



20 March 2020

[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

[Annual Tethys Survey](#)

We would like to request your help to ensure that *Tethys* remains useful, relevant, and pertinent to your interests. Please fill out this brief [annual survey](#) before 31 March 2020 to help us evaluate and guide further development of *Tethys*.

[New Tethys One-Pager](#)

The [Tethys Wind One-Pager](#), which highlights key features of *Tethys* relevant to both the land-based and offshore wind energy communities, is now available on *Tethys*.

[Open-Source 15 MW Offshore Wind Reference Turbine Available](#)

A new open-source reference wind turbine, developed by the U.S. Department of Energy's National Renewable Energy Laboratory, is now available and features options for fixed-bottom and floating foundations and moorings. A recently published [technical report](#) provides further details, and the full description is available on [GitHub](#).

[GenEst Update Available](#)

A GenEst update (v1.4.1) is now available on CRAN. v1.4.1 has a series of minor bug fixes and feature enhancements. You can update your version by entering in R the command: `install.packages("GenEst")`, or by following the directions [here](#).

Survey to Explore Regulatory and Political Barriers

On behalf of the DTOceanPlus consortium, WavEC Offshore Renewables is conducting an [online survey](#) to determine to what extent the legal, institutional, and political frameworks currently in place in several E.U. Member States are acting as barriers to wave and tidal energy project deployment. The questionnaire is open until Monday 6 April 2020.

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.

Funding Opportunities

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.

The Supergen Offshore Renewable Energy (ORE) Hub has launched 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 be submitted by 3 April 2020 at 5:00pm GMT.

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

The National Wind Coordinating Collaborative (NWCC) will 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.

Pacific Ocean Energy Trust (POET) is starting a series of webinars on west coast ocean energy, with a focus on floating offshore wind, entitled, *The Science of Offshore Renewable Energy Effects – What Do We Know and What Do We Still Need to Learn?* The webinars will feature experts in the field who will share what they know, engage in dialogue with participants, and help move the conversation along as floating offshore wind becomes established in a responsible manner. The first webinar will be held on 15 April from 10:00-11:30am PT on what we have learned from marine renewables and the relationship to floating offshore wind, featuring speakers from Pacific Northwest National Laboratory's Coastal Division. See [POET's website](#) for more details.

OES-Environmental and ORJIP Ocean Energy invite you to join a new international forum that will present and review the latest in research and monitoring around marine renewable energy sites. The forum kicks off with a three-part environmental webinar series to be held on 21, 22, and 23 April 2020 from 8:00-10:00am PT. Each webinar will showcase four to five speakers and will include time for Q&A and discussion. 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

[Oceanology International London 2020](#), originally planned for mid-March, has been postponed to 1-3 December 2020. All component parts of the event have also been postponed.

[OCEANS 2020 Singapore](#), originally schedule for early April, has been postponed to 11-14 August 2020. Details of the revised schedule will be available on the conference website shortly.

The [American Wind Energy Association \(AWEA\) Wind Project Siting and Environmental Compliance Conference](#) originally scheduled for early April has been postponed. AWEA plans to confirm details for the rescheduled event with current registrants no later than 17 April 2020.

[Environmental Interactions of Marine Renewables \(EIMR\)](#), originally scheduled for late April, has been postponed. The plan is to reschedule EIMR in Oban on a similar date in 2021.

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 from 18-21 August 2020.

[Waterpower Week in Washington 2020](#) and the [International Conference on Ocean Energy \(ICOE\)](#), originally planned for mid-May, have been postponed until 2021. Registrations will be automatically refunded in the method that payment was submitted.

New Documents on *Tethys*

Marine Renewable Energy

[An agent-based model to predict fish collisions with tidal stream turbines](#) – Rossington and Benson 2019

Interest in marine tidal turbines, particularly in coastal waters, raises concerns about collisions between marine wildlife and underwater turbine blades. Prediction methods for collisions are necessary to evaluate possible consequences for marine animal populations. Existing collision risk models, based on analytical solutions, assume simplistic non-behavioural traits. This paper seeks to advance these collision models to represent real behaviours of marine species by extending an existing numerical Agent-Based Model to include predictions of collisions.

