



4 March 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

SEER Research Briefs & Webinar Recordings

The U.S. Offshore Wind Synthesis of Environmental Effects Research (SEER) project recently published two new educational research briefs on *Tethys*, [Introduction of New Offshore Wind Farm Structures: Effects on Fish Ecology](#) and [Benthic Disturbance from Foundations, Anchors, and Cables](#). Recordings from all four past SEER webinars are also available on *Tethys* [here](#).

Request for Information

The US Department of Energy (DOE) Wind Energy Technologies Office recently released a [Request for Information](#) to solicit feedback on social science research needs relating to the effects of offshore wind development on communities, in the context of a clean and just energy transition. Responses must be submitted by 5:00pm EST (10:00pm UTC) on 11 March 2022.

ORJIP Ocean Energy Survey

The Offshore Renewables Joint Industry Programme (ORJIP) Ocean Energy, a UK collaborative programme of environmental research, is conducting a short, 5-minute [survey](#) to assist with the development of its next five-year plan. Please submit survey responses by 11 March 2022.

Calls for Abstracts

The [Call for Abstracts](#) for the [9th Partnership for Research in Marine Renewable Energy \(PRIMaRE\) Conference](#) has been extended through 7 March 2022. The conference will take place in Cornwall, UK on 6-7 July 2022.

The [Call for Abstracts and Symposia](#) for the New York State Environmental Technical Working Group' [2022 State of the Science Workshop on Wildlife and Offshore Wind Energy](#) is now open through 14 March 2022. The hybrid event will be held on 26-28 July 2022 in New York, US.

The [Call for Abstracts](#) for the [Pan-American Marine Energy Conference](#) (PAMEC 2022) is now open through 27 March 2022. PAMEC is scheduled for 19-22 June 2022 in Ensenada, Mexico.

The [Call for Abstracts](#) for the International Conference on Ocean Energy (ICOE) and Ocean Energy Europe (OEE)'s annual event is now open until 31 March 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 [6th International Conference on The Effects of Noise on Aquatic Life \(AN2022\)](#) is open through 31 March 2022. AN 2022 will take place on 10-15 July 2022 in Berlin, Germany.

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 [OCEANS 2022 Hampton Roads](#) is now open through 16 May 2022. The hybrid event will take place on 17-21 October 2022 in Virginia Beach, US and online.

Calls for Papers

The *Journal for Marine Science and Engineering* is accepting submissions for several Special Issues, including "[Impacts of Offshore Wind Farms on Marine Ecosystems, Fisheries and Societies](#)" (due 15 March 2022), "[New Technologies and Methods in Coastal Observing](#)" (due 15 April 2022), and "[Wind and Wave Climate](#)" (due 20 May 2022).

Energies is accepting submissions for several Topical Collections, including "[Progress on Offshore Wind and Marine Energy](#)", "[Women's Research in Wind and Ocean Energy](#)", and "[Feature Papers on Wind, Wave and Tidal Energy](#)". *Energies* is also accepting submissions for the Special Issue, "[Analysis and Prediction of Wind Turbine Noise](#)" (due 1 April 2022).

Funding & Testing Opportunities

The US National Offshore Wind Research and Development Consortium has released their [Innovations in Offshore Wind Solicitation 2.0](#). Concept papers for Round 2: Environmental Shared Use, Power Systems & Interconnection are due 9 March 2022.

UK Research and Innovation has announced a [Small Business Research Initiative competition](#) to develop open software, hardware and data solutions that address the challenges of transforming to a net zero energy system in the UK. Submissions are due by 11:00am UTC on 9 March 2022.

The U.S. Department of Defense's (DOD) Environmental Security Technology Certification Program has released a [Call for Proposals](#) for innovative energy technology demonstrations that address DoD requirements, including improving energy, water, and climate resilience. Pre-proposals are due by 2:00pm EST (7:00pm UTC) on 10 March 2022.

The Oceanic Platform of the Canary Islands (PLOCAN) recently announced the launch of its [Winter Access Call](#) for the use of its facilities and services by public research groups and by the private sector, both national and international communities. Applications are due 20 March 2022.

