



**20 September 2019**

The bi-weekly *Tethys Blast* highlights new publications on *Tethys*, opportunities in wind and marine renewable energy, and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with OES-Environmental to provide additional content. We hope you find this a valuable tool to keep you connected to new research, opportunities, and industry milestones.

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## **Announcements**

### Collegiate Wind Competition

The National Renewable Energy Laboratory has released a [Request for Proposals \(RFP\)](#) for students interested in competing in the U.S. Department of Energy's Collegiate Wind Competition in the spring of 2021. Students are challenged to design, build, and test a model wind turbine and plan and financially analyze a wind plant. The RFP is open for applications until 9 December 2019, and interested students and faculty can learn more about the competition and the application requirements [here](#).

### Marine Energy Collegiate Competition

The U.S. Department of Energy recently announced the first [Marine Energy Collegiate Competition](#) (MECC) designed to challenge interdisciplinary teams of undergraduate and graduate students to offer unique solutions to the burgeoning marine energy industry. The inaugural MECC will be held in conjunction with the International Conference on Ocean Energy (ICOE) in Washington, DC on 19-20 May 2020. An informational webinar will be held 3 October 2019, which you can register for [here](#). Applications are due 18 October 2019.

### Call for Abstracts

Abstracts are being accepted for the [International Conference on Ocean Energy](#) (ICOE) in Washington D.C. on 19-21 May 2020. The event will showcase innovations in ocean energy technology research and development, prepare ocean renewable energy to benefit the larger "Blue Economy" and the electrical grid, and identify research needed to further advance the state of the technology. Abstracts for poster and oral presentations are due by 11 October 2019 and can be submitted [here](#).

## Funding Opportunities

The [4<sup>th</sup> MaRINET2 Transitional Access Call](#) for offshore renewable testing is open until 30 September 2019. The project offers free access to a world-leading network of testing and research infrastructures, including the European Marine Energy Centre's test sites, and is open to offshore wind, wave, and tidal energy technology developers.

The Supergen Offshore Renewable Energy Hub is inviting applications for the [Early Career Researcher \(ECR\) Research Fund](#). The fund is designed to be a flexible research fund for ECRs to support small activities that either support and develop existing research activities or develop skills further. Applications should be directed at offshore wind, wave, or tidal energy research and are due 11 October 2019. It is anticipated that there will be further calls in spring and autumn 2020 and 2021.

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## **Upcoming Events**

### Upcoming Webinars

The International Energy Agency (IEA) Wind Task 28 will host an international roundtable-style webinar on offshore wind energy social acceptance at 15:00 GMT on 26 September 2019. Register for the webinar [here](#). A recording will also be made available on the [IEA Wind Task 28](#) website.

The National Wind Coordinating Collaborative (NWCC) will host a webinar at 14:00 ET on 2 October 2019. The webinar will provide background on wind project siting and operation, as well as opportunities and constraints for wind energy from the perspective of permitting, engineering, and economics. Register for the webinar [here](#).

ETIP Ocean, in cooperation with OES-Environmental, will host a [webinar](#) at 16:00 CEST on 16 October 2019 on marine spatial planning opportunities and challenges in the ocean energy sector.

### Upcoming Conferences

The annual [Ocean Energy Europe Conference & Exhibition](#) (OEE 2019) will be held in Dublin, Ireland from 30 September to 1 October 2019. OEE 2019 will feature an [OceanSET workshop](#), an [International Renewable Energy Agency \(IRENA\) event](#), and the first [Ocean Power Innovation Network \(OPIN\) Annual Symposium](#).

The [Offshore Energy Exhibition & Conference](#) will be held in Amsterdam, Netherlands on 7-9 October 2019. Entrance to the exhibition is free. Register for the conference [here](#).

The American Wind Energy Association's (AWEA) [CLEANPOWER 2020 Conference](#) will be held on 1-4 June 2020 in Denver, Colorado. The [Call for Proposals](#) is open for both podium and poster presentations until 7 October 2019.

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## **New Documents on *Tethys***

### **[Simulation Study of Potential Impacts of Tidal Farm in the Eastern Waters of Chengshan Cape, China](#) – Liu et al. 2019**

The sea area east of Chenshan Cape has peak tidal current flows that exceed  $2.3 \text{ m s}^{-1}$ , which make it a promising site for the development of tidal current energy. In this paper, we describe our construction of a three-dimensional hydrodynamic model of the waters near Chengshan Cape, and verify the performance of the model using continuous data measured in situ. We modeled the potential impacts of the exploitation of these resources on the flow field by adding a momentum loss term in the governing equation of the model.

