TETHYS BLAST

10 November 2023

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

Make A Splash Photo Contest

The U.S. Department of Energy (DOE) Water Power Technologies Office (WPTO) recently launched the Make A Splash Photo and Video Contest to capture photos and videos of water power that transport viewers and showcase the scope and potential of water power as a renewable energy. Cash prizes are available. Submissions due 17 November 2023.

Marine Energy Graduate Student Research Program

The U.S. DOE's WPTO and the Oak Ridge Institute for Science and Education (ORISE) has 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.

Wind Turbine-Radar Interference RFI

The U.S. DOE 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.

BOEM Seeking Public Input

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking comments on the draft Environmental Impact Statement for the proposed Maryland Offshore Wind Project (due 20 November 2023), the Draft Wind Energy Area in the Gulf of Maine (due 20 November), and the Notice of Intent to prepare an Environmental Assessment for additional site assessment activities for Beacon Wind (due 7 December 2023). BOEM is also accepting environmental study ideas for its Fiscal Year 2025-2026 Studies Development Plan (due 7 December 2023).

E-TWG Requesting Feedback

The New York State Environmental Technical Working Group (E-TWG) is requesting stakeholder feedback on its Draft Guidance for Pre-and Post-Construction Monitoring of Marine Birds in Relation to Offshore Wind Energy Development until 13 November 2023.

Spatial Environmental Assessment Toolkit Releases Beta Version

A beta version of the Spatial Environmental Assessment Toolkit (SEAT) is now available. SEAT is an integrated series of open-source tools that support the assessment and mitigation of environmental risks associated with deploying marine energy devices. The beta release includes new tutorials and an updated user interface.

Calls for Abstracts

The Call for Abstracts for the Environmental Interactions of Marine Renewables Congress 2024 (EIMR 2024) is now open through 17 November 2023. EIMR 2024 will take place on 15-19 April 2024 in Orkney, Scotland.

The Call for Abstracts for the International Conference on Ocean Energy (ICOE 2024) is now open through 5 March 2024. ICOE 2024 will take place 17-19 September 2024 in Melbourne, Australia.

The Call for Abstracts for the Asian Offshore Wind, Wave and Tidal Energy Conference (AWTEC 2024) is now open through 20 March 2024. AWTEC will take place 20-24 October 2024 in Busan, Korea.

Funding & Testing Opportunities

RWE has launched its first global Floating Wind Co-use Competition, which is looking for innovative and sustainable solutions to promote co-existence with other sea users and biodiversity enhancement. Applications are due 31 December 2023.

France's National Offshore Wind Observatory has launched a Call for Research Projects to develop new knowledge on the marine environment and the impacts of offshore wind power on the environment. Applications for the second round are due 31 December 2023.

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 European Commission's Horizon Europe Framework Programme has opened a Call for Additional Activities for the European Partnership for a Climate Neutral, Sustainable and Productive Blue Economy. This call is open to companies from European Union countries and a selected number of non-EU/non-Associated Countries. Applications are due 28 February 2024.

Career Opportunities

Ørsted is seeking a Wildlife Operations Compliance Manager who be responsible for driving permitting and compliance success, identifying potential environmental and social risks, and finding inventive solutions to ensure Ørsted's onshore energy projects have a net-positive impact on surrounding communities and biodiversity. Applications are due 12 November 2023.

The Marine Energy Test Area (META) in Wales is hiring a Commercial Manager who will be responsible for developing META by engaging with the market, enhancing its product offerings, and identifying commercial opportunities. Applications are due 17 November 2023.

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 18 November 2023.

Met Office, the National Meteorological Service for the United Kingdom, is looking for a Marine Applications Scientist, Marine Applications Foundation Scientist, and Marine Applications Senior Scientist. Applications are due 20 November 2023.

Bangor University's School of Ocean Sciences is seeking a Teaching & Research Lecturer in Marine Top-Predator Ecology and Conservation to teach undergraduate and graduate levels and develop their own programme of research. Applications are due 27 November 2023.

Upcoming Events

Upcoming Webinars

The U.S. DOE WPTO is also hosting its next Semiannual Stakeholder Webinar on 13 November 2023 from 10:30am-12:00pm PST (3:30-5:00pm UTC). The webinar will dive into current and future funding opportunities and other accomplishments, news, and updates.

The Portal and Repository for Information on Marine Renewable Energy (PRIMRE) team is hosting a webinar, "Introducing Telesto: PRIMRE's Knowledge Hub for Marine Energy Development Resources and Guidance", on 28 November 2023 from 10:00-11:00am MST (5:00-6:00pm UTC). The new and improved version of Telesto is home to open-source wiki pages, structured databases, and tools that provide information about the development life cycle of marine energy. Register here.

