



5 January 2024

[Tethys](#) is a knowledge hub with information and resources on the environmental effects of wind and marine energy. The bi-weekly [Tethys Blast](#) highlights announcements and upcoming events; new documents in the [Knowledge Base](#); and international energy news. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. [Email us](#) to contribute!

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Announcements

[New Tethys Story](#)

[SPAN: Scottish Passive Acoustic Network](#) by the SPAN Team

To help address remaining data gaps around the potential effects of underwater noise from offshore wind construction and operations on marine life, the Scottish Passive Acoustic Network (SPAN) project is using an extensive network of passive acoustic monitoring (PAM) stations to collect long-term data on marine mammal distribution, relative abundance, and underwater noise in data deficient areas around the coasts of Scotland. Read more in the latest Tethys Story [here](#).

[ETIPP Seeking Regional Partners](#)

The U.S. Department of Energy's (DOE) Energy Transitions Initiative Partnership Project (ETIPP) is [seeking applications from regional partners](#) around the United States to design a 12- to 18-month project that will help increase the resilience and reliability of a clean energy grid in selected communities. ETIPP offers technical assistance to remote and island communities to analyze energy systems and plan for increased resilience. Applications are due 10 January 2024.

[Wind Turbine-Radar Interference RFI](#)

The U.S. DOE's Wind Energy Technologies Office (WETO), in collaboration with the interagency Wind Turbine-Radar Interference Mitigation Working Group, recently released a

[Request for Information](#) (RFI) seeking input on challenges and opportunities relating to the co-existence of wind energy and radar. Responses are due by 12 January 2024.

InDEEP Phase 2

The U.S. DOE's Water Power Technologies Office (WPTO) is launching Phase 2 of the [Innovating Distributed Embedded Energy Prize \(InDEEP\)](#) to encourage innovation in distributed embedded energy converter (DEEC) technology to generate new, precommercial materials for wave energy conversion. Join the [Webinar on DEEC-Tec 2.0](#) on 17 January 2024, the [Webinar on Innovation Methods 2.0](#) on 24 January, and the [Webinar on TPL Assessment 2.0](#) on 31 January to learn more about InDEEP and useful tools. Submissions are due 26 April 2024.

Community Energy Innovation Prize

The U.S. DOE recently launched the [Community Energy Innovation Prize](#), a competition that will award cash prizes and mentorship opportunities to organizations supporting innovation, entrepreneurship, capacity building, and economic development in communities historically underrepresented in climate and energy technology funding. Clean Energy Ecosystem and Manufacturing Ecosystem Track applications are due on 2 February 2024.

SEAT Webinar Recording Available

The Spatial Environmental Assessment Toolkit (SEAT), developed by researchers from Sandia National Laboratories, Integral Consulting, and Montana State University, is a series of open-source tools to help stakeholders simulate site- and technology-specific environments to assess the impacts of marine energy deployments. Learn more about SEAT in the latest [WPTO R&D Deep Dive webinar recording](#).

Calls for Abstracts

American Clean Power (ACP) has opened the [Call for Proposals](#) for speaking and poster presentations at the [2024 ACP Siting & Permitting Conference](#) through 5 January 2024. The conference will take place 11-13 March 2024 in Colorado Springs, Colorado, U. S.

The [Call for Abstracts](#) for [European Geophysical Union \(EGU24\)](#) closes on 10 January 2024. EGU24 will take place on 14-19 April 2024 in Vienna, Austria and online.

The [2024 State of the Science Workshop on Offshore Wind Energy, Wildlife, and Fisheries](#) is now accepting [proposals for symposia and side meetings](#) and [abstracts for oral and poster presentations](#) through 26 January 2024. The workshop will take place 16-19 July 2024 in Long Island, New York, U.S.

RenewableUK has opened the [Call for Papers](#) for [Global Offshore Wind 2024 \(GOW24\)](#) until 26 January 2024. GOW24 will take place on 18-19 June 2024 in Manchester, England.

Funding & Testing Opportunities

The U.S. DOE recently announced up to \$10 million in funding for the [Inspiring Generations of New Innovators to Impact Technologies in Energy 2024 \(IGNIITE 2024\)](#) program, led by the Advanced Research Projects Agency-Energy (ARPA-E). The new program will support early-career scientists and engineers seeking to develop impactful new energy technologies. Concept papers are due 5 January 2024.

