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[Tethys](#) is an online knowledge base that facilitates the exchange and dissemination of information on the environmental effects of wind and marine renewable energy (MRE). The bi-weekly *Tethys Blast* highlights new publications in the [Tethys Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with OES-Environmental to provide additional content.

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Announcements

WPTO Semiannual Stakeholder Webinar

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) will be hosting its [third Semiannual Stakeholder Webinar](#) on 12 May 2020 from 1:00-2:30pm ET. DOE representatives will highlight recent announcements and publications, share project updates, and discuss upcoming priorities. They will also discuss COVID-19 impacts to events and DOE funded work. The presentation will close with Q&A. Email questions ahead of the webinar to WaterPowerTechnologiesOffice@ee.doe.gov. Register [here](#).

Reddit Ask Me Anything Panel

Pacific Northwest National Laboratory (PNNL) coastal scientists and engineers will be hosting a [Reddit Ask Me Anything](#) panel on the [blue economy](#) on 20 May 2020 from 3:00-5:00pm ET. The panel will discuss how science and technology are advancing the future of the blue economy and answer questions from the online community.

POET Webinar Recording Available

A recording of the recent Pacific Ocean Energy Trust (POET) webinar, *Potential Effects of Offshore Renewable Energy - Knowledge and Resources (Part 1: Marine Renewables and Offshore Wind)*, is now available on *Tethys*. View the presentation slides and recording [here](#).

Call for Applications for the Atlantic Project Awards

Applications for the Atlantic Action Plan's 4th Atlantic Project Awards are now open. The Award honors projects with outstanding success stories, located on the Atlantic coastal area in Ireland, France, Portugal, or Spain. Apply [here](#) before 18 June 2020.

Calls for Abstracts

The American Wind Energy Association (AWEA) is now accepting abstract submissions for its [Offshore WINDPOWER 2020 Conference & Exhibition](#) in New York, NY (US) from 13-14 October 2020. Abstracts can be submitted [here](#) and are due on 31 May 2020.

The abstract submission deadline for [CoastGIS 2020](#), the 14th International Coastal GIS Symposium in Raseborg, Finland from 17-19 September 2020 has been extended to 31 May 2020.

Funding Opportunities

The U.S. DOE's WPTO has issued a [funding opportunity](#), entitled "Marine Energy Foundational Research and Testing Infrastructure", to build marine energy research capabilities and leverage expertise to help the developing marine energy industry tackle complex scientific and technical problems. Concept papers are due 11 May 2020 and full applications are due on 7 July 2020. A pre-recorded [informational webinar](#) is now available to provide information to potential applicants.

The U.S. DOE announced up to \$38 million in funding for a new Advanced Research Projects Agency-Energy (ARPA-E) program, [Submarine Hydrokinetic And Riverine Kilo-megawatt Systems \(SHARKS\)](#). The program seeks to design economically attractive hydrokinetic turbines for tidal and riverine currents. Concept papers are due 27 May 2020 at 9:30am ET.

The UK Research and Innovation's [Innovate UK Smart Grants](#) fund for research and development projects that can make a significant impact on the UK economy across a variety of fields is still accepting applications. Applications are due 27 May 2020.

Vineyard Wind and Greentown Labs have partnered to launch the [Offshore Wind Challenge](#), a six-month accelerator program supporting innovations in responsible development of offshore wind energy. The Offshore Wind Challenge is focused on advances in marine mammal monitoring, specifically for data collection and real-time transmission or data analysis. Applications are due 31 May 2020.

Upcoming Events

Upcoming Webinars

AWEA and the U.S. DOE's Wind Energy Technologies Office will be hosting an informational [webinar](#) entitled, *DOE Wind Energy Technologies Office Program Update and Research Priorities*, on 5 May 2020 from 1:30-3:00pm ET.

ETIP Ocean and OceanSET will be hosting a [webinar](#) on 7 May 2020 at 11:00am CEST to provide an update on the ocean energy sector in Europe. Register [here](#).

Western EcoSystems Technology (WEST) will be hosting a webinar entitled, *Cut-in speed curtailment for reducing bat collision risk at wind energy facilities*, on 7 May 2020 from 11:00-11:30am MT as part of its WEST Webinar Series. RSVP for conferencing details [here](#).

The Bureau of Ocean Energy Management (BOEM) is pleased to present the [West Coast Renewable Energy Science Exchange](#), a series of webinars about scientific research off the U.S. West Coast. The fourth webinar in the series will be held on 13 May 2020 at 10:00am PT and will provide an overview of BOEM-funded research about marine mammals.

ETIP Ocean will be hosting a webinar entitled, *Solutions for environmental monitoring*, on 19 May 2020 at 4:00pm CEST. Register [here](#).

The Nova Scotia Offshore Energy Research Association (OERA) will be hosting a webinar entitled, *Development of Acoustic Doppler Aquatic Animal Monitoring (ADAAM) for application to marine life movement in high-energy tidal channels*, on 21 May 2020 from 1:00-2:00pm ADT. Register [here](#).