[The impacts of wave energy conversion on coastal morphodynamics](#) – Ozkan et al. 2020

Many researchers have studied the impacts of wave energy converters (WECs) on coastal hydrodynamics, however, the impact on morphodynamics is not as well understood. In this paper, we review studies that assess the impacts of wave farms on coastal erosion. The results of a number of studies that focus on various locations around the world show that WECs often generate clean and renewable energy without negatively impacting local coastlines, and in fact often mitigate coastal erosion.

[Evaluation of Co-Existence Options of Marine Renewable Energy Projects in Japan](#) – Kularathna et al. 2019

Consensus building among local stakeholders is vital for the success of the proposed commercial marine renewable energy (MRE) projects in Japan. The purpose of this study was to systematically evaluate the co-existence options available for Japan's MRE projects through data collected from interviews and questionnaire surveys in two development sites in Nagasaki and Kitakyushu. To overcome the limitations of data unavailability and uncertainty, the Dempster Shafer Analytic Hierarchy Process was used for evaluating the best co-existence strategy out of five potential options.

Wind Energy

[Bat Impact Minimization Technology](#) – Cooper et al. 2020

In this project, Frontier Wind built on previous research demonstrating that ultrasonic noise can mask echolocation and act as a repellent or deterrent to bat flight activity. Whereas the initial study only broadcast ultrasonic transmissions from the center of the turbine, the Strike Free™ system developed for this project extended the ultrasonic coverage to the entire area swept by the turbine blades. The researchers used an acoustic

model to determine the optimal configuration of transmitters along the blades to provide sound transmission coverage across the turbine rotor swept area volume.

Noise Propagation Calculations of a Wind Turbine in Complex Terrain – Sessarego and Shen 2019

This paper describes numerical noise propagation calculations of a single wind turbine in complex terrain near a town in Central Denmark. The purpose of the work is to estimate the noise level at increasing distances from a single wind turbine and investigate the effect of complex terrain. Results indicate that time varying numerical noise propagation predictions of wind turbines in complex terrain can be achieved by using computational fluid dynamics via large-eddy simulation (LES) and the Technical University of Denmark's noise propagation tool based on the parabolic equation.

Site-specific life cycle assessment of a pilot floating offshore wind farm based on suppliers' data and geo-located wind data – Poujol et al. 2020

Renewable energy systems are essential in coming years to ensure an efficient energy supply while maintaining environmental protection. Despite having low environmental impacts during operation, other phases of the life cycle need to be accounted for. This study presents a geo-located life cycle assessment of an emerging technology, namely, floating offshore wind farms. It is developed and applied to a pilot project in the Mediterranean Sea.

News & Press Releases

Marine Renewable Energy

WESE & SEA Wave launch a platform for ocean energy data sharing – WavEC Offshore Renewables

An online platform, MARENDATA, has been launched in collaboration by the WESE and SEA Wave projects to disseminate environmental monitoring data collected within the marine energy industry. Co-funded by the European Maritime and Fisheries Fund, both WESE and SEA Wave are undertaking bespoke environmental research campaigns to better understand the potential environmental effects associated with deploying and operating some of the world's leading marine energy technologies.

Eco Wave Power Successfully Completes Wave Simulation Testing to the Fully Integrated Conversion Unit – Eco Wave Power

Onshore marine energy developer, Eco Wave Power (EWP) has successfully finalized the wave simulation testing of the fully integrated EWP conversion unit for its Jaffa Port expansion project, which will be followed by automation system installation and calibration, breakwater reinforcement, floaters production and full system transportation

to the final implementation site for installation and grid-connection. The entire conversion unit (hydraulic and electrical) has been designed and assembled in a standard-sized shipping container located on land, just like a traditional power station.