ETIP Ocean, the European Technology & Innovation Platform for Ocean Energy, is hosting a webinar, "Best practices for local community engagement", on 6 December 2023 at 3:00pm CET (2:00pm UTC). Register here.

Marine Renewables Canada is hosting the second webinar in its Ask the Expert webinar series, "Environmental Impacts & Effects of Offshore Wind", on 14 December 2023 from 1:00-2:00pm EST (9:00-10:00pm UTC). Register here.

Upcoming Conferences

The Pan American Marine Energy Conference (PAMEC 2024) will take place on 22-24 January 2024 in Barranquilla, Colombia. Pre-conference workshops will take place 19-20 January 2023. Registration is now open here.

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

The Oceantic Network (formerly the Business Network for Offshore Wind) is hosting the International Partnering Forum (IPF 2024) on 22-25 April 2024 in New Orleans, Louisiana, U.S. Registration is now open here.

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

Quantifying conditional probabilities of fish-turbine encounters and impacts – Peraza & Horne 2023

> Tidal turbines are one source of marine renewable energy but development of tidal power is hampered by uncertainties in fish-turbine interaction impacts. Current knowledge gaps exist in efforts to quantify risks, as empirical data and modeling studies have

characterized components of fish approach and interaction with turbines, but a comprehensive model that quantifies conditional occurrence probabilities of fish approaching and then interacting with a turbine in sequential steps is lacking. We combined empirical acoustic density measurements of Pacific herring (*Clupea pallasii*) and when data limited, published probabilities in an impact probability model that includes approach, entrainment, interactions, and avoidance of fish with axial or cross-flow tidal turbines.

Automated Detection and Tracking of Marine Mammals in the Vicinity of Tidal Turbines Using Multibeam Sonar – Gillespie et al. 2023

Understanding how marine animals behave around tidal turbines is essential if we are to quantify how individuals and populations may be affected by the installation of these devices in the coming decades. Our particular interest is in collision risk, and how this may be affected by the fine-scale behaviour of seals and small cetacean species around devices. We report on a study in which multibeam sonar data were collected close to an operational tidal turbine in Scotland continuously over a twelve-month period. The sonars provide high-resolution (a few cm) data over a 120° angle out to a range of 55 m at a rate of 10 frames per second. We describe a system which uses automatic computer algorithms to detect potential targets of interest, verified by human analysts using a sophisticated computer user interface to confirm detections and assign target species.

ELEMENT: Local Community Engagement Report – Lehnertz 2023

This report provides feedback on three local community engagement activities that were held from June 2022 to February 2023 related to the test from February to April 2023 of a tidal turbine in the Etel estuary in Brittany, France, for the ELEMENT (Effective Lifetime Extension in the Marine Environment for Tidal Energy) project.

- A local Nautical Commission meeting was convened on 29 June 2022 to explain the project to local marine users and Prefects and to receive their observations and recommendations regarding the test;
- A local public town hall meeting was held on 24 October 2022 to explain the project to local citizens before the Etel tidal turbine test started;
- A site visit on the test premises was carried out on 9 February 2023 with local authorities, associations, businesses and journalists with the tidal turbine visible before the machine was put in the water.

Wind Energy

BatTool: projecting bat populations facing multiple stressors using a demographic model – Wiens et al. 2023

Bats provide ecologically and agriculturally important ecosystem services but are currently experiencing population declines caused by multiple environmental stressors, including mortality from white-nose syndrome and wind energy development. In this work, we provide an exposition of the BatTool R package, detailing the primary

components of the matrix projection model, a publicly accessible graphical user interface (https://rconnect.usgs.gov/battool) facilitating user-defned scenario analyses, and its intended uses and limitations. We present a case study involving wind energy permitting, weighing the effects of potential mortality caused by a hypothetical wind energy facility on the projected abundance of four imperiled bat species in the Midwestern United States.

Energy Conversion Factors in Underwater Radiated Sound from Marine Piling: Review of the method and recommendations – Wood et al. 2023

This project was commissioned by Marine Scotland, with the aim to improve the understanding of the Energy Conversion Factor (ECF) method, and to make recommendations regarding the modelling approaches for impact piling as used in environmental impact assessments (EIA) in Scottish Waters. The key finding from this work is that, while the standard use of ECFs for piling is entirely valid, the process of generating a source level and propagating using point source models as used by the point-source equivalent ECF method reproduces the sound field from piling poorly. While there are concerns raised about the selection of a suitable value of ECF, greater errors are likely to arise in the choice of propagation models.

