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[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

[Marine Energy Graduate Student Research Program](#)

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) and the Oak Ridge Institute for Science and Education (ORISE) recently opened applications for the [2024 Marine Energy Graduate Student Research Program](#), which supports graduate students working on marine energy by providing access to expertise, resources, and capabilities available at DOE offices, national laboratories, government and industry partners, and other approved facilities. Applications are due 1 December 2023.

[ECOWind Brief](#)

The National Renewable Energy Laboratory's (NREL) Enabling Coexistence Options for Wind Energy and Wildlife ([ECO Wind](#)) project recently published a new [Summary on Grouse and Land-Based Wind Energy Development in the United States](#) on Tethys.

[RWSC Science Plan](#)

The Regional Wildlife Science Collaborative for Offshore Wind (RWSC) has released the [Draft Integrated Science Plan for Wildlife, Habitat, and Offshore Wind Energy in U.S. Atlantic Waters](#) for review and comment. The Plan describes recommendations for data collection, research, and coordination compiled by expert subcommittees. Comments are due 30 September 2023.

Calls for Abstracts

The [Call for Abstracts](#) for [OCEANS 2024 Singapore](#) are now open through 15 October 2023. OCEANS will take place in 14-18 April 2024 in Singapore.

The [Call for Abstracts](#) for the [43rd International Conference on Ocean, Offshore & Arctic Engineering \(OMAE 2024\)](#) is now open through 26 October 2023. OMAE 2024 will take place 9-14 June 2024 in Singapore.

Funding & Testing Opportunities

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program is now accepting [Request for Technical Support 11 applications](#) until 3 November 2023. Applicants can apply to work with approved facilities on tank and flume testing, lab/bench testing, numerical modeling and analysis, and open water support.

The U.S. DOE is now accepting applications for the [Renewable Energy Siting through Technical Engagement and Planning \(R-STEP\)](#) program, which seeks to expand the decision-making capacity and expertise of state and local governments around large-scale renewable energy planning, siting, and permitting. Applications are due 3 November 2023.

Career Opportunities

Pacific Northwest National Laboratory (PNNL) is seeking a [Post Doc Research Associate - Coastal Ocean Modeling](#) to conduct coastal modeling research related to: 1) wave and/or tidal modeling for energy resource characterization using unstructured-grid models; 2) modeling of wave-current interaction; and 3) multi-scale modeling and analysis of coastal processes under further climate. Applications are due 1 October 2023.

Natural Resources Wales is recruiting for several roles in a range of specialties to support the development of offshore renewable energy in Wales:

- [Marine Renewable Energy Programme Manager](#) (closes 3 October 2023)
- [Marine Regulatory and Policy Approach Team Leader](#) (closes 4 October 2023)
- [Marine Regulatory Policy and Approach Lead Specialists](#) (closes 4 October 2023)
- [Process Analysis and Fees Review Lead Specialist Advisor](#) (closes 4 October 2023)
- [Renewable Energy Team Leader](#) (closes 8 October 2023)
- [Senior Marine Advisors](#) (closes 8 October 2023)
- [Marine Ornithology Specialist Advisor](#) (closes 11 October 2023)
- [Marine Mammals Specialist Advisor](#) (closes 11 October 2023)
- [Marine Ecology Specialist Advisor](#) (closes 11 October 2023)
- [Marine and Estuarine Fish Specialist Advisor](#) (closes 11 October 2023)

The European Marine Energy Centre (EMEC) is looking for an experienced [Operations and Maintenance Manager](#) to ensure assets are fit for purpose and that day-to-day operations are planned and executed safely and in accordance with requirements of EMEC's Integrated Management System and policies. Applications are due 4 October 2023.

The University of Massachusetts Amherst is inviting applications for multiple tenure-track [Assistant Professors - Mechanical and Industrial Engineering](#) with expertise in fluid dynamics, ocean engineering, heat transfer, or thermodynamics, especially with application to sustainable and renewable energy. Applications are due 15 October 2023.

The University of Hull is seeking a [Senior Lecturer in Offshore Wind / Renewable Energy](#) with expertise in either environmental impacts, environmental economics or carbon management. Applications are due 20 October 2023.

NREL is seeking a [Postdoctoral Researcher](#) to support projects evaluating and characterizing wave energy measurement technologies, developing wave measurement calibration methods, and researching methods to improve wave measurements. Applications are due 20 October 2023.

Biodiversity Research Institute (BRI) is seeking a [Quantitative Ecology Research Associate](#) to conduct marine ecology research and risk assessment focusing on offshore wind and wildlife, including establishing benthic food web models.