### **[Endangered Atlantic Sturgeon in the New York Wind Energy Area: implications of future development in an offshore wind energy site](#) – Ingram et al. 2019**

The goal of this study was to establish baseline information on endangered Atlantic Sturgeon in the New York Wind Energy Area (NY WEA), a future offshore development site. Passive acoustic transceivers equipped with acoustic release mechanisms were used to monitor the movements of tagged fish in the NY WEA from November 2016 through February 2018 and resulted in detections of 181 unique individuals throughout the site. These insights into the ecology of marine-resident Atlantic Sturgeon are crucial for both defining monitoring parameters and guiding threat assessments in offshore waters.

### **[Wave Energy Converter Arrays: Optimizing Power Production While Minimizing Environmental Effects](#) – Raghukumar et al. 2019**

A robust approach using numerical models to simulate the wave energy converter (WEC) devices and array layouts is presented that simultaneously evaluates power production and assesses environmental effects. "WEC-friendly" open-source numerical tools have been developed that are capable of assessing the environmental force on and potential changes to the environment caused by the energy extraction by WEC arrays. A case study is presented to demonstrate how the changes in WEC array configurations can be mapped and quantified using a validated model.

### **[Do wind turbines impact plant community properties in mountain region?](#) – Pătru-Stupariu et al. 2019**

The emergence of renewable energy infrastructures calls for a better understanding of their impact on biodiversity. The aim of the present study was to investigate in a mountain region the impact of a wind turbine on plant communities in their vicinity. A field survey was conducted in a wind farm situated in the Southern Romanian Carpathians, five years after the turbines were installed. We tested for the effects of the presence of the turbine and the distance to the turbine on plant species richness, on five plant ecological indicators and on the quality of the pastures.

## **Optimising tidal lagoons: an environmental focus – Elliot 2019**

Tidal lagoons could help towards meeting ambitious global and national renewable energy and carbon reduction targets, contributing towards tackling climate change through the displacement of fossil fuel generation. Despite these advantages there are no tidal lagoons in the world to date, the key barriers to lagoon development have been cost and environmental concerns. This research shows how to optimise tidal lagoons in terms of the environment, considering the wider socio-economic implications of lagoon developments as multi-use facilities.

## **Precipitation reduction during Hurricane Harvey with simulated offshore wind farms – Pan et al. 2018**

Hurricane Harvey brought to the Texas coast possibly the heaviest rain ever recorded in US history, which then caused flooding at unprecedented levels. Previous studies have shown that large arrays of hypothetical offshore wind farms can extract kinetic energy from a hurricane and thus reduce the wind and storm surge. This study quantitatively tests whether the hypothetical offshore turbines may also affect precipitation patterns. The Weather Research Forecast model is employed to model Harvey and the offshore wind farms are parameterized as elevated drag and turbulent kinetic energy sources.

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## **News and Current Events**

### **Marine Renewable Energy**

#### **DOE and NOAA Announce Prize Competition to Power Ocean Observing Platforms with Marine Renewable Energy Prize Builds on Efforts to Spur U.S. Innovation - DOE**

The U.S. Department of Energy (DOE), along with NOAA, announced a \$3 million prize competition to generate innovation in marine energy-powered ocean observing platforms. The Powering the Blue Economy™ Ocean Observing Prize will draw upon American innovators to accelerate technology development through a series of contests to demonstrate marine renewable energy-powered ocean observing platforms. The Ocean Observing Prize will provide innovators a pathway from concept to design to construction, with two separate competitions and prize awards during each phase.

#### **Mako tidal energy demonstration site opens in Singapore – Renewable Energy Magazine**

The Mako Tidal Energy Site at the Sentosa Boardwalk in Singapore has opened, following the signing of a collaboration agreement between Mako Energy Pte Ltd and Sentosa Development Corporation in December 2018. The collaboration agreement allows Mako Energy, a Singapore-based marine renewable energy company and a subsidiary of the Elemental Energy Technologies Group, to use a part of the Sentosa Boardwalk as a testbed site for the installation of tidal turbines. The site will demonstrate the scalable tidal energy system under South East Asian conditions.