The [US Testing Expertise and Access for Marine Energy Research](#) (TEAMER) program, sponsored by DOE and directed by Pacific Ocean Energy Trust, is offering [open water support for marine energy testing](#). Open Water Support applications may be submitted at any time, while applications for its [6th Request for Technical Support](#) are now available and due 24 March 2022.

Student & Employment Opportunities

Pacific Northwest National Laboratory is recruiting multiple [Undergraduate Technical Interns](#) from diverse backgrounds to join its Coastal Sciences Division and work in one of three focus areas, including marine energy and coastal resilience. Applications are due 11 March 2022.

University College Cork and the MaREI Centre for Energy are inviting applications for a [Post-Doctoral Researcher](#) and [2 PhD students](#) to join the CETUS (Cetacean, Elasmobranch, Turtle and Seabird distribution modelling platform supporting the sustainable development of offshore renewable energy) project. Applications are due 11 March 2022.

The European Marine Energy Centre is recruiting a [Metocean Data Engineer](#) to oversee environmental data management and a [Senior Metocean Engineer](#) to manage the collection and analysis of metocean measurement programmes. Applications are due 16 March 2022.

The Renewable Energy Wildlife Institute (REWI) is seeking multiple [Solar/Wind Energy Wildlife Scientists](#) to support REWI's work in developing science, tools, and strategies for both wind and solar siting and operations that minimize impacts to wildlife and wildlife habitat.

Upcoming Events

Upcoming Workshop

The US DOE's Water Power Technologies Office (WPTO) and National Renewable Energy Laboratory are hosting a free, two-day [Marine Energy Data and Instrumentation Workshop](#) on 16-17 March 2022 to bring together industry, university, and laboratory experts in marine energy

data collection and instrumentation. Participants will identify instrumentation and measurement needs, and discuss best practices for data collection. Register for Day 1 [here](#) and Day 2 [here](#).

Upcoming Webinars

The US DOE's WPTO is hosting its Semiannual Stakeholder Webinar from 1:00-2:00pm EST (6:00-7:00pm UTC) on 10 March 2022. During the webinar, WPTO leadership will review accomplishments, preview what's yet to come, and discuss investments that will come from the Bipartisan Infrastructure Law. Register [here](#).

The OceanSET project and France Energies Marine are hosting a [webinar](#) from 10:00-10:45am UTC on 10 March 2022 to launch the third and final OceanSET Annual Report. This event will provide an update of ocean energy activities across Europe and outline how the sector could evolve toward meeting ambitious European deployment goals. Register [here](#).

The RESOURCECODE project is hosting a webinar from 11:00am-12:30pm CET (10:00-11:30am UTC) on 10 March 2022 to introduce a new Marine Data Toolbox that provides developers with a set of standards and functions for resource assessment and operations planning. Register [here](#).

ETIP Ocean (European Technology and Innovation Platform for Ocean Energy) and APPA Renewables are hosting a [webinar on ocean energy in Spain](#) at 11:00am CET (10:00am UTC) on 22 March 2022. The webinar will discuss the recently published Spanish Marine Energy Roadmap and review the funding opportunities available for ocean energy. Register [here](#).

The National Renewable Energy Laboratory is hosting a webinar from 9:00am-12:30pm MDT (3:00-6:30pm UTC) on 29 March 2022 to present recent progress in the development and validation of new eagle behavioral models, highlighting applications for wind-plant siting and operations. The workshop will feature a Q&A session to solicit feedback on model capabilities and future directions, and then a hands-on working session for those interested in exploring the models. Register [here](#).

The [Portal and Repository for Information on Marine Renewable Energy \(PRIMRE\)](#) is hosting a webinar on the [Marine and Hydrokinetic Toolkit \(MHKiT\)](#) from 1:00-2:00pm EDT (5:00-6:00pm UTC) on 31 March 2022. During the webinar National Renewable Energy Laboratory, Sandia National Laboratories, and Pacific Northwest National Laboratory will present introduce new functionality in the open-source package and give demonstrations in Python. Register [here](#).

Upcoming Conferences

The Atlantic International Research Centre is hosting [Atlantic Innovation Week](#), a conference stimulating research and innovation, on 14-17 March 2022 in Azores, Portugal. Register [here](#).

American Clean Power is hosting the [2022 Siting and Environmental Compliance Conference](#) on 29-30 March 2022 in Austin, US. Advanced registration ends 23 March 2022. Register [here](#).