The National Offshore Wind Research & Development Consortium (NOWRDC) has partnered with Innovate UK to launch its [Innovations in Offshore Wind – Solicitation 3.0](#), which includes a challenge area on technologies that reduce offshore wind development’s impacts on the marine biosphere. Proposals must contain both a US-led and UK-led scope and are due 10 January 2024.

The Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the U.S. DOE and directed by the Pacific Ocean Energy Trust (POET), is accepting [Request for Technical Support \(RFTS\) 12](#) applications through 1 March 2024 to support marine energy testing and development projects. Open Water Support applications can be submitted any time.

Career Opportunities

IFREMER, the French Institute for Ocean Science, has launched a call for proposals for [post-doctoral fellowships](#) focused on wave energy conversion, wave tanks, and hydrodynamics of floating structures. Applications are due 8 January 2024.

Pembrokeshire Coastal Forum is hiring a [Floating Offshore Wind \(FLOW\) Project Manager](#) and [Marine Energy Test Area \(META\) Commercial Manager](#). Applications are due 8 January 2024.

The Coastal Studies Institute (East Carolina University Outer Banks campus) is seeking a [Program Manager](#) for a portfolio of projects related to marine energy device and component testing at the Jennette’s Pier Wave Energy Test Center. Applications are due 15 January 2024.

The Environmental Research Institute (ERI) is recruiting for a [Research Fellow in Renewable Energy and the Environment](#) to join its multi-disciplinary group working to advance understanding of the biophysical interactions of marine and offshore renewable energy with the environment. Applications are due 18 January 2024.

Upcoming Events

Upcoming Webinars

The International Energy Agency’s Wind Task 34 ([WREN](#)) is hosting its 23rd webinar and first webinar in Spanish, “[Wind Energy and Wildlife: Perspectives from Latin America](#)”, on 10 January 2023 from 11:00am-12:00pm PST (7:00-8:00pm UTC). The webinar will feature speakers from Argentina, Chile, and Mexico. View the Spanish flyer [here](#) and register [here](#).

The TEAMER program is hosting a “[Technology Performance Level \(TPL\) Assessment Webinar](#)” on 16 January 2024 from 1:00-2:00pm PST (9:00-10:00pm UTC). The webinar will outline the TPL tool and the service options to be provided within the TEAMER program with a focus on TPL's potential to support marine energy development across multiple markets from continental grid to various Powering the Blue Economy markets. Register [here](#).

The [IMPACT](#) and [VALID](#) projects are jointly hosting a webinar, “[Harnessing Ocean Power: Progressing with Wave Energy Converter Technology through Rig Testing](#)”, on 31 January 2024 from 2:00-3:00pm CET (1:00-2:00pm UTC). Register [here](#).

PNNL and the National Renewable Energy Laboratory are hosting an informational [Marine Energy Career Panel](#) on 7 February 2024 from 3:00-4:30pm PST that will feature National Laboratory staff who are working to advance the marine energy industry. The webinar is aimed at current students and those interested in working in the marine energy industry. Register [here](#).

Upcoming Conferences

The [Pan American Marine Energy Conference \(PAMEC 2024\)](#) will take place on 22-24 January 2024 in Barranquilla, Colombia. Register [here](#).

The [6th Symposium of the Scottish Marine Energy Research Programme \(ScotMER\)](#) will take place 6-8 February 2024 online. ScotMER will also be hosting participatory workshops on socioeconomics and Scotland's National Marine Plan 2.

[Ocean Sciences Meeting 2024](#) will take place 18-23 February 2024 in New Orleans, Louisiana, U.S. Early bird registration is available through 10 January 2024 [here](#).

The Supergen Offshore Renewable Energy Hub is hosting its [7th Early Career Researchers Forum](#) on 23 April 2024 and [7th Seventh Annual Assembly](#) on 24 April 2024 at the University of Plymouth in Plymouth, England.

Upcoming Workshops

In addition to the PAMEC 2024 Conference Program, PAMEC in partnership with key partners, is hosting several workshops prior to the conference.