## **Energy Department Announces Network Director for Marine Energy Research and Testing Program – DOE**

The U.S. Department of Energy (DOE) announced the selection of the Pacific Ocean Energy Trust (POET) as Network Director for the U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) Program, to ensure it runs effectively and efficiently. The three-year program supports testing and research for marine energy technologies and will provide access to test facilities and technical expertise to assist with numerical modeling and data collection in operational and extreme conditions.

## **Robotic System to Tackle Subsea Biofouling Will be Tested in Orkney – European Marine Energy Centre (EMEC)**

The second phase of an Innovate UK project has been launched to develop an automated fouling management system for the marine energy industry. The 24-month RoBFMS (Robots to Inspect, Maintain and Repair in Extreme and Challenging Environments) project will develop an automated robotic system to monitor, identify and clean biofouling from subsea structures, building on the learning gained from the development of a prototype robot in phase 1. The robot is expected to be deployed for real sea testing on marine energy technologies at EMEC's test sites in Orkney in Spring 2020.

## **Eco Wave Power Files New Patent; Starts Integrated Wave and Solar System Testing – Marine Energy**

Eco Wave Power (EWP) has applied for a new international patent (PCT) and a new Israeli patent for an integrated wave and solar system and started the initial testing for the combined solution. The idea for the combined solution was conceived from interest of several of EWP's potential clients in having a variety of renewable energy sources as part of their energy mix, but due to space restrictions, there is a limitation on the implementation of large-scale solar farms which often require significant land spaces.

## **Wind Energy**

### **OWSMRF – Working together to understand the impact of offshore wind energy on marine birds – Joint Nature Conservation Committee**

With UK offshore wind ambitions set to increase by 2030, an industry-led forum to better understand how large-scale development may impact marine birds was launched today. The Offshore Wind Strategic Monitoring and Research Forum (OWSMRF) led by six offshore wind developers – EDF-Renewables, Equinor, Innogy, Ørsted, ScottishPower Renewables, and Vattenfall – is being delivered by JNCC. OWSMRF will enable government nature conservation advisors, NGOs, experts and regulators to highlight critical knowledge gaps to developers.

### **World's largest wind turbine blade test stand built by Siemens Gamesa – Siemens Gamesa**

Siemens Gamesa Renewable Energy (SGRE) has begun construction of the world's largest wind turbine blade test stand in Aalborg, Denmark. The site will be capable of performing full-scale tests on the next generations of SGRE rotor blades and is expected to be fully operational before the end of 2019. The gigantic structure in Aalborg will have more steel rebar reinforcement per square meter than a wind turbine foundation, so that it has the capability to accelerate the test and prove full reliability over the lifetime of the blade in the shortest possible time, while full respecting IEC regulations.

### **[Interior Dept. Delays Vineyard Wind Construction Until 2020](#) – Engineering News Record**

Construction of the country's first commercial scale offshore wind farm off Massachusetts' coast will be delayed until at least next year while the federal Bureau of Ocean Energy Management determines the cumulative effect on commercial fishing of building multiple wind farms in the region, the agency said in a recent update. Vineyard Wind, a joint venture of Copenhagen Investment Partners and Avengrid Renewables, is developing the 800-MW, \$2.8 billion project. Five other offshore wind projects are planned adjacent to the site.

### **[INL working on plan to protect wind power from attack](#) – Post Register**

Idaho National Laboratory (INL) is spearheading an effort to develop a national plan to safeguard America's wind energy grid. INL is working with the U.S. Department of Energy, Sandia National Laboratories, the National Renewable Energy Laboratory in Golden, Colo., and the wind industry on the wind cybersecurity roadmap. The labs are examining the wind industry's current posture working with the industry to identify and research security and technology gaps.

### **[Wind Turbines Leave Behind Hard-To-Manage Waste](#) – Science Friday**

While most of a turbine can be recycled or find a second life on another wind farm, researchers estimate the U.S. will have more than 720,000 tons of blade material to dispose of over the next 20 years, a figure that doesn't include newer, taller, higher-capacity versions. It's a waste problem that runs counter to what the industry is held up to be: a perfect solution for environmentalists looking to combat climate change, an attractive investment for companies like Budweiser and Hormel Foods and a job creator across the Midwest and Great Plains.