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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

Waves to Water Prize

The Water Power Technologies Office at the U.S. Department of Energy has launched the second stage of the [Waves to Water Prize](#), which seeks to accelerate technology innovation in wave energy powered desalination systems. Submissions are due 13 March 2020.

TEAMER

The Testing Expertise and Access for Marine Energy Research (TEAMER) program is preparing to announce its first open call for Requests for Technical Support and now has an official website and mailing list. To be notified of developments in the program, [visit the website](#) and subscribe to the mailing list. You can also follow TEAMER on [Twitter](#), [Facebook](#), [LinkedIn](#) and [Instagram](#). Questions about TEAMER can be directed to teamer@pacificoceanenergy.org.

AWTEC Call for Abstracts Extended

Abstracts are currently being accepted for the [5th Asian Wave and Tidal Energy Conference \(AWTEC 2020\)](#), which will be held in Hobart, Australia from 8-12 November 2020. Abstracts must now be submitted through the presentation portal before 31 March 2020. Authors of

accepted abstracts will then be required to submit a full paper through the conference portal before 20 June 2020.

Employment Opportunities

Sandia National Laboratories' Water Power Technologies Department is currently seeking a Graduate Summer Intern (ID: 671083), a Graduate Year-Round Intern (ID: 671088), and a Postdoctoral Appointee (ID: 671162). View all available positions [here](#).

The American Wind Energy Association is currently seeking a [Research Analyst](#) to support its analytical agenda through collection and analysis of wind industry market data as well as general research and policy analysis.

Funding Opportunity

The U.S. Department of Energy's Water Power Technologies Office has partnered with the Economic Development Administration to provide \$35 million in funding across [three competitions](#), which seek to support entrepreneurship and accelerate company growth within the Blue Economy. Concept Proposals will be accepted through 24 March 2020 at 11:59 pm EST.

Upcoming Events

Upcoming Webinars

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 third webinar in the series will be held on 11 March 2020 at 10:00am PT and will provide an overview of BOEM-funded research about fish and fisheries.

As part of the [GloFouling Webinar Series](#), Heriot Watt University will be hosting a [webinar](#) entitled, Monitoring biofouling in the offshore renewable energy industry on 17 March 2020 at 3:00pm CET. Register [here](#).

The National Wind Coordinating Collaborative (NWCC) will be hosting a [webinar](#) entitled, New Research on Deterrents and Monitoring for Bats at Wind Energy Facilities Supported by the U.S. Department of Energy on 17 March 2020 from 3:00-4:30pm ET.

The Offshore Energy Research Association (OERA) will be hosting a [webinar](#) entitled, Updates in The Pathway: A program towards regulatory certainty for instream tidal energy projects on 19 March 2020 from 1:00-2:00pm AST. Register [here](#).

NWCC will also be hosting a [webinar](#) entitled, New Research on Smart Curtailment for Bats at Wind Energy Facilities Supported by the U.S. Department of Energy on 26 March 2020 from 3:00-4:30pm ET.

The International Energy Agency Wind Technical Collaborative Program Task 34 (Working Together to Resolve Environmental Effects of Wind Energy [WREN]) will be rescheduling the webinar entitled, Experiences from Conducting Environmental Research at Land-Based and Offshore Wind Energy Facilities, for a later date.

Upcoming Workshops

The New York State Energy Research and Development Authority (NYSERDA) will be hosting its second [State of the Science Workshop](#) on Wildlife and Offshore Wind Energy from 5-6 May 2020 in Rye Brook, New York. Workshop attendees will review offshore wind development's cumulative effects on populations and ecosystems, and work together to develop short-term research plans to improve our understanding of cumulative biological impacts as the offshore wind industry develops in the U.S. To register for the workshop, reserve a discounted room at the conference hotel, or submit a poster abstract, visit the workshop webpage [here](#). The deadline for registration and abstract submission is 13 April 2020.

In collaboration with MaRINET2, The European Marine Energy Centre (EMEC), WavEC Offshore Renewables, and the Marine Engineering Institute – Italian National Research Council (CNR-INM), will be hosting a short course entitled, [Methods and Environmental Data Collection in Marine Renewable Energy Sites](#). The short course will take place in Orkney, Scotland from 23-24 June 2020. There is no registration fee, and travel & subsistence support is available to early-stage researchers and postgraduate students. Registration closes 24 April 2020.

Upcoming Conferences

The Wildlife Management Institute's [85th North American Wildlife and Natural Resources Conference](#) will be held on 8-13 March 2020 in Omaha, Nebraska, U.S. Register [here](#).