- Pacific Northwest National Laboratory is hosting an [Ocean Thermal Energy Conversion \(OTEC\) Workshop](#) on 19 January to review OTEC technologies, discuss potential environmental effects, and examine additional uses of deep cold water. Register [here](#).
 - The PRIMRE team is also hosting a workshop on [Marine Energy Data Organized – PAMEC Workshop on PRIMRE and International Data Sharing](#) on 20 January to present on the resources available within PRIMRE and discuss opportunities for international databases to connect to the system. Register [here](#).
 - Fundy Ocean Research Centre for Energy (FORCE) is also hosting a workshop on [Monitoring for Interactions Between Marine Animals and MRE Devices](#) on 20 January to present on environmental monitoring around wave and tidal devices. Register [here](#).
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New Documents on Tethys

[Tethys](#) hosts thousands of documents on the environmental effects of marine and wind (land-based and offshore) energy, including journal articles, conference papers, and reports.

Marine Energy

[Effects of small marine energy deployments on oceanographic systems](#) – Whiting et al. 2023

The placement and operation of marine energy deployments in the ocean have the potential to change flow patterns, decrease wave heights, and/or remove energy from the oceanographic system. Knowledge of changes in oceanographic systems associated with marine energy is primarily available from numerical modeling studies, informed by some laboratory tests and very few field measurements. A literature review was conducted using the Tethys knowledge base and other online sources, building on conclusions from the Ocean Energy Systems-Environmental State of the Science report. Potential changes in oceanographic systems that may be caused by marine energy differ between tidal and wave devices because of different extraction mechanisms and siting locations.

[Key Biofouling Organisms in Tidal Habitats Targeted by the Offshore Renewable Energy Sector in the North Atlantic Include the Massive Barnacle *Chirona hameri*](#) – Want et al. 2023

Marine habitats are being targeted for the extraction of offshore renewable energy (ORE) as part of the drive to decarbonise electricity generation. Unmanaged biofouling impacts ORE devices and infrastructure by elevating drag forces, increasing weight, and accelerating corrosion, leading to decreased performance and survivability, and extending costly periods of maintenance. ORE deployments in high tidal flow locations are providing opportunities to study the biofouling unique to these habitats. In this study, surveys of numerous devices and associated infrastructure deployed at the European Marine Energy Centre in Scotland identified high tidal flow fouling assemblages. Substrate orientation relative to tidal flow appears to affect the abundance of key fouling species, including the massive barnacle *Chirona hameri*.

[Engaging the Regulatory Community to Aid Environmental Consenting/Permitting Processes for Marine Renewable Energy](#) – Rose et al. 2023

Regulators involved in consenting/permitting marine renewable energy (MRE) have faced multiple challenges due to relatively new, unfamiliar technologies and uncertainty surrounding potential environmental impacts. This has resulted in slow progress for the MRE industry, including long consenting timeframes and extensive and expensive monitoring requirements, which increase financial risk for investors. OES-Environmental has surveyed regulators internationally to understand their key knowledge gaps and perspectives to support the development of the MRE industry. From the results of these surveys a data transferability process and a risk retirement pathway have been developed to assess consenting and monitoring requirements in proportion to risk.

Wind Energy

[A paradigm for understanding whole ecosystem effects of offshore wind farms in shelf seas](#) – Isaksson et al. 2023

With the rapid expansion of offshore windfarms (OWFs) globally, there is an urgent need to assess and predict effects on marine species, habitats, and ecosystem functioning. Doing so at shelf-wide scale while simultaneously accounting for the concurrent influence of climate change will require dynamic, multitrophic, multiscale, ecosystem-centric approaches. However, as such studies and the study system itself (shelf seas) are complex, we propose to structure future environmental research according to the investigative cycle framework. This will allow the formulation and testing of specific hypotheses built on ecological theory, thereby streamlining the process, and allowing adaptability in the face of technological advancements (e.g. floating offshore wind) and shifting socio-economic and political climates.

[Bidirectional movements of Nathusius' pipistrelle bats \(*Pipistrellus nathusii*\) during autumn at a major migration corridor](#) – Voigt et al. 2023

Migration is well documented for many species throughout the animal kingdom. Although migration is also a common behaviour in bats, it is rarely studied due to the cryptic nature of the phenomenon. Recoveries of banded individuals have shown that Nathusius' pipistrelles (*Pipistrellus nathusii*) can fly more than 2000 km between their summer and winter ranges in Europe, but further details of how and where they move between the endpoints of their seasonal journeys remain elusive. Here, we used three-dimensional acoustic tracking at a coastal migration corridor to elucidate the flight behaviour of Nathusius' pipistrelles during late summer. We argue that it is possible for Nathusius' pipistrelles to fly back and forth (south and north) during autumn migration, spending more time on this migration corridor than required for a straight one-way flight.