Oregon Sea Grant is hiring for several positions, including an [Extension Specialist in Marine Energy and Communities](#) who will develop and deliver inclusive community engagement programs on marine energy with a focus on offshore wind energy.

Upcoming Events

Upcoming Webinars

NREL and the Renewable Energy Wildlife Institute (REWI) are hosting a webinar series on [Compensatory Mitigation for Land-Based Wind Energy](#). The second webinar, “Compensatory Mitigation: Funding Mechanisms”, will take place on 2 October 2023 from 4:00-5:00pm EDT (8:00-9:00pm UTC). This webinar will introduce two of the more common methods for instituting compensatory mitigation: mitigation banks and in lieu fee programs. Register [here](#).

The Tethys team is hosting a webinar, “[Introducing Offshore Wind Environmental Metadata on Tethys](#)”, on 10 October 2023 from 8:00-8:30am PDT (3:00-3:30pm UTC). The webinar will include a live demonstration of the new tool, which features information on the environmental effects of offshore wind energy projects around the world, and detail how offshore wind project developers can contribute. Register [here](#).

Upcoming Conferences

The University Marine Energy Research Community (UMERC) is hosting the [2nd Annual UMERC Conference](#) on 4-6 October 2023 in Durham, New Hampshire, U.S. Register [here](#).

The National Offshore Wind Research and Development Consortium (NOWRDC) is hosting the [4th Annual NOWRDC Symposium](#) on 4-5 December 2023 in Brooklyn, New York, U.S. and online. Register [here](#).

WavEC Offshore Renewables, in collaboration with the Netherlands Embassy, is hosting the [2023 WavEc Seminar](#) on 6 December 2023 in Lisbon, Portugal. Register for free [here](#).

Upcoming Workshops

PNNL and the Atlantic Marine Energy Center (AMEC) are hosting a stakeholder workshop on environmental effects of marine energy on [7 October 2023 from 12-4 EDT](#) following [UMERC](#). The workshop will discuss the effects of tidal energy on the marine environment. Anyone is welcome to attend, but online registration is encouraged. Register [here](#).

The Argentine Network of Marine Energies, in collaboration with the Center for Ocean Energy Research (COER), Maynooth University, Ireland, and the Marine Offshore Renewable Energy Lab are hosting the [8th Wave Energy Workshop](#) in conjunction with the 2023 Argentine Meeting on Marine Energies (ENAEM 2023) on 6-8 November 2023 in Buenos Aires, Argentina.

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

[Life Cycle Assessment of a wave energy device – LiftWEC – Bastos et al. 2023](#)

The LiftWEC device couples with the waves through lift forces generated by two hydrofoils that rotate in a single direction aligned orthogonally to the direction of wave propagation. To fully evaluate the overall advantages of this new technology, it is necessary to go beyond the techno-economic performance and reliability. While capable of producing electricity from clean sources, Marine Renewable Energy (MRE) devices are not entirely environmentally friendly, since energy is consumed and pollutants are emitted during their various life cycle stages. Accordingly, as the MRE sector expands, it is important to ensure that the technologies prove to be sustainable alternatives in terms of their environmental impact.

[Validating a Tethered Balloon System and Optical Technologies for Marine Wildlife Detection and Tracking – Amerson et al. 2023](#)

The interactions between marine wildlife and marine energy devices are not well understood, leading to regulatory delays for device deployments and testing. Technologies that enable marine wildlife observations can help to fill data gaps and reduce uncertainties about animal–device interactions. A validation test conducted in Galveston Bay near La Porte, Texas, in December 2022 used a technology package consisting of a tethered balloon system and three independent sensor systems, including three-band visible, eight-band multispectral, and single-band thermal to detect three marine-mammal-shaped surrogates. The field campaign aimed to provide an initial step

to evaluating the use of the TBS and the effectiveness of the sensor suite for marine wildlife observations and detection.

[A Comparison of the European Regulatory Framework for the deployment of Offshore Renewable Energy Project](#) – Moscoloni et al. 2023

The REPower EU Plan has set a minimum of total renewable energy generation capacity of 1,236 GW by 2030. Achieving this target, and emission reductions by 2050, will require the extensive deployment of offshore energy facilities, especially offshore wind (OW) and wave energy converters (WECs). However, an incomplete and sometimes unfavourable regulatory framework still jeopardises the feasibility of both prototypes and large-scale installations. There are, for example, significant differences between the permitting procedures in different Member States and regions. Moreover, following the transposition of the Directive 2014/89/EU “establishing a framework for maritime spatial planning”, important differences pertain to the way environmental and heritage protection is dealt with.

