invenergy

Invenergy, the largest privately held global developer, owner and operator of sustainable energy solutions and GE Renewable Energy, recently announced commercial operations for the 998-megawatt Traverse Wind Energy Center, the largest wind farm constructed in a single phase in North America. Located in north central Oklahoma, Traverse joins the operational 199-megawatt Sundance Wind Energy Center and the 287-megawatt Maverick Wind Energy Center, as the last of three projects developed by Invenergy for American Electric Power to reach commercial operation. These projects make up the North Central Energy Facilities and have 531 GE turbines with a combined capacity of 1,484 MW, making them collectively among the largest wind energy facilities globally.

[The Netherlands Designates Areas for 10.7 GW of New Offshore Wind](#) – Offshore Wind

The Dutch government has designated three new areas and has confirmed two previously designated areas in the North Sea for the development of offshore wind farms with a

combined capacity of 10.7 GW. With the new areas, the Netherlands is doubling the total planned capacity for offshore wind energy to around 21 GW by 2030. The areas, part of the North Sea Programme, are located to the north and northwest of the Netherlands. The three new wind energy areas have been given the following names: Nederwiek, Lagelander, Doordewind. The other two reconfirmed areas are the northern part of IJmuiden Ver and the southern part of Hollandse Kust (west). The government will decide this summer exactly where the wind farms will be located within the designated areas as part of the Roadmap 2030+.

Fraunhofer IWES to test Vestas' XXL rotor blade on new test bench – Fraunhofer Institute for Wind Energy Systems (IWES)

Following successful conclusion of the contract, the first customer for the Fraunhofer Institute for Wind Energy Systems' new rotor blade test bench has now been decided: the Danish wind turbine manufacturer Vestas will be testing the rotor blade of the new V236-15.0 MWTM prototype in Bremerhaven later this year. The state-of-the-art test bench offers comprehensive testing possibilities for rotor blades measuring up to more than 120 meters. In addition to biaxial full-scale blade tests, manufacturers also have the option of testing individual segments of a rotor blade. The modular and adaptable design of the test bench allows the scientists at Fraunhofer IWES to react flexibly to requirements and further develop intelligent test methods.