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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!

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

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

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

Announcements

New OES-Environmental Guidance Documents

OES-Environmental has created a series of [Guidance Documents for Risk Retirement](#) that can be used to evaluate environmental effects of marine energy and apply current understanding within consenting processes. Two new stressor-specific documents, focused on [Collision Risk](#) and [Entanglement](#), were recently published. Visit Tethys to learn more about [Risk Retirement](#) and view all country- and stressor-specific documents.

New WREN Short Science Summary

Working Together to Resolve Environmental Effects of Wind Energy ([WREN](#)) recently published a new [Short Science Summary: The Mitigation Hierarchy](#) on Tethys. The mitigation hierarchy is a widely used framework that includes avoidance, minimization, and compensation.

Request for Information

Pacific Northwest National Laboratory is requesting information from developers, owners, and/or manufacturers of wave energy converters (WECs) capable of deployment and operation of their WEC to power offshore aquaculture operations. The [Request for Information](#) is open through 11 August 2023.

BOEM Seeking Comments

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking public comments on the [draft Environmental Impact Statement](#) for two wind energy projects offshore New Jersey, the Atlantic Shores Offshore Wind Project 1 and Project 2, until 3 July 2023.

WCOA Request for Proposals

The West Coast Ocean Alliance (WCOA) has released two Requests for Proposals to provide support for the [WCOA Tribal Caucus Summit](#) and [WCOA Annual Summit](#) in October 2023. Proposals are due 14 July 2023.

Calls for Abstracts

The [Call for Extended Abstracts](#) for the [Pan American Marine Energy Conference \(PAMEC 2024\)](#) is now open through 26 June 2023. PAMEC 2024 will take place on 22-24 January 2024 in Barranquilla, Columbia.

The [Call for Short Abstracts](#) for the [3rd International Congress on Marine Energy CEMIE-Océano](#) is now open through 30 June 2023. Extended abstracts will be due by 18 August 2023. The conference will take place 5-7 September 2023 in Puerto Morelos, Mexico.

The [Call for Abstracts](#) for the International Conference on Oceanography and 19th French-Japanese Symposium of Oceanography ([COAST CAEN](#)) is open through 7 July 2023. The event will take place on 24-27 October 2023 in Caen, France.

The [Call for Abstracts](#) for the Argentine Meeting on Marine Energies (ENAEM) and 8th Center for Ocean Energy Research (COER) Wave Energy Workshop is now open through 13 August 2023. [ENAEM-COER 2023](#) will take place on 6-8 November 2023 in Buenos Aires, Argentina.

The [Call for Abstracts](#) for the [104th American Meteorological Society \(AMS\) Annual Meeting](#) is now open through 24 August 2023. The event will take place from 28 January to 1 February 2024 in Baltimore, Maryland, U.S.

The [Call for Abstracts](#) for [Floating Wind Solutions \(FWS\) 2024](#) is open through 1 September 2023. FWS 2024 will take place in Houston, Texas, U.S.

The [Call for Abstracts](#) for the [WindEurope Annual Event 2024](#) is now open through 8 September 2023. The event will take place 20-22 March 2023 in Bilbao, Spain.

Calls for Papers

Energies is accepting manuscript submissions for the Special Issue, “[Life Cycle Assessment \(LCA\) of Renewable Energy Technologies](#)”, through 20 July 2023.

Wind is accepting manuscript submissions for the Special Issue, “[Wind Energy Planning by considering Social, Environmental, and Economic Issues](#)”, through 31 July 2023.

The *Journal of Marine Science and Engineering* has extended the manuscript submission deadline for the Special Issue, “[Interface between Offshore Renewable Energy and the Environment](#)”, until 30 September 2023.

Funding & Testing Opportunities

The Lir-National Ocean Test Facility (Lir NOTF), in collaboration with the Sustainable Energy Authority of Ireland, has launched a [Call for Scaled Physical Testing](#) of offshore renewable energy devices, including wave, wind, and tidal. Applications are due 30 June 2023.

