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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

Calls for Abstracts

The [7th PRIMaRE \(Partnership for Research In Marine Renewable Energy\) Conference](#) is now accepting abstracts submissions until 17 April 2020. The conference will be held online from 7-8 July 2020, with no charge for attendance.

The American Wind Energy Association (AWEA) is now accepting abstract submissions for the [Wind Resource & Project Energy Assessment Conference 2020](#) in Minneapolis, Minnesota (US) from 29-30 September 2020. Abstracts can be submitted [here](#) and are due by 30 April 2020.

The National Wind Coordinating Collaborative (NWCC) is now [accepting abstract submissions](#) for the [13th NWCC Wind Wildlife Research Meeting](#) in Kansas City, Missouri (US) from 1-4 December 2020. Abstracts are due 5 June 2020.

Calls for Papers

The Marine Technology Society Journal is accepting manuscript submissions for a [special issue](#) entitled, *Utilizing Offshore Resources for Renewable Energy Development: Marine Renewable and Offshore Wind Energy*. The deadline for manuscript submissions is 22 June 2020.

The Journal of Marine Science and Engineering is accepting manuscript submissions for a [special issue](#) entitled, *Advances in Wave Energy Harvesting*. The deadline for manuscript submissions is 26 June 2020.

The Journal of Marine Science and Engineering is accepting manuscript submissions for a [special issue](#) entitled, *Environmental Interactions of Marine Renewable Energy Installations*. The deadline for manuscript submissions is 27 June 2020.

Funding Opportunities

The Supergen Offshore Renewable Energy (ORE) Hub has extended its [second round of Flexible Funding](#) which will award a total of up to £1.2 million to seed areas that complement existing research, fill gaps, or add cross cutting activities to explore the transfer of research findings between sectors within ORE. Expressions of Interest must now be submitted by 17 April 2020 at 5:00pm GMT.

The Blue-GIFT (Blue Growth and Innovation Fast Tracked) project has announced the [2nd call for applications](#). The project aims to help Atlantic Area companies test the next generation of MRE technology in real sea environments. Applications close 30 April 2020 at 5:00pm UTC.

The U.S. Department of Energy's Wind Energy Technologies Office has issued a [funding opportunity](#), entitled "Offshore Wind Energy Atmospheric Science and Project Development", to support offshore wind development by improving the ability to forecast energy production, and by demonstrating innovative technologies not yet deployed at commercial scale. Concept papers are due 30 April 2020 and full applications are due on 9 July 2020.

The U.S. Department of Energy's Water Power Technologies Office 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. Department of Energy 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.

Upcoming Events

Upcoming Webinars

OES-Environmental and ORJIP Ocean Energy invite you to join the first *International Forum on MRE Environmental R&D* that will present and review the latest in research and monitoring

around MRE sites. This forum consists of three different webinars, each running from 8am – 10am PT (3pm – 5pm UTC) from 21-23 April 2020. The purpose of the forum is to share the most recent environmental research and monitoring results with a broad audience. The primary audiences will include regulators, MRE device and project developers, and other researchers. Each webinar will showcase four to five experts. The first webinar, [Update on Monitoring and Research Around Turbines](#), will be held on 21 April; the second webinar, [Design and Application of Integrated Monitoring Platforms for Monitoring Around MRE Devices](#), will be held on 22 April; and the third webinar, [Updates on Monitoring and Research Around Wave Devices](#), will be held on 23 April.

Conference Updates

The Business Network for Offshore Wind's [International Partnering Forum \(IPF\)](#) has been [reorganized](#) as *Virtual First, Together Second* to provide educational content and networking at different times. [IPF Virtual](#) will take place online from 21-22 April 2020 and IPF Together will take place in Providence, Rhode Island (US) from 18-21 August 2020.

The American Wind Energy Association's [CLEANPOWER 2020 Conference & Exhibition](#), originally scheduled for June in Indianapolis, Indiana (US) has been cancelled.

The [Asian Wave and Tidal Energy Conference \(AWTEC 2020\)](#), originally scheduled for November 2020 in Hobart, Australia, has been postponed. New dates for the conference will be announced at a later date.

New Documents on *Tethys*

Marine Renewable Energy

[Modelling the ecological impacts of tidal energy barrages](#) – Baker et al. 2020

The River Severn is a distinguished candidate region for tidal energy in the UK featuring sites under stringent ecological protection regulations. We examine the impact of a proposed Severn tidal barrage on 14 species via the linking of hydrodynamic modelling to species distribution models. Through a selection of species that are linked via a simple food web system we extrapolate changes in prey species to the respective predator species. We show that species at lower trophic levels are adversely affected by the barrage, but higher trophic level organisms increase in possible habitable area.