The Business Network for Offshore Wind's [International Partnering Forum \(IPF\)](#) will be held in Providence, Rhode Island, U.S. from 21-24 April 2020. Registration rates increase on 13 March.

The [Environmental Interactions of Marine Renewable Energy Technologies \(EIMR\) Conference](#) will be held in Oban, Scotland on 21-23 April 2020. Registration closes 10 April.

New Documents on *Tethys*

Marine Renewable Energy

[Risk Retirement—Decreasing Uncertainty and Informing Consenting Processes for Marine Renewable Energy Development](#) – Copping et al. 2020

Progress in establishing the marine renewable energy (MRE) industry, largely wave and tidal energy, has been slowed in part due to uncertainty about environmental risks of these devices, including harm to marine animals and habitats, and the associated concerns of regulators and stakeholders. A process for risk retirement was developed to organize

and apply knowledge in a strategic manner that considered whether specific environmental effects are likely to cause harm. Applying the risk retirement process could decrease the need for costly investigations of each potential effect at every new MRE project site and help move the industry beyond current barriers.

Vertical migrations of fish schools determine overlap with a mobile tidal stream marine renewable energy device – Whitton et al. 2020

Large increases in the generation of electricity using marine renewable energy (MRE) are planned, and assessment of the environmental impacts of novel MRE devices, such as kites, are urgently needed. A first step in this assessment is to quantify overlap in space and time between MRE devices and prey species of top predators such as small pelagic fish. Here, we quantify how the distribution of fish schools overlaps with the operational depth (20–60 m) and tidal current speeds (≥ 1.2 – 2.4 m/s) used by tidal kites, and the physical processes driving overlap.

Energy and carbon audit of a tidal array equipped with an innovative power take-off – Santos-Herran et al. 2019

This paper presents the life cycle carbon and energy study of an array of ten tidal stream turbines equipped with the innovative power take-off developed, built and tested under the European H2020 project TiPA. A ‘cradle-to-grave’ evaluation was performed, taking account of all energy inputs and CO₂ emissions in the fabrication, transport, installation, lifetime maintenance and decommissioning (including recycling). The calculated energy and carbon intensities were at 445 kJ/kWh and 29.2 g CO₂/kWh, respectively.

Wind Energy

Investigating the potential impact of wind farms on Lake Erie – Afsharian et al. 2020

Offshore wind farms are coming to the Great Lakes. We therefore investigate the potential impact of wind farms on Lake Erie’s dynamic and thermal structure using the COHERENS (a Coupled Hydrodynamical-Ecological model for Regional and Shelf Seas) and simulate a large wind farm with 432 offshore turbines located in the shallow southern waters of the central basin. The simulation is run twice to compare physical parameters such as temperature and circulation pattern and velocity results in the absence and presence of a large wind farm.

Limitations, lack of standardization, and recommended best practices in studies of renewable energy effects on birds and bats – Conkling et al. 2020

We evaluated 633 peer-reviewed publications, unpublished reports, and citations, and we analyzed data from 540 of these sources (203 facilities: 193 wind; 10 solar) in the U.S. and Canada to determine: (1) frequency of pre- and post-construction surveys and whether that frequency changed over time; (2) frequency of studies explicitly designed to allow before-after or impact-control analyses; and (3) what types of survey data were

collected during pre- and post-construction periods and how those data types were standardized across periods and among facilities.

[Implementing hedonic pricing models for valuing the visual impact of wind farms in Greece](#) – Skenteris et al. 2019

This study applies the hedonic pricing method to estimate the value of environmental externalities associated with large-scale exploitation of wind power at a local level. It examines the characteristics of approximately 1,800 sales of single-family homes surrounding 17 existing wind facilities in two Greek islands, namely Evia and Kefalonia. Four different hedonic price models are developed and applied, with diverging results in the two areas.

News & Press Releases

Marine Renewable Energy

[OPT Unveils Hybrid PowerBuoy](#) – Marine Energy

Ocean Power Technologies (OPT) has announced that the prototype for its newest product, the hybrid PowerBuoy, is in production at its New Jersey facility. The hybrid PowerBuoy will offer remote power for subsea and topside applications, reliable data communications, and a nominal 1.5-megawatt hours of energy storage. Solar charging of on-board battery power with a clean-fueled Stirling engine backup makes the hybrid PowerBuoy a low- to zero-carbon power solution, adding flexibility to the sea power options that OPT can offer in conjunction with its ocean-proven flagship product, the PB3 PowerBuoy.