Wind Energy

[Remotely sensed evidence of the divergent climate impacts of wind farms on croplands and grasslands](#) – Liu et al. 2023

To mitigate climate change, the utilization of wind energy has rapidly expanded over the last two decades. However, when producing clean electricity, wind farms (WFs) may in turn alter the local climate by interfering in land surface-atmosphere interactions. Currently, China and the United States have the highest wind energy capacities globally. Thus, quantitatively analyzing the impacts of WFs on land surface temperature (LST) between the two countries is valuable to deeply understand the climate impact of WF. In this study, we use the moderate-resolution imaging spectroradiometer (MODIS) time series from 2001 to 2018 to reveal the impacts of 186 WFs (76 in China and 110 in the US) on local LSTs. The remote sensing observations reveal that WFs generally lead to warming impacts in both countries, with stronger effects in the US compared to China.

[Integration criteria of offshore wind farms in the landscape: Viewpoints of local inhabitants](#) – Gkeka-Serpetsidaki & Tsoutsos 2023

The offshore wind energy sector will flourish in the next few decades to meet global climate change commitments and energy demand. All EU Member States are required to develop marine spatial planning in order to facilitate the transition to a green economy. Even though these proposed offshore wind farms are essential for the energy transition, the visual impact of their implementation could serve as an obstacle to their deployment. A methodological framework is proposed to assess the visual impact of offshore wind farms. The current paper quantifies their visual impact, compares the results with nearby citizens' opinions, and proposes a realistic approach. Personal interviews took place in August to meet as many people as possible since these villages are primarily touristic.

[Disentangling mechanisms responsible for wind energy effects on European bats](#) – Leroux et al. 2023

Mitigating anthropogenic climate change involves deployments of renewable energy worldwide, including wind energy, which can cause significant impacts on flying animals. Bats have highly contrasted responses to wind turbines (WT), either through attraction increasing collision risks, or avoidance leading to habitat losses. However, the underlying mechanisms remain largely unknown despite the expected rapid evolution of WT size and densities. Here, using an extensive acoustic sampling (i.e. 361 sites-nights) up to 1483 m from WT at regional scale, we disentangle the effects of WT size (ground clearance and rotor diameter), configuration (density and distance), and operation (blade rotation speed and wake effect) on hedgerow use by 8 bat species/groups and one vertical community distribution index.

News & Press Releases

Marine Energy

[Final quayside assembly of tidal energy kite Dragon 12 initiated in Uddevalla, Sweden](#) – Minesto

Minesto, leading ocean energy developer, has completed the manufacturing of the Dragon 12 wing and started system integration at quayside in Uddevalla port, Sweden. The quayside completion of the kite enables an efficient shipment directly to Minesto's tidal energy production site in Vestmannastrandir, Faroe Islands. The wing, spanning 12 metres, is a key component in the Dragon 12 system to which all other modules connect. All subsystems, including the 1.2 MW power take off, steering pods, and control system are being prepared for integration. The manufacturer of the wing is Swedish composite specialist Elitkomposit.

[+CityxChange Demonstration in Limerick City](#) – GKinetic

As part of GKinetic's ongoing work in the +CityxChange project, the company showcased one of their 12kW riverine turbine units in the heart of Limerick city from the 19th – 21st of September 2023. The aim of the demonstration was to allow people to see the unit in real-life and share their thoughts and feedback. When running at full capacity, the 12kW unit that was on display can output enough power to meet the full electrical needs of 17 Irish homes. In remote communities where energy usage is lower, one turbine can power an entire village of 80-90 homes. This highly innovative demonstration was part of an EU funded smart cities project called '+CityxChange' which is led by two Lighthouse Cities; Limerick (Ireland) and Trondheim (Norway). There are also 5 'Follower Cities' involved, including: Alba Iulia (RO), Pisek (CZ), Võru (EE), Smolyan (BG) and Sestao (ES).

Six Small Businesses Receive Funding for Marine Energy Research and Development – U.S. DOE

The U.S. (DOE recently announced nearly \$6.8 million for six small business-led marine energy projects as part of Phase II of the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) program. DOE's WPTO selected these projects, which can drive innovation in marine energy and help achieve the country's clean energy goals. Marine energy refers to power harnessed from waves, tides, ocean and river currents, and even from differences in ocean salt levels, temperatures, and pressure. These resources are abundant, geographically diverse, and complementary to other renewable energy sources.

China achieves breakthrough in first floating ocean thermal energy power generation – Global Times

China's first floating ocean thermal energy conversion device for generating electricity has successfully completed offshore testing, marking the first time the country has achieved theoretical validation and engineering operation of the project under actual marine conditions, according to chief developer of the project, the Guangzhou Marine Geological Survey (GMGS). The 20-kilowatt device was carried by the Haiyang Dizhi 2 (Ocean Geology 2) ship, which successfully completed an offshore trial in the South China Sea and returned to Guangzhou, capital of South China's Guangdong Province, said the project developer. In August, the device conducted its first offshore trial in the waters of the South China Sea at a depth of 1,900 meters.