[Study on the Impact of Offshore Wind Farms on Surrounding Water Environment in the Yangtze Estuary Based on Remote Sensing](#) – Cai et al. 2023

Offshore wind farms (OWFs), built extensively in recent years, induce changes in the surrounding water environment. The changes in the suspended sediment concentration (SSC) and chlorophyll-a concentration (Chl-aC) induced by an OWF in the Yangtze River Estuary were analyzed based on Chinese Gaofen (GF) satellite data. The results show the following: (1) The flow near the wind turbines makes the bottom water surge, driving the sediment to “re-suspend” and be lost, deepening the scour pit around the bottom of the wind turbines, which is known as “self-digging”. The interaction between the pillar of a wind turbine and tidal currents makes hydrodynamic factors more complicated. Blocking by wind turbines promoting the scour of the bottom seabed of the OWF results in speeding up the circulation rate of sediment loss and “re-suspension”, which contributes to the change in the SSC and Chl-aC.

News & Press Releases

Marine Energy

[Eco Wave Power Commences Sending of Clean Electricity to the Israeli National Electrical Grid – Eco Wave Power](#)

Eco Wave Power Global AB, a leading, publicly traded onshore wave energy company, recently announced that it has commenced sending of clean electricity from its EWP-EDF One project in the Port of Jaffa, to the Israeli National Electrical grid. Eco Wave Power has recently finalized the construction of the EWP-EDF One project in the Port of Jaffa, in Israel. The EWP-EDF One Project was co-funded by EDF Renewable IL, who owns 50% of the project, and by the Israeli Ministry of Energy, which recognized the Eco Wave Power technology as a Pioneering technology. The project has 100KW installed capacity and is comprised of 10 floaters. In August 2023, the power station was officially connected to the Israeli national electrical grid, marking the first time in the history of Israel, that electricity produced by the power of the waves is sent to the national grid.

[European Wave Energy Project Gets \\$4.4M Funding Boost – Marine Technology News](#)

European Union's Horizon program has approved a \$4.4 million grant for SHY project, which will develop a new power take-off (PTO) system with advanced control strategy, aimed at reducing the cost of wave energy. SHY project, short for Seawater Hydraulic PTO using dynamic passive controller for wave energy converters, is a collaborative project whose aim is to develop key components of a seawater hydraulic PTO system, coupled with an advanced control strategy. The dual focus aims to reduce the levelized cost of energy (LCOE) while minimizing the environmental impact at the same time. The SHY project consortium comprises nine organizations across seven European countries, strategically chosen for their world-leading capabilities and knowledge.

[Leask Marine drills a 'first' for tidal developer – Offshore Energy](#)

Leask Marine has installed the first offshore grouted pile with its Raptor Submersible Drilling Rig (SDR) technology in the Faroe Islands, for a Swedish tidal developer. This marks the final commercialization phase of the Raptor SDR, from concept, design, manufacturing, and full testing program complete with third-party verification, Leask Marine said. The Raptor SDR has now installed a subsea anchor with a diameter of over 980mm weighing 12 tonnes, at a water depth of more than 80 meters in basalt rock. The unit includes hydraulic stabilizers and its independent leveling systems, once reaching the seabed, allowing the Raptor SDR to install anchors in a single deployment in tidal currents up to 6 knots, Leask Marine said.

[Tidal Energy Turbine Comes Ashore in Japan – Marine Technology News](#)

The AR500 tidal turbine has successfully completed Phase 1 of the Goto Islands pilot project and was recovered from the Naru Strait by Proteus Marine Renewables. The

500kW-rated turbine was recovered in December 2023. The first phase of the Goto Islands pilot concluded 12-months of generation with an impressive 97% availability, according to Proteus Marine Renewables. Proteus Marine Renewables was created in 2022 when SIMEC Atlantis Energy agreed to sell its majority stake in Advanced Tidal Engineering and Services division (ATES), which resulted in the creation of a new tidal energy company. Building upon the success of the pilot project, the turbine is now ready to be locally upgraded and redeployed in the first quarter of 2025.