Seven US Academic Teams Tackle Waves to Water Challenge – Marine Energy

To inspire transforming saltwater into drinking water using wave energy to power the process, the U.S. Department of Energy (DOE) Water Power Technologies Office (WPTO) launched the Waves to Water Prize in June 2019. This four-stage competition offers intrepid competitors up to \$2.5 million in cash prizes to demonstrate small, modular, cost-competitive desalination systems that use the power of ocean waves to provide clean drinking water for disaster recovery and for remote and coastal communities. Seven academic teams were among the 20 winners.

Biome makes waves with Renishaw's additive manufacturing expertise – Renishaw

Global engineering technologies company, Renishaw, has collaborated with the Nova Scotia Community College (NSCC) in Canada, to produce two ocean turbine parts using additive manufacturing (AM) for industrial design firm Biome Renewables. Renishaw helped manufacture a PowerCone® retrofit that co-rotates with the turbine's rotor and curved propellers to reduce drag. Using metal AM to produce these parts reduced costs by 80 per cent and meant that two turbine components could be developed in two months.

First blade panels hit the water for biofouling tests – NEMMO

The NEMMO project has installed a set of tidal turbine blade panels made from fibreglass and a gel-coat coating for testing at the HarshLab facility. The samples, taken from the current Magallanes' turbine blade, will be submerged for six months to determine the level of biofouling on the surface. These results will then be used as a reference for the development of new blade materials and coatings. Check out the short video of the panels being installed at HarshLab's floating offshore laboratory.

Wind Energy

FloatGen floating wind pilot hits new heights in French Atlantic – Recharge

The pioneering FloatGen floating wind pilot in the French Atlantic Ocean has outreached production levels seen to date at the project, hitting a new record in February with over 920MWh of output for the month. The 2MW unit, based around a Vestas turbine and 'damping pool' foundation from Ideol, also saw its highest-ever monthly capacity factor, 66.3%, a percentage significantly better than the average bottom-fixed offshore machine, which averages around 50%.

GWEC and RE100 join forces to accelerate corporate sourcing of renewable electricity in emerging markets – GWEC

The Global Wind Energy Council (GWEC) is entering a new partnership with The Climate Group's RE100 initiative to spur greater corporate commitment to renewable electricity sourcing in emerging markets. GWEC is the neutral representative body for the global wind industry, representing leading wind energy manufacturers, developers, utilities IPPs and service companies. RE100 brings together more than 200 global companies committed to 100 per cent renewable power.

Japanese wind fans bank interest – Reuters

Domestic and international lenders are vying for a slice of Japan's nascent offshore wind power sector, which is expected to provide as much as ¥3trn (US\$29bn) in project financing opportunities, albeit at very low margins. Akita Offshore Wind completed the nation's first fundraising for a major offshore wind project last month, raising ¥80bn to build wind turbines near two ports in western Japan. Auctions for sites off Japan's shores are due to kick off in April, and lenders are busy preparing for a rush of financings.

IRENA Invites Renewable Energy Developers to Register Projects on Investment Platform – IRENA

A landmark initiative launched by a coalition of intergovernmental partners during the UN Climate Action Summit in September 2019, has now entered an operational phase. The International Renewable Energy Agency's (IRENA) contribution to the Climate Investment Platform, developed in response to country needs to mobilize low-carbon, climate-resilient investments, now calls renewable energy project developers to register suitable projects via a purpose-built portal organised around 14 regional clusters.

Governor Cuomo Announces Details for 21 Large-scale Renewable Energy Projects to Deliver Clean, Affordable Energy to New Yorkers – NYSERDA

Governor Andrew M. Cuomo recently unveiled the details of the awards for 21 large-scale solar, wind, and energy storage projects across upstate New York, totaling 1,278 megawatts of new renewable capacity. These projects, which New York Energy Research and Development Authority (NYSERDA) and other State and local agencies will ensure are sited and developed responsibly, will spur over \$2.5 billion in direct, private investments toward their development, construction and operation and create over 2,000 short-term and long-term jobs.