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the DOE’s Water Power Technologies Office (WPTO), is now accepting [Request for Technical Support \(RFTS\) 10](#) applications until 7 July 2023.

The U.S. DOE WPTO has released a [funding opportunity](#) to support projects focused on advancing the tidal and current energy industry, including a community-led development project. Concept papers are due by 13 July 2023.

California Ocean Protection Council has launched an [Offshore Wind Environmental Monitoring Guidance Request for Proposals](#) and is seeking applications to develop environmental monitoring guidance for offshore wind development in California by 31 July 2023.

Student & Employment Opportunities

Natural Power is seeking a [Principal Consultant](#) and an [Environmental Systems Engineer](#) to support the Natural Power EchoSense system. Applications are due 28 June 2023.

France Energies Marines is seeking a [Research Engineer](#) in atmospheric modelling who will be responsible for setting up projects on the theme of characterizing the wind conditions of offshore renewable energy sites. Applications are due 2 July 2023.

Pacific Northwest National Laboratory is seeking a [Coastal Modeler](#) with a strong background in coastal oceanography and estuarine hydrodynamics and modeling experience with state-of-the-art coastal ocean models. Applications are due 6 July 2023.

The Oregon Sea Grant College Program is soliciting applications for the [Oregon Sea Grant 2023-2024 Natural Resource Policy Fellowship and the new West Coast Ocean Alliance Fellowship](#) program. Applications are due 10 July 2023.

The University of Strathclyde is advertising a [PhD studentship position](#) that will contribute to the project: AI-Based Approaches for Ocean Forecast and Development of Ensemble Ocean Climate Data. Applications are due 31 August 2023.

Upcoming Events

Upcoming Webinars

The International Energy Agency's Ocean Energy Systems (IEA-OES) is hosting a webinar, "[Ocean Energy Outlook in Europe](#)", on 27 June 2023 at 11:00am UTC. During the webinar, OES speakers will provide valuable insights into the ocean energy landscape in Europe, including the latest developments, challenges, and opportunities. Register [here](#).

The Marine Alliance for Science and Technology for Scotland ([MASTS](#)) is hosting a webinar, "From the North Sea to the Strait of Gibraltar: remote sensing applications for high-resolution coastal science solutions", on 5 July 2023 from 12:00-12:30pm UTC. Register [here](#).

The U.S. Offshore Wind Synthesis of Environmental Effects Research ([SEER](#)) project is hosting a webinar, "[Recent Advances in Autonomous Environmental Monitoring Technologies to Support Offshore Wind Energy Development](#)", from 9:00-10:00am PDT (4:00-5:00pm UTC) on 6 July 2023. Register [here](#).

MASTS is also hosting a webinar, "A pilot study towards understanding the connectivity of United Kingdom and Norwegian black-legged kittiwake populations across the North Sea", on 19 July 2023 from 12:00-12:30pm UTC. Register [here](#).

The National Oceanic and Atmospheric Administration National Marine Protected Areas Center and Open Communications for the Ocean are hosting a webinar, "Developing Offshore Wind in US Waters Part 1: The Planning and Regulatory Framework", from 10:00-11:00am MDT (4:00-5:00pm UTC) on 19 July 2023. Register [here](#).

As part of its [Learning from the Experts series](#), the New York State Energy Research and Development Authority is hosting a webinar, "Environmental Data Management and Offshore Wind", from 1:00-2:00pm EDT (5:00-6:00pm UTC) on 19 July 2023. Register [here](#).

Upcoming Workshop

The U.S. WPTO is hosting a [Water-Energy Nexus Strategy Workshop](#) on 25 July 2023 from 11:00am-5:00pm EDT (3:00-9:00pm UTC) to discuss the interdependent linkage of water and energy resources. Join to learn more about WPTO's strategy development and to provide input on the objectives, questions, and directions being explored.

