



**24 January 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**

### MHKiT Code Hub

The Marine and Hydrokinetic Toolkit (MHKIT) Code Hub—developed by the National Renewable Energy Laboratory, Pacific Northwest National Laboratory, and Sandia National Laboratories—is now available for public use at <https://code.primre.org>. The MHKiT Code Hub is a Git repository of open-source marine renewable energy software modules for controlling, processing, visualizing, and managing data. Developed in Python and MATLAB, the MHKiT Code Hub provides robust and verified functions that are needed by the marine renewable energy community to standardize data processing.

### Ocean Observing Prize

The [Powering the Blue Economy: Ocean Observing Prize](#), a joint prize between the Water Power Technologies Office at the U.S. Department of Energy and the Integrated Ocean Observing System program at the National Oceanographic and Atmospheric Administration, is now open. Submissions for the first of a series of competitions, which seeks novel concepts that integrate ocean observing technologies with marine energy systems to address end-user needs, are due 12 February 2020.

## Calls for Papers

The Journal of Ocean Technology (JOT) has launched a [call for technical papers, essays, and short articles](#) on marine spatial planning. The submission deadline for technical papers and expression of interest for essays and short articles is 21 February 2020. The submission deadline for essays and short articles is 24 April 2020.

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

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

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

## Woman in Wind Global Leadership Program

The Global Wind Energy Council and the Global Women's Network for the Energy Transition have announced the [call for applications](#) for the second edition of their joint [Women in Wind Global Leadership Program](#). Applications will be accepted until 16 February 2020 at 23:59 CET.

## Funding Opportunities

The €13 million [OceanDEMO project](#) has opened the [2<sup>nd</sup> call for applications](#). The project aims to accelerate marine renewable energy's transition from single prototype to multi-device farms by providing access to world-leading test centers. Applications close 31 January 2020.

The Marine Energy Alliance (MEA) has opened the [2<sup>nd</sup> call for applications](#). The aim of MEA is to progress the technical and commercial maturity level of early-stage marine energy technology companies with the overall goal of reducing the risk of device failure in subsequent demonstration phases. Applications close 14 February 2020. A live, informational webinar will be held on 28 January 2020 at 14:30 CET. Register for the webinar [here](#).

The U.S. Department of Energy (DOE) has released a [Funding Opportunity Announcement](#) for the DOE Small Business Innovation Research and Small Business Technology Transfer programs. Applications are due 24 February 2020.

The European Maritime and Fisheries Fund has launched the [Blue Economy Window call](#) to support the sustainable development of small and mid-size enterprises across the European Union. The deadline of the call is 27 February 2020.

The [Blue-GIFT \(Blue Growth and Innovation Fast Tracked\) project](#) has opened the [2<sup>nd</sup> 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 17:00 UTC.

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## Upcoming Events

### Upcoming Conferences

The [All-Atlantic Ocean Research Forum](#) will be held in Brussels, Belgium from 6-7 February 2020. Register [here](#).

[Ocean Sciences 2020](#) will be held in San Diego, California, U.S. from 16-21 February 2020.

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## New Documents on *Tethys*

### Marine Renewable Energy

#### [Life Cycle Assessment of Electricity Generation from an Array of Subsea Tidal Kite Prototypes](#) – Kaddoura et al. 2020

In this study, a prospective life cycle assessment (LCA) was performed on a 12 MW tidal energy converter array of Minesto Deep Green 500 (DG500) prototypes, closely following the Environmental Product Declaration (EPD) standards, but including scenarios to cover various design possibilities. The global warming potential (GWP) of the prototype array was in the range of 18.4–26.3 gCO<sub>2</sub>-eq/kWhe. This is comparable with other renewable energy systems, such as wind power.

#### [Irregular wave validation of a coupling methodology for numerical modelling of near and far field effects of wave energy converter arrays](#) – Fernández et al. 2019

Between the Wave Energy Converters (WECs) of a farm, hydrodynamic interactions occur and have an impact on the surrounding wave field, both close to the WECs (“near field” effects) and at large distances from their location (“far field” effects). To simulate this “far field” impact in a fast and accurate way, a generic coupling methodology between hydrodynamic models has been developed by the Coastal Engineering Research Group of Ghent University in Belgium. The objective of this paper is to present a validation of the novel coupling methodology for the test case of irregular waves.