New Documents on *Tethys*

Marine Energy

[Agreements and benefits in emerging ocean sectors: Are we moving towards an equitable Blue Economy?](#) – Cisneros-Montemayor et al. 2022

Transitioning to a Blue Economy that prioritizes social equity will be challenging in ocean sectors but could be comparatively easier for newer industries where appropriate guidelines can be followed from the start. We focus here on two emerging ocean sectors—blue carbon and ocean energy—and an evaluation of benefit-sharing agreements at operational sites, and the recipients and types of these benefits. This is an initial yet useful gauge of progress towards integration of social equity concerns as envisioned under a Blue Economy. The number ($n = 84$) and scale of ocean energy sites is rapidly increasing but highly concentrated in a few regions. The ocean energy sector is currently focused on serving grids in urbanized areas and reducing national emissions, and economic benefit-sharing mechanisms with local residents are less common.

[Hydrodynamic and Morphodynamic Influences from Ocean Current Energy Conversion Sites in the South–Southeastern Brazilian Inner Shelf](#) – Kirinus et al. 2022

As marine renewable resources begin to become a feasible energy source, it becomes crucial to investigate the nearshore impact of hydrodynamic and morphodynamic processes. As part of the implementation of turbines in the numerical modeling environment of Telemac-3D and Sisyphe modules, we conducted a 10-year run to evaluate nearshore impacts of turbines in the flow. We used five criteria to define viable locations. Turbines sites were added to a conversion energy model coupled into the hydrodynamic model in order to develop properly the flow changes towards the energy conversion process. The results revealed that in the three chosen spots, turbines were not converting equally the current energy within the site. In fact, the turbines located on the outer side of the farm developed greater conversion rates.

[Using Trajectories through a Tidal Energy Development Site in the Bay of Fundy to Study Interaction of Renewable Energy with Local Fish](#) – Sanderson et al. 2021

A tidal energy development site has been designated in Minas Passage (Bay of Fundy, Nova Scotia, Canada) for testing in-stream turbines and producing renewable energy. Concern remains that turbines might harm local populations of marine animals as they sweep by within a fast-flowing water mass. Drifters approximately track a water mass and can support instrumentation for detecting fish that carry an acoustic tag. A tagged Atlantic salmon tracked sufficiently similarly to the drifter for it to be continuously within detection range for three intervals of up to 56 minutes over a 21-hour period. The same fish was briefly detected near the drifter five days later. Two types of quasi-stable drifter trajectory were found to make many transits through the fast-flowing waters of Minas Passage, with tidal excursion extending far beyond the passage.

Wind Energy

[Stochastic agent-based model for predicting turbine-scale raptor movements during updraft-subsidized directional flights](#) – Sandhu et al. 2022

Rapid expansion of wind energy development across the world has highlighted the need to better understand turbine-caused avian mortality. Golden eagles subsidize their flight in part by soaring in orographic updrafts, which can place them in conflict with wind turbines utilizing the same low-altitude wind resource. Understanding the behavior of soaring raptors in varying atmospheric conditions can therefore be relevant to predicting and mitigating their risk of collision. We present a predictive movement model that simulates individual paths of golden eagles during directional flight (such as migration) that is subsidized by orographic updraft. We modeled eagles in a 50 km by 50 km study area in Wyoming containing three wind power plants with documented golden eagle collisions with turbines.

[Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea: Attraction, avoidance and habitat use at various spatial scales](#) – Degraer et al. 2021

In this report, we zoom in on patterns of attraction, avoidance and habitat use at various spatial scales (i.e., wind farm-scale, turbine-scale and microhabitat-scale) and across different ecosystem components (i.e., marine mammals, (sea)birds, fish and benthic invertebrates), and demonstrate the benefits of such knowledge to design appropriate measures to mitigate undesired impacts. Attraction to and avoidance of offshore wind farms (OWFs) reshuffle species distribution patterns, altering the local expression of ecological functions, and probably are the most commonly known effects of OWFs. Seabirds like red-throated divers *Gavia stellata* avoid OWFs up to more than ten kilometers, while marine mammals such as harbor porpoises *Phocoena phocoena* avoid areas with excessive sound levels like pile driving locations.