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

Assessment of the impact of tidal power extraction from the Eastern Scheldt storm surge barrier through the evaluation of a pilot plant – Fockert et al. 2023

Hydraulic structures can be a promising place for tidal energy extraction due to the high flow velocities, easy access to the power grid and easy access for maintenance. In 2015 a pilot plant consisting of an array of five Tocardo tidal turbines was installed in the Eastern Scheldt Storm Surge Barrier in the Netherlands. This pilot was accompanied by monitoring studies to verify that the operation of the plant had no adverse impact on the barrier and its surroundings. This paper presents the assessment of the hydraulic impact of the tidal power plant in the storm surge barrier based on an analysis of water level and current measurements, combined with numerical modeling and followed by an assessment of the environmental impact with emphasis on the effects on the intertidal areas in the estuary.

Measuring Detection Efficiency of High-Residency Acoustic Signals for Estimating Probability of Fish–Turbine Encounter in a Fast-Flowing Tidal Passage – Sanderson et al. 2023

Semidiurnal tidal currents can exceed 5 ms^{-1} in Minas Passage, Bay of Fundy, where a tidal energy demonstration area has been designated to generate electricity using marine hydrokinetic turbines. The risk of harmful fish–turbine interaction cannot be dismissed for either migratory or local fish populations. Individuals belonging to several fish populations were acoustically tagged and monitored by using acoustic receivers moored within the Minas Passage. Detection efficiency ρ is required as the first step to estimate the probability of fish–turbine encounter. Moored Innovasea HR2 receivers and high-residency (HR) tags were used to obtain detection efficiency ρ as a function of range and current speed, for near-seafloor signal paths within the tidal energy development area.

Information to support Environmental Assessment of tidal lagoon developments in Wales – Natural Resource Wales 2023

This guidance has been produced by Natural Resources Wales (NRW) to provide advice to developers about the information needed to inform environmental assessments of tidal lagoon developments in Welsh waters. The document provides an overview of the key environmental implications of tidal lagoon development in Wales. The guidance is divided into three parts. Part A provides an overview of the general issues relevant to assessments of tidal lagoons. Part B provides information to assist with the assessment of the implications of a project for environmental receptors. Part C provides guidance on the implications of tidal lagoons for other functions and uses of the marine environment that NRW advises on. The three parts of the guidance are complementary and should be read together to ensure a full understanding of assessment requirements.

Wind Energy

Diving into a just transition: How are fisheries considered during the emergence of renewable energy production in Scottish waters? – Without et al. 2023

Infrastructure at sea to accommodate a transition to renewable energy and meet global climate commitments is proliferating around the world. Although there is seemingly more space at sea than on land for these new developments, anticipated and existing conflict with existing marine users such as the fishing industry have raised concerns. Yet, countries around the world have committed to a just energy transition, which should avoid disproportionate impacts on specific communities. This study introduces a framework that considers three dimensions of justice at different project planning stages to analyse whether strategies to foster justice for fisheries align with remaining barriers to justice. It was used to understand how existing and planned cable and renewables projects in Scottish waters account for energy justice in relation to the fishing industry.

Wind farm noise and anuran diversity patterns: a case study in Brazilian seasonal dry tropical forest – de Oliveira et al. 2023

Noise pollution contributes to the global biodiversity crisis, however the consequences of this pollution on anuran diversity patterns are poorly understood. This is especially true of less evident sources of noise like wind farms and highly exploited areas, as in the Brazilian semi-arid region. Here, we evaluated the influence of wind farm noise on anuran assemblages' diversity at the Caatinga, a seasonal dry tropical forest in Brazil. We tested the hypothesis that wind farm noise negatively affects the diversity of anuran assemblages in terms of abundance, species richness and composition. Anurans were sampled in 19 temporary ponds along a noise gradient in two wind farms over a rainy season (March to August).