[Government Unveils Plan for an Ocean Thermal Energy Park in Yabucoa](#) – The Weekly Journal

The Department of Economic Development and Commerce recently unveiled a plan to develop the Puerto Rico Ocean Technology Complex (PROtech), a technological park to generate ocean thermal energy and promote other eco-friendly initiatives, at a price tag of \$300 million. The proposed plant, to be situated on the southeast area of the island, would produce 500 kilowatts of energy through a collaboration with the private sector, which would pick up the tab for the development, according to the government's proposal.

[Magallanes at EMEC Through Horizon 2020 Projects](#) – European Marine Energy Centre

Tidal energy developer Magallanes Renovables have been successfully testing their second generation, 2 MW tidal platform 'ATIR' at the EMEC, since 2018, as part of the Ocean_2G project. The aim of the project was to test, validate and pre-certify Magallanes' device and this was successfully achieved through a structured programme of testing, which resulted in the ATIR generating electricity into the UK national grid for

the first time in 2019. This has allowed Magallanes to demonstrate the operational performance of the device and brings them closer to readying the technology for market.

Wärtsilä and partners to pursue greater fuel efficiency in major EU-funded project – **Wärtsilä**

Wärtsilä, together with a consortium of six other industry and academic partners, has been awarded EU funding for a major project aimed at reducing fuel consumption and lowering emission levels for shipping. The SeaTech project consortium has been formed to develop two symbiotic ship engine and propulsion innovations that when combined, could lead to a 30 percent reduction in fuel consumption. The renewable energy-based propulsion innovation is a biomimetic dynamic wing mounted at the bow of the ship to augment propulsion in moderate and heavy sea conditions. By capturing wave energy, extra thrust is produced, and ship motions are dampened.

Introducing Tidal – **X**

One of the biggest barriers to protecting the ocean—and our future—is that we don't know much about what's going on under the water. That's why today we're announcing Tidal: a team at X working on a moonshot to protect the ocean and preserve its ability to support life and help feed humanity, sustainably. Our initial area of focus is on developing technologies that bring greater visibility and understanding of what's happening under the water. After spending lots of time out on the water, we've developed an underwater camera system and a set of machine perception tools that can detect and interpret fish behaviors not visible to the human eye.

Wind Energy

Why Britain Lifting the Ban on Onshore Wind Farm Subsidies Is Big News for the Environment – **Global Citizen**

The UK has reversed its 4-year ban on onshore wind farm subsidies. It means companies will once again be able to compete for government contracts that will stimulate investment into building more wind turbines on land — one of the cheapest ways to produce renewable energy. It's a decision that aims to take another step towards Britain's goal to achieve net-zero carbon emissions by 2050. The ban was first brought in by former prime minister David Cameron in 2016 after pressure from Conservative MPs who argued that wind turbines were eyesores in rural communities.

Is it possible to build wildlife-friendly windfarms? – **BBC**

From direct collision deaths to displacement from feeding or nesting areas, to habitat degradation or loss, wind farms can have negative impacts on biodiversity, with birds and bats being particularly affected. The tug-of-war between wind turbines and wildlife preservation is alive and well in Souris, Prince Edward Island in Canada, where The

Prince Edward Island (PEI) Energy Corporation wants to add seven new turbines to the 10 currently in place.

Energy Department Announces Participants of 2021 Collegiate Wind Competition – DOE

The U.S. Department of Energy recently announced the 13 collegiate teams selected to participate in the 2021 Collegiate Wind Competition. Three new schools were selected along with 10 returning teams from previous competitions. The competition challenges multidisciplinary teams of undergraduate students to develop a project plan based on wind energy market and siting considerations, design and build a model wind turbine, and test their turbine in a wind tunnel against a set of rigorous performance criteria.

GWEC and JWPA launch joint Task Force to drive offshore wind growth in Japan – GWEC

The Global Wind Energy Council (GWEC) and the Japan Wind Power Association (JWPA) have launched a joint Japan Offshore Wind Task Force with key local and global industry players to accelerate Japan's offshore wind market. As of December 2019, Japan had 65.6 MW of offshore wind power, including five floating turbines totaling 19 MW, with another 13 GW projects in development. The Task Force will address key bottlenecks to the growth of Japan's offshore wind industry such as providing input to streamline the regulatory process for development and building a local supply chain.

Alphabet Winds Down Makani – MarineLink

Alphabet, Google's parent company, announced that it is calling it quits on its efforts to build and monetize its Makani wind energy kites. Google acquired Makani, which developed airborne wind turbines and aimed to make wind energy more accessible and affordable, in 2013. Makani CEO Fort Felker said that despite successfully demonstrating a flight off the coast of Norway last year, business and technology challenges meant that “the road to commercialization is longer and riskier than hoped.”