Event Updates

The [Environmental Interactions of Marine Renewables \(EIMR\) 2020 Conference](#), originally scheduled for late April 2020 in Oban Scotland, has been rescheduled for the week of 19 April 2021. Online content (i.e., ePosters and digital presentations) from the postponed event are available via the [EIMR 2020 Online Programme Agenda](#) until 7 May 2020.

The U.S. DOE's [2020 Collegiate Wind Competition](#), originally planned as part of the AWEA CLEANPOWER conference (now cancelled), will be held via webinar 12-14 May, 2-4 June, and 16-18 June 2020. Learn more [here](#).

New Documents on *Tethys*

Marine Renewable Energy

[Characterisation of underwater operational sound of a tidal stream turbine](#) – Risch et al. 2020

The underwater sound emitted during the operation of the Atlantis AR1500 turbine, a 1.5 MW three bladed horizontal axis tidal-stream turbine, was measured in the Pentland Firth, Scotland. Most sound was concentrated in the lower frequencies, ranging from 50 to 1000 Hz. This study highlights the importance of empirical measurements of turbine underwater sound. It illustrates the utility and challenges of using drifting hydrophone systems to spatially map operational turbine signal levels with reduced flow noise artefacts when recording in high flow environments.

[Three-dimensional modelling of suspended sediment transport in the far wake of tidal stream turbines](#) – Li et al. 2020

A three-dimensional tidal turbine simulation based on an oceanographic numerical model has been tested for suspended sediment calculation, particularly in the wake of a standalone tidal turbine. The results suggest a need for further improvement of the model in order to obtain correct predictions of suspension strength of the wake and suspended sediment concentration under the influence of a turbine (compared to measured data). Due to the wide use of FVCOM in coastal applications where turbines are commonly installed, it proves necessary to address this issue.

[Anthropogenic electromagnetic fields \(EMF\) influence the behaviour of bottom-dwelling marine species](#) – Hutchinson et al. 2019

We quantified biologically relevant behavioural responses of the presumed, magneto-receptive American lobster and the electro-sensitive Little skate to electromagnetic field (EMF) emissions of a subsea high voltage direct current (HVDC) transmission cable for domestic electricity supply. We demonstrate a striking increase in exploratory/foraging behaviour in skates in response to EMF and a more subtle exploratory response in lobsters. In addition, by directly measuring both the magnetic and electric field components of the EMF emitted by HVDC cables we found that there were DC and unexpectedly AC components. Modelling, restricted to the DC component, showed good agreement with measured results.

Wind Energy

[Satellite telemetry and digital aerial surveys show strong displacement of red-throated divers \(*Gavia stellata*\) from offshore wind farms](#) – Heinänen et al. 2020

Here we assess the robustness of the conclusions of earlier studies that the strictly protected red-throated diver, *Gavia stellata*, is strongly displaced from wind farms in the German Bight (North Sea). We modelled the distribution of divers based on two independent data sets, digital aerial surveys and satellite telemetry, in relation to the dynamic offshore environment and anthropogenic pressures. Both data types found that divers were strongly displaced from wind farms in suitable habitat. The displacement

effect gradually decreased with distance from the wind farms (being very strong up to 5 km away), but a significant effect could be detected up to 10–15 km away.

Emergy-based ecological footprint analysis of a wind farm in China – Zhang et al. 2020

Based on the emergy analysis, this paper estimates the ecological footprint of a wind farm in Dalian, evaluates its sustainability, and analyzes the ecological footprint of the four phases which include wind turbines production and transportation, construction, operation and maintenance, and demolition during the life cycle of the wind farm. It was concluded that the emergy carrying capacity of the wind farm was 3879.57 hm²/a, and the emergy ecological footprint was 5117.59 hm²/a. The wind farm was in an ecological deficit.

Distributive fairness and local acceptance of wind turbines: The role of compensation schemes – Jorgenson et al. 2020

To address increasing opposition to wind projects in Denmark three compensation schemes were introduced in the 2008 Renewable Energy Act. The aim was to address issues of distributive fairness and thereby to increase local acceptance. This paper analyses the role of two individual compensation schemes – the property value-loss scheme and the co-ownership scheme – on local citizens' perceptions of fair distribution of the benefits and burdens of wind energy projects.

News & Press Releases

Marine Renewable Energy

Overcoming the Pandemic to Build a Mammoth Turbine in Wuhan – SIMEC Atlantis

In the space of just 18 months, a significant milestone has been achieved in the race to harness the global potential of tidal stream energy. SIMEC Atlantis Energy, through its partnership with ITP Energised, has worked with The China Shipbuilding Industry Corporation and China Three Gorges (CTG) to develop CTG's first SG500kW tidal stream turbine. The mammoth structure, with a rotor diameter of 18 meters, was installed between the islands of Putuoshan and Huludao in the Zhoushan archipelago in China in the past week.