Life cycle assessment of a floating offshore wind farm in Italy – Brussa et al. 2023

Offshore wind energy can provide access to additional wind resources, also overcoming some issues related to onshore wind deployments such as land-use competition and social acceptability. The Life Cycle Assessment (LCA) methodology can be used to gain insight into the environmental performances of different technologies, e.g. renewable energy generation technologies, along the lifecycle stages and across a number of impact categories. This paper reports the cradle-to-grave LCA of a floating offshore wind farm, consisting of 190 wind turbines with 14.7 MW rated power, intended to be deployed in the Mediterranean Sea. The employed technology is represented by the IEA 15 MW reference wind turbine supported by the reference semi-submersible platform.

News & Press Releases

Marine Energy

Wildlife monitoring buoy hits water in Morlais tidal energy zone – Offshore Energy

A wildlife monitoring buoy has been deployed in the sea off the coast of Holyhead, marking a significant milestone for tidal energy in Wales, as the data gathered will

inform future turbine installations at the Morlais tidal energy site as well as similar projects worldwide. Part of the Marine Characterisation Research Project (MCRP), led by Anglesey social enterprise Menter Môn, the aim is help ensure marine wildlife is safeguarded as turbines are deployed in the sea off the coast of Holy Island in north Wales. The buoy travelled to Holyhead from Orkney and is equipped with data collection technology, including surface and underwater infrared and red-green-blue cameras. The craft is powered by solar and wind energy.

California Senate passes wave, tidal bill – reNEWS

California State Senate has unanimously passed a wave and tidal energy bill. California Senate Bill 605 – Wave and Tidal Energy (SB 605) was unanimously approved in three separate policy committees: the Energy, Utilities and Communications Committee; the Natural Resources and Water Committee; and the Appropriations Committee. The legislative initiative directs the California Energy Commission to work with the relevant California state agencies to study the feasibility and potential for wave and tidal energy development in California and sets deadlines to report its findings to the California Legislature and Governor. SB 605 is the second bill introduced in the United States focusing on exploring wave energy technology in recent years.

Eco Wave Power and Lian Tat Company Sign MoU to Bring Wave Energy to Taiwan – Eco Wave Power

Eco Wave Power recently announced that it signed a Memorandum of Understanding with Lian Tat Company (LTC), a leading maritime engineering company, to bring Eco Wave Power's wave energy technology to Taiwan. Eco Wave Power and Lian Tat Company will enter into negotiations regarding the establishment of a Joint Venture company to develop wave energy projects in Taiwan. Given Lian Tat's expertise and leadership in Taiwan's maritime industry, LTC will be responsible for obtaining permits, land use consents and any licensing and approvals necessary to complete the installation of the planned wave energy project. The first stage of the project will be the development of a 20 MW wave energy power station in Taiwan, which would begin with a 100 kW pilot and then expand in stages to a total installed capacity of 20 MW.

Wave power for subsea equipment demo grabs oil & gas industry's attention – Offshore Energy

European and Asian energy companies have paid a visit to a demonstration project for powering subsea equipment with wave power and subsea energy storage, led jointly by Mocean Energy and Verlume with other consortium partners, in Orkney. The €2.3 million (£2 million) project, called Renewables for Subsea Power (RSP), which connects Mocean Energy-built Blue X wave energy converter with Verlume-developed Halo underwater battery system, was seen first-hand by representatives from companies including Bridge Petroleum, PTTEP, Harbour Energy, Serica Energy and Baker Hughes last week. The two technologies were deployed in the seas off Orkney earlier this year

and are now nearing the end of a four-month test programme where they have delivered low-carbon power and communication to infrastructure.

Jones Bros completes onshore works for Morlais – reNEWS

Civil engineering outfit Jones Bros has completed the onshore works for the £36m UK tidal energy project Morlais in north Wales three months ahead of schedule. Jones Bros secured the main contract, worth £24.6m, to build the onshore infrastructure for Anglesey marine energy project, which has the potential generating capacity of 240MW. Activity includes constructing the landfall substation on Holy Island as well as the cabling works which will connect the scheme to the National Grid. The project, led by fellow North Wales-based organisation Menter Môn, has rapidly progressed with the carriageway works near Parc Cybi and South Stack Road now completed, and all traffic lights removed in time for the holidays.