[Impacts of 319 wind farms on surface temperature and vegetation in the United States](#) – Qin et al. 2022

The development of wind energy is essential for decarbonizing energy production. However, the construction of wind farms changes land surface temperature (LST) and vegetation by modifying land surface properties and disturbing land–atmosphere interactions. In this study, we used moderate resolution imaging spectroradiometer satellite data to quantify the impacts on local climate and vegetation of 319 wind farms in the United States. Our results indicated insignificant impacts on LST during the daytime but significant warming of 0.10 °C of annual mean nighttime LST averaged over all wind farms, and 0.36 °C for those 61% wind farms with warming. The nighttime LST impacts exhibited seasonal variations, with stronger warming in winter and autumn, up to 0.18 °C, but weaker effects in summer and spring.

News & Press Releases

Marine Energy

[Eco Wave Power Global to Relocate the Gibraltar Wave Energy Array to the Port of LA](#) – Eco Wave Power

Eco Wave Power recently announced its intent to relocate its energy conversion unit from Gibraltar, after full overhaul, to AltaSea's premises in the Port of Los Angeles, in accordance with the agreement entered between the parties in January 2022. The primary reason is Eco Wave Power's increasing interest in the US market, emphasized by the company's recent listing on Nasdaq Capital Market. Additional considerations include the condition of the Ammunition Jetty, and that Eco Wave Power has accumulated almost six years of operational experience with over 49,632 grid connection hours, in its Gibraltar pilot site, and is therefore ready to continue with its plan to expand to larger scales and new regions with its pioneering technology.

[Waterotor Unveils "The Big Cajun," a 20 MW Hybrid Ocean Energy-Generating System](#) – Waterotor International

Waterotor International Corp., a hydrokinetic energy company, recently unveiled its Megarotor system design called "The Big Cajun" at the Floating Wind Solutions 2022 convention in Houston, Texas. The 20-Megawatt Big Cajun is the first hybrid ocean system that simultaneously extracts energy from slow moving water and wind. This worldwide, patented technology utilizes unique rotor stacks in low water speed and conventional wind turbines to extract large amounts of power. Currently under development in Louisiana, the Big Cajun is Waterotor's first commercial ocean deployment. Its first application allows Big Oil to reduce its carbon footprint and drastically reduce costs by replacing diesel-generated electricity production on platforms that each consume 33,000 gallons of fossil fuel per day at a cost of \$70 million per year.

[Mocean Energy lands funds to build wave energy device for oil and gas sector](#) – Offshore Energy

Scottish company Mocean Energy has secured €875,000 to accelerate the commercial roll-out of its wave energy technology and drive its adoption in offshore oil and gas sector. The new funds will enable the company to advance the design of its next-generation Blue Star wave machine and drive its adoption in subsea oil and gas. Last year, the company successfully trialed its Blue X prototype at sea at the European Wave Energy Centre in Orkney, and is currently collaborating with partners to advance a demonstrator project, 'Renewables for Subsea Power'. The project is expected to show how Mocean Energy's technology can be coupled with underwater energy storage to provide reliable low carbon power to subsea equipment and autonomous underwater vehicles. Plans are in place to test the system at sea later in 2022.

[North Wales £7bn tidal lagoon gets thumbs up from council](#) – Ground Engineering

Denbighshire County Council has given its support to a proposed scheme for a massive £7bn tidal lagoon on the Denbighshire coast in North Wales. The lagoon will be formed by a 30km barrage stretching from Prestatyn to Llandudno. It will use turbines to generate electricity from the movement of the tides. The council unanimously voted to back the scheme in principle at a meeting last week. The motion was put forward by Welsh Conservative councillor Brian Jones. A group of Denbighshire councillors will now help progress the scheme and lobby the UK and Welsh governments on behalf of an unnamed private sector company. It is part of a renewable energy auction scheme through which the government is investing £20M per year in tidal electricity across the UK.