#### [Effect of low frequency electromagnetic field on the behavior and bioenergetics of the polychaete \*Hediste diversicolor\*](#) – Jakubowska et al. 2019

The aim of the present study was to determine the effect of an electromagnetic field (EMF) of value typically recorded in the vicinity of submarine cables on the behavior and

bioenergetics of the polychaete *Hediste diversicolor*. No avoidance or attraction behavior to EMF was shown, but the burrowing activity of *H. diversicolor* was enhanced in EMF treatment, indicating a stimulating effect on bioturbation potential. This is the first study demonstrating the effects of environmentally realistic EMF value on the behavior and physiology of marine invertebrates, thus there is a need for more research.

## Wind Energy

### [Impulsive pile driving noise elicits alarm responses in squid \(\*Doryteuthis pealeii\*\)](#) – Jones et al. 2020

We quantified how a commercially and economically important squid (*Doryteuthis pealeii*: Lesueur 1821) responded to pile driving sounds recorded from a windfarm installation within this species' habitat. Body pattern changes, inking, jetting, and startle responses were observed and nearly all squid exhibited at least one response. These responses occurred primarily during the first 8 impulses and diminished quickly, indicating potential rapid, short-term habituation. Similar response rates were seen 24-h later, suggesting squid re-sensitized to the noise.

### [Collision risk of Montagu's Harriers \*Circus pygargus\* with wind turbines derived from high-resolution GPS tracking](#) – Schaub et al. 2019

Flight behaviour characteristics such as flight altitude and avoidance behaviour determine the species-specific collision risk of birds with wind turbines. However, traditional observational methods exhibit limited positional accuracy. High-resolution GPS telemetry represents a promising method to overcome this drawback. In this study, we used three-dimensional GPS tracking data including high-accuracy tracks recorded at 3-s intervals to investigate the collision risk of breeding male Montagu's Harriers *Circus pygargus* in the Dutch–German border region.

### [Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea: Marking a Decade of Monitoring, Research and Innovation](#) – Degraer et al. 2019

This report, targeting marine scientists, marine managers and policy makers, and offshore wind farm developers, presents an overview of the scientific findings of the Belgian offshore wind farm environmental monitoring programme (WinMon.BE), based on data collected up to and including 2018. Within the monitoring programme, the Royal Belgian Institute of Natural Sciences and its partners assess the extent of the anticipated impacts onto the marine ecosystem and aim at revealing the processes behind these impacts.

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## News & Press Releases

### Marine Renewable Energy

## **Pioneering the Green Economy: Certification Opens Pathway to Diversify Renewable Energy Mix as WaveRoller is Certified by Lloyd's Register (LR) – AW-Energy**

Working to rigorous technical standards in collaboration with LR, AW-Energy committed to follow best practice from corresponding industries. It has helped to secure the first-of-a-kind grid connection with the WaveRoller® device deployed off the coast of Peniche in Portugal. WaveRoller® is a near-shore wave energy converter, mounted to the seabed with a panel that oscillates with the wave surge. Once the device is deployed offshore, it has minimal visual impact and has been proven to help create artificial bases for reef ecosystems to flourish.

## **Sustainable Marine Energy Applies for Grand Passage Demo Permit – Marine Energy**

Sustainable Marine Energy Canada (SMEC) is proposing an electrical grid-connected tidal energy project at Grand Passage, located between the communities of Westport and Freeport in Digby County, Nova Scotia. The project will begin with the connection of the PLAT-I tidal energy platform (outfitted with 4 tidal turbines) that is currently installed at Grand Passage to the Nova Scotia electrical grid in spring 2020. This will be followed by the installation of a second PLAT-I device near the current location of PLAT-I.

## **Eni and the Politecnico di Torino: a renewed alliance for the use of marine energy resources – Eni**

The Rector of the Politecnico di Torino, Professor Guido Saracco, and Eni's CEO, Claudio Descalzi, have signed a Memorandum of Understanding to further strengthen scientific collaboration and undertake a joint academic initiative to study energy from marine resources. This agreement will involve the launch of the "MarEnergy Lab" research laboratory, which will investigate specific issues, enhance related understanding, and also contribute to the rapid deployment of industrial technologies that use marine energy resources.