Wind Energy

Ørsted and WWF embark on marine restoration project in the Danish North Sea to contribute to ocean biodiversity – Ørsted

The marine restoration project ‘BioReef’ aims to establish one or more biogenic reefs of European flat oysters and horse mussels in Danish waters. The project is part of the global partnership between Ørsted and World Wildlife Fund (WWF) to advance offshore wind with a net-positive impact on the ocean. Ørsted and WWF are developing and carrying out this joint project in close collaboration with the Technical University of Denmark’s Institute of Aquatic Resources, DTU Aqua, which serves as the project’s scientific partner. DTU Aqua’s large-scale hatchery and experimental nursery for initial grow-out in northern Denmark are central to the production and deployment of European flat oysters and horse mussels for the BioReef project. The work in the hatchery will lead to protocols that can be implemented elsewhere to produce seed for similar marine restoration efforts.

Wind power with vision: RWE to install recyclable rotor blades at Thor offshore wind farm to drive sustainability – RWE

RWE is once again driving forward sustainability in wind power by using the worldwide-first recyclable rotor blades at its Danish offshore wind farm Thor. 40 of the 72 (SG 14-236 DD) wind turbines will be equipped with recyclable rotor blades manufactured by Siemens Gamesa. Installation at sea is expected in 2026. In addition, RWE is piloting CO₂-reduced steel towers at half of the project’s turbines. The GreenerTower from Siemens Gamesa will ensure a CO₂ reduction of at least 63 percent in the tower steel plates compared to conventional steel. RWE will build the Thor wind farm in the Danish North Sea, approximately 22 km from Thorsminde on the west coast of Jutland. With a planned capacity of more than 1,000 MW, Thor is Denmark’s largest offshore wind farm to date.

NOAA and the University of Rhode Island Sign Agreement to Explore Effects of Offshore Wind Energy Development – National Oceanic and Atmospheric Administration (NOAA)

NOAA's Northeast Fisheries Science Center and the University of Rhode Island (URI) have signed a 5-year formal partnership agreement to research how offshore wind energy development will affect marine ecosystems and the people who live near, or work on, the ocean. Under the agreement, the multidisciplinary approach will focus on understanding these complicated relationships on an ecosystem level. For example, an early project under the agreement is to create an integrated ecosystem assessment for the Gulf of Maine. Specifically, the partnership will streamline NOAA's ability to efficiently and effectively tap into URI science, outreach, and education expertise and resources. NOAA and URI are considering efforts to ensure that vessel-based data captured on commercial fish species can be adapted to accommodate navigation in wind farms.

Industry taskforce to develop guidance on how seabed changes can affect offshore wind installations – ORE Catapult

The Offshore Renewable Energy (ORE) Catapult has joined forces with leading offshore wind developers and seabed mobility experts to provide clear guidance on seabed change and how it affects offshore wind and marine energy projects. ORE Catapult is leading a consortium of offshore renewables giants – SSE, ESB, Scottish Power Renewables, and RWE – with seabed mobility experts, Cooper Marine Advisors and Partrac, on an 18-month project to produce guidance on seabed mobility for use in planning offshore wind and marine energy developments worldwide. A mobile seabed can present risks to installations such as buried cables or offshore wind turbine foundations. These risks need to be identified and managed to reduce potential damage or disruption to an offshore project and reduce the potential cost of repair or replacement.

Last turbine for Hollandse Kust Zuid – Vattenfall

Almost two years after the start of construction, the last turbine of the Hollandse Kust Zuid wind farm has been installed. Over the next couple of months, the turbines will be commissioned and tested. Hollandse Kust Zuid is expected to be inaugurated later this year as the first subsidy-free offshore wind farm in the world. The total number of turbines is 139, one less than the 140 that were planned for. Last year, one of the foundations was damaged after a collision with bulk carrier Julietta D. after it became rudderless during a storm and drifted through the wind farm. In alignment with partners, contractors and authorities it was decided that the foundation was damaged too much to install a turbine and will not be replaced. It will be removed in 2024.