SMEC lands 700 kW tidal demonstration permit in Canada – Offshore Energy

Nova Scotia Energy and Mines has issued a tidal energy demonstration permit to Sustainable Marine Energy Canada (SMEC) for a 700 kW project in the Bay of Fundy. The permit is valid for a period of five years. The project will begin with the connection of the PLAT-I 4.63 tidal energy platform to the Nova Scotia electrical grid. The installation of the second PLAT-I device will also follow near the current location of

PLAT-I 4.63. The proposed demonstration will be the first electrical grid-connection of the PLAT-I technology in the world.

Wave, wind and PV: The world's first floating Ocean Hybrid Platform – SINN Power

Starting this summer, SINN Power will offer solar panel manufacturers the opportunity to demonstrate and test their photovoltaic (PV) modules on a floating platform in Iraklio, Greece. The goal is to internationalise SINN Power's ocean hybrid platform as a complete off-grid energy solution to provide people near coasts worldwide with renewable energy. Based on many years of R&D of a patented floating wave energy system, SINN Power developed an extremely robust, modular yet affordable maritime structure to generate renewable energy from waves, wind and PV.

Total to Examine if O&G Platforms Can Run on Floating Wind and Wave Combo – Offshore Wind

French energy major Total has joined a project to explore the potential of powering offshore oil and gas platforms with floating wind and wave energy. The O/G Decarb innovation project will examine the possibility of using a combined wind and wave technology on a floating foundation to store wind and wave energy that can convert electricity into hydrogen via electrolysis. In addition to ensuring that the production platform has access to a stable source of renewable energy, the project will also examine the possibility of integrating any surplus production of hydrogen into the gas sent ashore.

Eco Wave Power Enters Concession Agreement with APDL to Enable the Construction of an up to 20 MW Wave Energy Power Station in Portugal – Eco Wave Power

Onshore marine energy developer, Eco Wave Power (EWPG Holding AB) recently entered an official Concession Agreement with APDL (A Administração dos Portos do Douro, Leixões e Viana do Castelo) regarding the usage of an area potentially suitable for the construction, operation, and maintenance of a wave energy power plant of up to 20 MW in four locations owned and operated by APDL. APDL will provide Eco Wave Power with the concession for its' breakwaters for a period of 25 to 30 years.

Wind Energy

First Wooden Wind Power Tower Erected In Sweden – Renewable Energy Magazine

Sweden's first wooden wind tower is now ready on the island of Björkö outside Gothenburg. The tower is 30 meters high and was erected by Swedish development company Modvion. The wood construction is as strong as steel and makes the wind turbine climate neutral from the start. As early as 2022, the first wooden towers will be built on a commercial scale. The wind towers in wood can be built at a significantly lower cost than steel, which lowers the production cost of the wind power-generated electricity.

[EnergySails Aim to Harness Wind and Sun To Clean Up Cargo Ships](#) – IEEE Spectrum

The global shipping industry is experiencing a wind-powered revival. Metal cylinders now spin from the decks of a half-dozen cargo ships, easing the burden on diesel engines and curbing fuel consumption. Devices like giant towing kites, vertical suction wings, and telescoping masts are well underway, while canvas sails flutter once more on smaller vessels. The latest development in “wind-assisted propulsion” comes from Japan. Eco Marine Power recently unveiled a full-scale version of its EnergySail system at the Onomichi Marine Tech Test Center in Hiroshima Prefecture.

[Greening Industry: Building Recyclable, Next-Generation Turbine Blades](#) – National Renewable Energy Laboratory (NREL)

While the expansion of renewables is undoubtedly a positive shift, not all renewable energy is renewable from start to finish. Tapping into a vast wealth of experience in fundamental wind energy research, development, and validation, NREL researchers established an approach to manufacturing wind turbine blades, employing a thermoplastic resin system developed by Arkema Inc. The thermoplastic resin system is a potentially groundbreaking development because it allows the turbine blades to be recycled at their end of life.

[Rooftop Wind Power Might Take Off by Using Key Principle of Flight](#) – Scientific American

Solar panels perched on the roofs of houses and other buildings are an increasingly common sight in the U.S., but rooftop wind systems have never caught on. Past efforts to scale down the towering turbines that generate wind power to something that might sit on a home have been plagued by too many technical problems to make such devices practical. Now, however, a new design could circumvent those issues by harnessing the same principle that creates lift for airplane wings.

[One Small Step for BladeBUG, One Giant Leap for the Wind Industry](#) – ORE Catapult

The latest round of testing of the BladeBUG inspect-and-repair robot for offshore wind turbine blades has successfully concluded at the Offshore Renewable Energy (ORE) Catapult’s National Renewable Energy Centre in Blyth. The six-legged blade crawler has now reached a major milestone in development under a £1 million project – BladeBUG 2, partly funded by Innovate UK, enabling technical integration to begin with the ambitious MIMRee system for fully autonomous wind farm operations.