Modeling the Spatial Distribution of Carcasses of Eagles Killed by Wind Turbines – Huso et al. 2023

Models of relative carcass density as a function of distance from the turbine can be fit to observed carcass locations and used to estimate the proportion of carcasses expected to land within an area of any configuration beneath a turbine. In the USA, however, it has been difficult to estimate these models for large birds such as Bald Eagles (*Haliaeetus leucocephalus*) and Golden Eagles (*Aquila chrysaetos*) due to inadequate numbers of dead eagles found at any single facility. In this case, analysis of a surrogate species might be useful to inform carcass distributions. We chose to model the carcass distribution of White-tailed Eagles (*Haliaeetus albicilla*) in Norway as an informative surrogate for Bald Eagles and Golden Eagles in the USA.

News & Press Releases

Marine Energy

DOE Announces Winners in First Round of Prize Focused on Novel Wave Energy Technologies – U.S. DOE

The U.S. DOE WPTO recently announced the Phase I winners of the Innovating Distributed Embedded Energy Prize (InDEEP). Nineteen teams shared $285,000 in cash prizes for their novel distributed embedded energy converter technology (DEEC-Tec) concepts to harness and convert the power of ocean waves into usable types of energy. DEEC-Tec concepts combine many small energy converters, often less than a few

centimeters in size, into a single, larger ocean wave energy converter. This larger system could convert energy from a wide range of ocean locations and wave types. During Phase I, competitors developed an initial DEEC-Tec concept, submitted a brief technical narrative representing their idea and innovation process, and completed a simplified technology performance level assessment to reflect their concept's potential economic performance.

Onshore testing of kite system Dragon 12 completed – now being shipped for installation and commissioning in Faroe Islands – Minesto

Minesto, leading ocean energy developer, today announces that the Dragon 12 kite (1.2 MW) is now being shipped from the Uddevalla port to Faroe Islands for final stage of commissioning in Vestmanna. Shipment is now underway for the final stage of system integration at quayside in Vestmanna, Faroe Islands. Work remains to be done regarding installation of the drilled and grouted foundation, this work must be completed before offshore installation of powerplant and start of electricity production. Extensive subsystem verification and testing at the Minesto workshop in Göteborg has been completed with satisfactory results. After service and upgrades the 100kW Dragon 4 is in stable electricity production mode at the site in Vestmanna.

Global OTEC Unveils Advanced Concepts for the First Commercial-Scale OTEC Platform at the IVECF23 – Global OTEC

The International Vienna Energy and Climate Forum (IVECF) hosted the official presentation of the advanced concepts for the next-generation Ocean Thermal Energy Conversion (OTEC) platform, last Friday, at the Hofburg Conference Centre, in Austria. Developed by Global OTEC and named Dominique, the structure can generate 1.5MW net output by harnessing the ocean waters using an array of OTEC modules and is set to be installed in São Tomé and Príncipe. The updated layout was presented during the Solution Session "Driving the blue and green economy aspirations of São Tomé and Príncipe through OTEC". These advancements represent the recent advancements made for the structure after securing Approval in Principle (AIP) from Lloyds Register, last June.

Wavepiston enters final stages of wave energy and desalination system installation – Offshore Energy

Danish company Wavepiston has started the final stage of installation of its full-scale wave energy system for desalination and power production offshore Canary Islands. The installation process started by dragging down the anchors and positioning the mooring legs, provided by Vryhof, Wavepiston informed. After that, the buoys have been craned into the water and towed out to sea, to be connected to the mooring. The next step involves installing the string with drill pipes from TCDL Steel and the energy collectors designed by Wavepiston and manufactured by Thune Eureka. The system is being deployed at the Oceanic Platform of the Canary Islands (PLOCAN) test platform.

Ocean Energy Could Be a Golden Thread for Coastal Communities – NREL

Waves, tides, and currents hold an immense amount of energy that could sustain remote coastal and island communities in an entirely new way. But what if a framework existed that could guide renewable energy experts as they support communities in their clean energy transition, empowering communities to determine where and how marine energy fits within their home based on their unique relationships to the ocean and environment? To help answer that question, researchers at the U.S. DOE's National Renewable Energy Laboratory (NREL) and Pacific Northwest National Laboratory (PNNL) are developing the Deployment Readiness Framework (DRF) to support energy transitions in remote coastal and island communities. The goal? To arrange marine energy as a thread in the coastal fabric, rather than a wrinkle.

CorPower C4 operates reliably through Babet and Aline storms. – CorPower Ocean

CorPower Ocean has successfully verified its C4 Survival Mode after weathering two major storms along the Portuguese coast last week. It marked the most energetic period at the Aguçadoura site in northern Portugal since CorPower Ocean deployed its first commercial scale device in August. With major depressions building up over the Atlantic, Storm Babet and Aline unleashed waves up to 13 meters, providing an ideal opportunity to test the C4's design principle for robust operation in extreme weather. The storms were widely reported, leaving a trail of destruction across Portugal resulting in strong winds, torrential rain, flooding and building collapses. The C4's unique Survival Mode feature is enabled by a frequency detuning principle.