[WECHULL+ project to develop novel floating structures based on high-performance concrete and Ocean Harvesting's buoy design](#) – Ocean Harvesting

The WECHULL+ project, co-ordinated by RISE Research Institutes of Sweden, has received a 2.5 MEUR grant from the EU Clean Energy Transition Partnership (CETP) program. The project will develop and test new floating structures of high-performance concrete, reducing cost and CO2 footprint, as well as improving circularity and reliability, in the offshore renewable energy sector. It is a 3-year project, starting in December 2023, implemented by a consortium of research organizations and companies from five European countries (RISE, Delft University of Technology, Carnegie Clean Energy, Ocean Harvesting Technologies, Gdansk University of Technology, SolarDuck, PLOCAN and Pekabex).

Wind Energy

[Avangrid, CIP Announce First Power from Nation-Leading Vineyard Wind 1 Project](#) – Vineyard Wind

Avangrid, Inc., a leading sustainable energy company and member of the Iberdrola Group, and Copenhagen Infrastructure Partners (CIP), a global leader in greenfield renewable energy investments, recently announced that power from the Vineyard Wind project was delivered to the New England grid for the first time. As part of the initial commissioning process, at 11:52PM on Tuesday, January 2, 2024, one turbine delivered approximately five megawatts of power, with additional testing expected to happen both on and offshore in the coming weeks. The project expects to have five turbines operating at full capacity early in 2024. Once completed, the project will consist of 62 wind turbines generating 806 Megawatts, enough to power more than 400,000 homes and businesses in Massachusetts.

[EU Governments commit to take urgent actions outlined in the Wind Power Package](#) – Wind Europe

In October the European Commission published the Wind Power Package: 15 immediate actions to strengthen the competitiveness of Europe's wind value chain. The European Commission and European Investment Bank are delivering on their bits of the package already. But the bulk of the actions fall to National Governments. So, the Energy Ministers of 26 EU Member States recently endorsed the European Wind Charter, formally committing their countries to deliver on the actions ascribed to them under the

Wind Power Package. This broad support shows that Governments have understood the strategic value of wind energy being “made in Europe” and the urgent need to strengthen Europe’s wind industry. The EU continues to move decisively in implementing the EU Wind Power Package.

BOEM Announces Environmental Review of Future Development of California Offshore Wind Leases – BOEM

Supporting the Biden-Harris administration’s goal of deploying 30 gigawatts (GW) of offshore wind energy capacity by 2030 and 15 GW of floating offshore wind energy capacity by 2035, the Bureau of Ocean Energy Management (BOEM) recently announced it will conduct a regional environmental review of potential development activities on the five offshore wind lease areas off California’s central and north coasts. The PEIS will describe the potential impacts of federal offshore wind energy development activities off the coast of California, as well as the change in those impacts that could result from adopting programmatic mitigation measures. BOEM will conduct subsequent site-specific NEPA analyses and consultations for individual proposed wind energy projects as construction and operations plans for those projects are received.

First Day 2024: World's largest ultra-high-altitude wind farm starts operation in China – CGTN

The world's largest ultra-high-altitude wind power generation project, built at an altitude of 4,650 meters, started operation in Nagqu Town, Seni District of Nagqu City, southwest China's Xizang Autonomous Region on Monday, the first day of 2024. For wind projects, a plant built at an altitude of 3,500 to 5,500 meters is considered ultra-high, according to the China Energy Investment Corporation (China Energy), the project's developer. With a capacity of 100 megawatts (MW), the wind farm is designed to provide 200 million kilowatt-hours (kWh) of annual electric power to 230,000 residents living in Nagqu City. The project has 25 wind turbines, covering an area of over 140,000 square meters.

Aker Solutions to pilot floating-wind power hub – Aker Solutions

Aker Solutions has signed a front-end engineering and design (FEED) contract with the Marine Energy Test Centre (METCentre) in Norway to pilot new subsea power system technology which has the potential to significantly reduce the costs and complexity of offshore wind farms. The project will see Aker Solutions provide new power transmission technology, Subsea Collector, for the METCentre’s offshore wind test area which today consists of two floating offshore wind turbines located 10 kilometers off the southwestern coast of Karmøy, Norway. The test area will expand to seven floating offshore wind turbines from 2026. Subsea Collector provides an alternative solution to connect multiple wind turbines electrically in a star configuration instead of the traditional daisy chain pattern, allowing for more flexibility in offshore wind farm architecture and construction.