TEAMER Network Director Announces RFTS 5 Technical Support Recipients – TEAMER

The U.S. Testing Expertise and Access to Marine Energy Research (TEAMER) program selected 9 projects through its fifth Request for Technical Support (RFTS) for testing expertise and access to numerical modeling, laboratory or bench testing, and tank/flume testing and expertise within the growing TEAMER Facility Network. The awards reflect a total funding amount of nearly \$900,000. Selected applicants, along with the supporting Facility, will now submit their completed Test Plans, a requirement before assistance activities can commence. Supported by the U.S. Department of Energy and directed by the Pacific Ocean Energy Trust, TEAMER accelerates the viability of marine renewables by providing access to the nation's best facilities and expertise to solve critical challenges, build knowledge, foster innovation, and drive commercialization.

Wind Energy

Biden-Harris Administration Sets Offshore Energy Records with \$4.37 Billion in Winning Bids for Wind Sale – US Department of the Interior

The Department of the Interior recently announced the results of the nation's highest-grossing competitive offshore energy lease sale in history, including oil and gas lease sales, with the New York Bight offshore wind sale. These results are a major milestone towards achieving the Biden-Harris administration's goal of reaching 30 gigawatts of offshore wind energy by 2030. The lease sale offered six lease areas totaling over 488,000 acres in the New York Bight for potential wind energy development and drew competitive winning bids from six companies totaling approximately \$4.37 billion. A recent report indicates that the United States' growing offshore wind energy industry presents a \$109 billion revenue opportunity to the supply chain over the next decade.

Eleven UK companies secure industry funding for projects to accelerate offshore wind consenting – Offshore Wind Growth Partnership

Eleven UK companies are celebrating after securing a share of the £3m Innovation Grant funding pot from the Offshore Wind Growth Partnership (OWGP). Launched in September 2021, the Innovation Grant competition is the first of its kind – offering grants of up to £100,000 to UK supply chain companies for projects that could accelerate the

offshore wind site development and consenting process. The 11 companies, from across the UK, will deliver projects that address a variety of challenges associated with offshore wind site development and consenting, including optimising site selection, environmental monitoring and compensation methods, subsea surveys, and data analysis techniques. The remaining Innovation Grant pot funding will be allocated at the next OWGP funding competition, which is expected to launch in May 2022.

Largest U.S. Wind Project Online in New Mexico – POWER

A wind farm comprised of four projects in central New Mexico, serving areas of that state and California, is now online and takes the title of the largest wind power installation in the U.S. Pattern Energy Group, among the world's largest privately-owned developers and operators of wind, solar, transmission, and energy storage projects, on Feb. 24 announced the opening of Western Spirit Wind, a project in Guadalupe, Lincoln, and Tarrant counties in New Mexico with more than 1,050 MW of generation capacity. The project features 377 GE wind turbines ranging from 2.3 to 2.8 MW in size. Local officials have touted the project's economic benefits, with Western Spirit Wind projected to provide an estimated \$3 million per year for the three counties and two school districts.

Consultation launched for offshore wind energy in the Gulf of Cagliari (Italy) – BlueFloat Energy

Nora Ventu, the company set up by the partnership between Falck Renewables and BlueFloat Energy to develop floating offshore wind farms off the Sardinian coast, has launched a consultation to provide local communities with more information on two projects to be developed in the Gulf of Cagliari. Nora Ventu, named in homage to Sardinia's history and ancient culture, has begun a series of meetings with local stakeholders to outline its proposals for two offshore floating wind farms, Nora Energia 1 in the south-west, and Nora Energia 2 in the south-east, which together would have a total of around 1.4 GW of installed capacity. This local engagement starts before the beginning of the authorization procedure, the first step of which will be a preliminary consultation process aimed at defining the scope of the environmental impact study.

US Plans to Auction 3 GW Offshore Oregon, Pinpoints Three Areas – Offshore Wind

The US Bureau of Ocean Energy Management (BOEM) has identified three Call Areas in the Pacific Ocean offshore Oregon for wind energy development, which have a total installed capacity potential of 17 GW. The agency is now embarking on narrowing down these pieces of federal waters into Wind Energy Areas which could support 3 GW in the near term, with a lease sale expected in the first quarter of 2024, at the latest. The agency has identified Call Areas offshore the cities of Coos Bay, Bandon, and Brookings which span 5,651 square kilometres and could accommodate a total of 16,956 MW of installed offshore wind capacity. The Government opened the Pacific Coast for first commercial scale offshore wind projects last year with the decision to advance areas northwest of Morro Bay and off Humboldt County in California for offshore wind development.