## **Space@Sea Tests WEC Concept at DST – Marine Energy**

Horizon 2020-funded Space@Sea project is carrying out concept trials of wave energy converter (WEC) system and floater-floater connectors. The testing is being undertaken at international research institute DST (Development Centre for Ship Technology and Transport Systems), located in University of Duisburg-Essen and one of the project partners. Space@Sea began its work in November 2017 setting out to make a step in efficient use of the maritime environment. DST contributes to the strategic logistic optimisation and investigates different scenarios of hinterland connections via river-sea, short sea and inland shipping.

## **Marine renewables expected to power ahead in Scotland's year of coasts and waters – Alternative Energy24**

Last year was quite a year in the energy sector, not just in the Highlands and Islands but across the UK, with many key achievements worthy of reflection. In February, the Scottish Government announced the £10 million Saltire Tidal Energy Fund to support commercial deployment of tidal energy generation in Scottish waters. March saw the announcement that renewable electricity generation in Scotland had reached record levels during 2018 – 74.6 per cent, an increase of 6.1 per cent.

## **Wind Energy**

### **[Ørsted, Recently Named the Most Sustainable Company in the World, Forms New Research Partnerships to Advance Technology for Protection and Conservation of Right Whales](#) – CSR Wire**

Ørsted U.S. Offshore Wind is proud to announce an exciting and innovative partnership with Rutgers, The State University of New Jersey, the University of Rhode Island (URI), and Woods Hole Oceanographic Institution (WHOI) to launch the Ecosystem and Passive Acoustic Monitoring (ECO-PAM) project. Ørsted signed an initial memorandum of understanding with Rutgers University in May 2019 to support academic research activities related to offshore wind. The ECO-PAM project will be in addition to this initial funding agreement.

### **[Ingenuity of UK Entrepreneur Set to Save Europe's Wind Industry £250 Million Per Year](#) – ORE Catapult**

GE Renewable Energy and the Offshore Renewable Energy (ORE) Catapult are backing the development of a new technology which promises to reduce manual working at offshore wind farms, slashing one of the industry's biggest maintenance costs by 80 percent. Once fully developed, the technology concept, EchoBolt, will drastically reduce the cost of inspecting and retorquing wind turbine bolts – one of the biggest maintenance tasks that face wind farm operators. The cost saving for the European wind industry (offshore and onshore) will be an estimated £250 million per year.

### **[Ocean Renewable Energy Action Coalition launches to accelerate global offshore wind capacity](#) – Equinor**

An international Ocean Renewable Energy Action Coalition has been formed to advance sustainable deployment of ocean-based renewable energy and mitigate the harmful impacts of climate change. Bringing together civil society, intergovernmental institutions and industry, the Action Coalition will represent the offshore wind sector in the global dialogue on climate action. It will be spearheaded by Ørsted and Equinor. The group also includes: CWind, Global Marine Group, JERA, MHI Vestas, Mainstream Renewable Power, Shell, Siemens Gamesa, TenneT, and The Crown Estate.

### **[Greater Gabbard Survey Work Carried Out Using Cutting Edge Technology](#) – SSE Renewables**

Greater Gabbard Offshore Wind farm, operated by SSE Renewables, was at the frontline of an industry first this month, as a remote sea vessel undertook survey work for the offshore wind farm. Greater Gabbard is a joint venture between SSE Renewables and Innogy and the XO-450 Unmanned Surface Vessel (USV), owned and operated by XOCEAN, carried out seabed surveys on seven of the turbines at the 140-turbine wind farm, located 23 km off the Suffolk coast (UK).

### **Vestas to produce zero-waste wind turbines by 2040 – Vestas**

Vestas is excited to announce its intention to produce zero-waste wind turbines by 2040. Vestas is the first turbine manufacturer to commit to zero-waste wind turbines, meaning running a value chain that generates no waste materials. This will be achieved by developing and implementing a new waste-management strategy, introducing a circular economy approach in the different phases of the value chain: design, production, service, and end-of-life. The strategy will be presented within the next two years.