[Life Cycle Assessment on Wave and Tidal Energy Systems: A Review of Current Methodological Practice](#) – Zhang et al. 2020

Recent decades have witnessed wave and tidal energy technology receiving considerable attention because of their low carbon emissions during electricity production. However, indirect emissions from their entire life cycle should not be ignored. Therefore, life cycle assessment (LCA) has been widely applied as a useful approach to systematically

evaluate the environmental performance of wave and tidal energy technologies. This study reviews recent LCA studies on wave and tidal energy systems for stakeholders to understand current status of methodological practice and associated inherent limitations and reveal future research needs for application of LCA on wave and tidal technologies.

An Overview of the Expected Shoreline Impact of the Marine Energy Farms Operating in Different Coastal Environments – Raileanu et al. 2020

The aim of the present work is to provide an overview of the possible implications involving the influence of a generic marine energy farm on the nearshore processes. Several case studies covering various European coastal areas are considered for illustration purposes. These include different nearshore areas, such as the Portuguese coast, Sardinia Island or a coastal sector close to the Danube Delta in the Black Sea. Summarizing the results, we can conclude that a marine energy farm seems to be beneficial for coastal protection, even in the case of the enclosed areas where the erosion generated by the wave action represents a real problem.

Wind Energy

Landscape Factors Associated with Fatalities of Migratory Tree-Roosting Bats at Wind Energy Facilities: An Initial Assessment – Peters et al. 2020

Few studies have been conducted to explore the relationships among landscape-level factors and risk to bats from wind energy operations. This study examined fatality rates of three species of migratory tree-roosting bats commonly observed as fatalities at operational wind energy facilities - hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*) and eastern red bat (*Lasiurus borealis*) - in relation to landscape-scale features at varying scales in the midwestern and northeastern regions of the United States.

Small-Scale Effects of Offshore Wind-Turbine Foundations On Macrobenthic Assemblages in Pinghai Bay, China – Lu et al. 2019

In recent years, offshore wind farms in China have developed rapidly, especially in SE coastal regions. The construction of wind-turbine foundations (WTFs) introduces new artificial structures into coastal ecosystems, influencing the surrounding macrobenthos. Small-scale effects on macrobenthic assemblages around a high-rise cap pile WTF in Pinghai Bay, China, were investigated in November 2017 and May 2018, along SW and SE gradients. It is likely that most macrobenthos were able to recover quickly after the deployment of WTF, whereas more time might be needed for Mollusca to recover.

Optimizing the layout of onshore wind farms to minimize noise – Wu et al. 2020

As wind farm numbers and areas increase worldwide, it has become increasingly important to examine the impact of wind energy on the surrounding environment. One effect in some scenarios is noise, which depends on the type and age of the wind turbines

and the distances between them and the residential buildings. This paper focuses on an optimal layout for a wind farm considering its noise, without sacrificing power production. By optimizing the wind farm layout, the minimum noise is set as the basic objective, and both the wake effect and distances among wind turbines are considered.

News & Press Releases

Marine Renewable Energy

[International tidal technology developers sign agreement with Morlais project](#) – Morlais

North Wales tidal stream energy project, Morlais, has had a significant boost with the announcement that three new turbine developers have signed-up to the project. The deal comes following months of discussion with French firms SABELLA and HydroQuest as well as Spanish developer Magallanes. All three companies aim to deploy their devices on a commercial scale at the Crown Estate-designated zone off the coast of Anglesey, north Wales. Morlais is run by social enterprise, Menter Môn and has the potential to become one of the largest tidal stream energy sites in the world.

[ORPC trials its autonomous turbine generator](#) – Offshore Energy

Ocean Renewable Power Company (ORPC) has recently completed testing of its autonomous turbine generator unit (ATGU) at UMaine Advanced Structures and Composites Center. The trials demonstrated its ability to operate in power generation and also propulsion modes. The ATGU generates electricity from moving water currents in oceans and rivers. The ATGU system has the design for self-deployment and retrieval, but it can also provide power to subsea sensors and vehicles. Up next for the ATGU are sea trials in Maine.

[Integration of Environmental DNA \(eDNA\) @ SmartBay Observatory to Monitor Marine Biodiversity](#) – SmartBay

Researchers from Galway-Mayo Institute of Technology (GMIT) are currently using the SmartBay sub-sea observatory in Galway Bay to validate the integration of environmental DNA (eDNA) approaches for monitoring marine biodiversity in Galway Bay. eDNA is an emerging tool that relies on the acquisition of nucleic acids (also known as DNA and RNA) from environmental samples, such as water, to virtually detect any species that have shed “biological traces” and hence occur in a specific environment. This project is one of seven projects awarded under the 2018/2019 National Infrastructure Access Programme funding call.