Wind Energy

Biden-Harris Administration Approves Largest Offshore Wind Project in the Nation – U.S. BOEM

The Biden-Harris administration recently announced its approval of the Coastal Virginia Offshore Wind (CVOW) commercial project – the fifth approval of a commercial-scale, offshore wind energy project under President Biden's leadership. The announcement supports the Administration's goal of deploying 30 gigawatts of offshore wind energy capacity by 2030, following the approval of the Vineyard Wind 1, South Fork Wind, Ocean Wind 1, and Revolution Wind projects. Located approximately 23.5 nautical miles offshore Virginia Beach, the CVOW commercial project is the largest yet, and would provide about 2,600 megawatts of clean, reliable offshore wind energy, capable of powering over 900,000 homes.

Seaweed can contribute to biodiversity and climate-friendly foods: New project is only one in a string of innovation projects at Anholt Offshore Wind Farm – Ørsted

A new research project at Anholt Offshore Wind Farm in Denmark aims to grow a number of less carbon-intensive foods while contributing to a healthier marine environment. As part of the ULTFARMS project, researchers from the Technical

University of Denmark (DTU) are currently busy putting out lines of up to 100 metres – in sometimes very windy conditions – in the water around the 111 wind turbines that make up Anholt Offshore Wind Farm. The researchers attach seedlings to the lines to cultivate three different types of seaweed which can be used for human consumption. Next spring, the plan is to start the cultivation of blue mussels by supplementing the seaweed with material that mussel larvae in the seawater can settle on.

How bubble curtains protect porpoises from wind farm noise – BBC Future

Over the past decade, a curious invention has spread across Europe's northern seas. It's called a big bubble curtain, it works a bit like a giant jacuzzi, and it helps protect porpoises from the massive underwater noise caused by wind farm construction. A very large, perforated hose is laid on the seabed, encircling the wind turbine site. Air is pumped through, and bubbles rise from the holes to the surface of the water, forming a noise-buffering veil. The quirky gadget, also known as a big bubble veil, was pioneered in Germany to help protect the endangered harbour porpoise, the only cetacean species living in its North Sea and Baltic Sea. The bubble curtain is now widely used by northern European countries racing to build more offshore wind farms as part of their efforts to curb CO2 emissions and fight global warming.

South Fork Wind Set for Installation of First Wind Turbine Offshore – South Fork Wind

South Fork Wind has shipped the first offshore wind turbine from the Port of New London, Connecticut, to the project's offshore site, marking the start of the final construction phase for this historic, New York-first offshore wind farm. The first of South Fork Wind's 12 Siemens Gamesa wind turbine generators – pre-assembled tower sections; a nacelle; and three blades each longer than a football field – was loaded onto a U.S.-flagged transport barge pulled by two U.S.-flagged tugboats destined for the project site 35 miles off Montauk, New York. The first turbine will be installed in the coming days. Ørsted and Eversource's South Fork Wind is making progress toward delivering clean offshore wind power to Long Island in 2023.

TenneT places artificial reefs near offshore platform Hollandse Kust (west Alpha) – TenneT

TenneT, in collaboration with contractor Equans/Smulders, has placed several artificial reefs near the offshore transformer platform Hollandse Kust (west Alpha) to gain further knowledge about nature-inclusive construction. This offshore transformer platform will connect the Ecowende (Shell/Eneco) consortium wind farm to the high voltage grid. The aim is to build this wind farm with a healthy ecosystem and as little impact on nature as possible. The artificial reefs are part of a series of ecological measures by TenneT to monitor and encourage nature around offshore wind farms. To find out which form works best, two types of artificial reefs have been placed near the Hollandse Kust west alpha jacket, located about 50 kilometers off the coast of Egmond aan Zee.

Offshore Wind Supply Chain Organization Rebrands As "Oceantic Network"—Reinforcing Members' Leadership In Offshore Wind Power, Positioning Itself For New Opportunities In Ocean-Based Renewable Energy – Oceantic Network

The Business Network for Offshore Wind, the leading national organization working to accelerate offshore wind energy development and build a dedicated domestic supply chain, recently announced that is has adopted a new name: Oceantic Network. This rebranding reinforces the organization's strategic commitment to convene stakeholders in all ocean-based sources of renewable power, leveraging members' expertise and investments in developing offshore wind capabilities. As Oceantic Network, the nonprofit organization will continue to host the industry-leading International Partnering Forum (IPF) — the premier annual conference of offshore wind stakeholders and the largest in the Americas.