Meet the Developers Behind Wales' Newest Tidal Stream Projects – Marine Energy Wales

The latest results of the UK Government's renewable auction, the Contracts for Difference scheme, was described as 'catastrophic' for the offshore wind sector. But tidal stream energy in the UK was awarded a huge boost, with 11 companies successfully gaining contracts. The auction awards a 15-year contract to the projects that bid the lowest price for the clean electricity they go on to generate. At an agreed strike price of £198/MWh, the developers behind these projects can now move forward with confidence. In Wales, more than 22MW of tidal stream capacity was contracted, spread across four different developers, all of which are members of Marine Energy Wales. As a team we are delighted with the outcome for these projects and are looking forward to working with them closely and supporting them over the months and years ahead.

Wind Energy

DOE Wind Energy Technologies Office Selects 15 Projects Totaling \$27 Million to Address Key Deployment Challenges for Offshore, Land-Based, and Distributed Wind – U.S. DOE

In December 2022, the U.S. Department of Energy's (DOE) Wind Energy Technologies Office (WETO) released a funding opportunity to lower costs and address barriers to deployment of wind energy in all its applications—offshore, land-based, and distributed.

This opportunity, funded through President Biden’s Bipartisan Infrastructure Law, will support research to improve offshore wind transmission technologies, reduce barriers for distributed wind deployment by communities, better understand the impacts of offshore wind development on affected communities and reduce impacts to wildlife. In September 2023, WETO selected 15 projects for negotiation for award under this funding opportunity, ranging between \$500,000 and \$4,500,000.

Floating Wind: The DemoSATH project starts supplying energy to the Spanish grid – RWE

The floating offshore wind project DemoSATH, led by the Spanish engineering firm Saitec Offshore Technologies, in collaboration with the German energy company RWE and the Japanese company Kansai Electric Power (KEPCO), achieves a significant milestone as it commences electricity generation. In August DemoSATH was installed offshore at the BiMEP testing area at Armintza in the Basque Country. Subsequently, the connection of the existing static seabed cable to the motion-absorbing dynamic cable, and the link to the platform's bow turret was successfully completed. This achievement enables the transmission of the generated electricity into the electrical grid through the BiMEP substation, converting the force of the wind into clean renewable energy.

BOEM Completes Environmental Review of Proposed Wind Project Offshore Virginia – BOEM

In support of the Biden-Harris administration’s goal of deploying 30 gigawatts of offshore wind energy capacity by 2030, the Bureau of Ocean Energy Management (BOEM) has completed its environmental review of the proposed Coastal Virginia Offshore Wind (CVOW) commercial project, which BOEM estimates could power about 1 million homes with clean, renewable energy if approved. The CVOW project, located approximately 23.5 nautical miles offshore Virginia Beach, Virginia, would provide up to 3,000 megawatts of clean, reliable offshore wind energy. A Notice of Availability for the final Environmental Impact Statement (EIS) for Dominion Energy’s proposed project will publish in the Federal Register on September 29, 2023.

The Crown Estate partners with Microsoft UK to build Minecraft Education worlds to educate and inspire the next generation of environmentalists and conservationists – The Crown Estate

Students across the UK will have the opportunity to test their green skills and learn more about the challenges of planning offshore wind farms and protecting the marine environment in a new Minecraft Education world, ‘Offshore Wind Power Challenge’. They will also learn about conservation and ecology through a second world based on the iconic Windsor Great Park. The worlds are part of a sustainability education initiative being launched by The Crown Estate and Microsoft aimed at inspiring and engaging primary and senior school students to grow their knowledge and skills around climate change and the natural environment, and to consider careers in areas such as engineering, sustainability and conservation.

Fourth Phase Could Bring 2 GW More to World's Already Largest Offshore Wind Farm Under Construction – Offshore Wind

Dogger Bank D, the potential fourth phase of the Dogger Bank Wind Farm, whose first three phases totalling 3.6 GW are currently being built, is planned to have a generation capacity of around 2 GW. If built, the fourth phase would bring the total installed capacity of the UK project – already the world's largest offshore wind farm under construction – to over 5.5 GW. SSE Renewables and Equinor, which own the Dogger Bank A, B and C offshore wind farms through a consortium that also comprises Vårgrønn, have now launched a public consultation period on the Dogger Bank D proposals that runs until 7 November. The consultation will provide the opportunity for the community to find out more about the project, ask questions, and share feedback that will help refine plans for the project and guide further development of the proposals.