[TiPA project drives down tidal energy cost](#) – Offshore Energy

The EU supported Tidal Turbine Power Take-off Accelerator (TiPA) project has developed technology that reduced the cost of tidal energy by close to 30 per cent. The

project set out with the goal of reducing the cost of tidal power production by 20 per cent. However, the Edinburgh University analysis found that the new generator actually reduced the cost by 29 percent. Aachen University in Germany carried out initial trials of the prototype generator. Subsea testing then followed by project lead Nova Innovation at Babcock's Rosyth site in Scotland.

[jUMP project launches pioneering initiative in Portugal to monitor underwater noise](#) – WaveEC Offshore Renewables

WaveEC Offshore Renewables is pleased to announce the jUMP project, a joint action for underwater noise monitoring in Portuguese waters, with funding from National Fundo Azul. The project is coordinated by WaveEC and brings together ten Portuguese partners altogether. The jUMP project started in January 2020 and will last for two years, with a total investment of 167 thousand euros, of which 149 thousand are supported by the Fundo Azul funding mechanism. The project aims to collect and promote information regarding noise pollution.

Wind Energy

[Hywind Tampen approved by Norwegian authorities](#) – Equinor

The Ministry of Petroleum and Industry has approved the plans for development and operation of the Hywind Tampen wind farm. The Snorre and Gullfaks platforms will be the first platforms in the world to receive power from a floating offshore wind farm. The wind farm will consist of 11 wind turbines based on the Hywind wind farm concept developed by Equinor. The 8 MW turbines will have a total capacity of 88 MW and meet about 35 percent of the annual power demand of the five platforms Snorre A and B and Gullfaks A, B and C. The wind farm will be located around 140 kilometres from shore, between the Snorre and Gullfaks platforms, at a water depth of 260 to 300 metres.

[ACT Blade Proves Yacht-Racing Inspired Concept for World's Lightest Wind Turbine Blade](#) – Offshore Renewable Energy (ORE) Catapult

ACT Blade, a spin-off company from UK yacht-sail developer SMAR Azure, has announced that it has successfully completed the first of two tests of its novel lightweight blade for wind farms at ORE Catapult's National Renewable Energy Centre in Blyth. These tests will pave the way for its first operational deployment later this year. Made up of an internal composite structure and high-tech textiles, as opposed to the prevailing fibreglass, ACT's blades are 24 percent lighter. A lower weight means blades can be made 10 per cent longer than the standard 55 metre blade around today: producing nine percent more energy and reducing the cost of energy by 6.7 percent.

[Harnessing the Power of Exascale for Wind Turbine Simulations](#) – Lawrence Berkeley National Laboratory

Before utility grids can achieve wide-scale deployment of wind energy, they need more efficient wind plants. This requires advancing our fundamental understanding of the flow physics governing wind-plant performance. ExaWind, a U.S. Department of Energy Exascale Computing Project, is tackling this challenge by developing new simulation capabilities to more accurately predict the complex flow physics of wind farms. By developing a virtual test bed, the researchers hope to revolutionize the design, operational control, and siting of wind plants, plus facilitate reliable grid integration. And this requires a combination of advanced supercomputers and unique simulation codes.

Dongfang Electric Piecing Together First 7 MW Typhoon-Resistant Offshore Wind Turbine – Offshore Wind

China's Dongfang Electric Corporation (DEC) has reported that its first 7 MW offshore typhoon-resistant wind turbine has completed the assembly and commissioning of various sub-systems. According to DEC, the DEW-D7000-186 model is suitable for certain sea areas which have low-speed winds, strong salt spray corrosion, and strong typhoons. At present, the model is said to be the largest-capacity typhoon-resistant offshore wind turbine and to have the largest rotor diameter of any turbines designed for the middle and low wind speed regions of China.

Tanzania's first ever wind farm nearing completion – Renewable Energy Magazine

Tanzania's first ever wind farm to reach financial close and start construction is nearing completion following a \$1.2 million loan from the Renewable Energy Performance Platform. Once operational, the 2.4 MW wind farm will provide much-needed energy security to customers of a rapidly expanding private rural grid network developed and operated by project developer Rift Valley Energy Group. The farm's three turbines have recently arrived at the project site in Mwenga in the Mufindi District of Tanzania's Iringa region, and installation and testing is expected to be completed by early May.