



## 4 October 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**

#### Women in Wind Energy Survey

The International Renewable Energy Agency (IRENA) has launched its second “Global Women in the Wind Energy Sector” survey and is calling for women in the field to complete the 20-minute survey. The survey is open until 15 November 2019 and can be accessed [here](#).

#### 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. The content and abstract submission deadline has been extended to 15 November 2019.

#### 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](#). An informational webinar will be held 17 October 2019.

#### 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. Applications are due 18 October 2019.

### Funding Opportunities

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.

Applications are being accepted for the National Science Foundation's [Graduate Research Fellowship Program](#) (GRFP), which will provide three years of support for the graduate education of individuals who have demonstrated their potential for significant research achievements in STEM or STEM education. Applications are due 21-25 October 2019 (depending on discipline) and can be submitted [here](#).

The California Energy Commission has released a [solicitation](#) for applied research and development projects that facilitate the development of next-generation wind energy technologies and result in increased competitiveness, performance and reliability, while lowering the cost and the environmental and wildlife impacts of wind energy. A pre-application workshop will be held 9 October 2019 in Sacramento (and online). Applications close 13 December 2019.

The European Commission has released a [Call for Proposals](#) for projects that can improve environmental monitoring of tidal and wave devices and support the development of ocean energy in Europe. The deadline is 15 January 2020.

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

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## **Upcoming Events**

### Upcoming Conferences

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.

The [Wave Energy Scotland Annual Conference 2019](#) (WESAC19) will be held in Edinburgh, UK on 5 December 2019. WESAC19 will showcase Wave Energy Scotland's past work and upcoming opportunities. Registration is free and available [here](#).

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

### **[Life Cycle Assessment of Greenhouse Gas Emissions for Floating Offshore Wind Energy in California](#) – Bang et al. 2019**

By performing a life cycle assessment (LCA) for a representative floating offshore wind project, this report presents the first analysis of the life cycle GHG emissions of any offshore wind project in California. Our results show that supplying 1 MWh of electricity through floating offshore wind power generates ~15kg CO<sub>2</sub>-equivalent GHG emissions over its life cycle, which is comparable with the literature for conceptual floating offshore wind turbine models. Our results are within the combined range of both onshore and offshore wind projects at a utility scale.

### **[Local and Non-local Geomorphic Effects of Hydrokinetic Turbines: Bridging Renewable Energy and River Morphodynamics](#) – Musa 2019**

Marine and Hydrokinetic (MHK) energy is an emerging renewable and sustainable technology which harnesses kinetic energy of natural water flows such as tides, rivers and ocean currents. In particular, rivers are currently an overlooked source of local and continuous kinetic energy that can be exploited using the available in-stream converters technology. A crucial issue that needs further attention is the interaction between these devices and the physical fluvial environment such as the bathymetry, sediment transport, and the associated morphodynamic processes.

### **[Impacts to Wildlife of Wind Energy Siting and Operation in the United States](#) – Allison et al. 2019**

Wind energy, like all power sources, can have adverse impacts on wildlife. After nearly 25 years of focused research, these impacts are much better understood, although uncertainty remains. In this report, we summarize positive impacts of replacing fossil fuels with wind energy, while describing what we have learned and what remains uncertain about negative ecological impacts of the construction and operation of land-based and offshore wind energy on wildlife and wildlife habitat in the U.S. Finally, we propose research on ways to minimize these impacts.

### **[The impacts of tidal energy development and sea-level rise in the Gulf of Maine](#) – Kresning et al. 2019**

In this study, we employed a 3-D and two-way nested Regional Ocean Modeling System (ROMS) to address several important outstanding issues regarding tidal energy development in the Gulf of Maine. We investigated the impact of projected sea-level rise

(SLR) on the energy resources of the region, and examined how tidal dynamics will be influenced by energy extraction and/or SLR. Further, we assessed whether the effect of SLR on the generation of tides in the ocean (hence at the boundary of the region) is significant in these assessments.

### [Avian vulnerability to wind farm collision through the year: insights from Lesser Black-backed Gulls \(\*Larus fuscus\*\) tracked from multiple breeding colonies](#) – Thaxter et al. 2019

Airborne taxa such as birds may be particularly sensitive to collision mortality with wind turbines, yet the relative vulnerability of species' populations across their annual life cycles has not been evaluated. Using GPS telemetry, we studied the movements of lesser black-backed gulls (*Larus fuscus*) from three UK breeding colonies through their annual cycle. We modelled the distance travelled by birds at altitudes between the minimum and maximum rotor sweep zone of turbines, combined with the probability of collision, to estimate sensitivity to collision.

### [In sight and in mind: social implications of marine renewable energy](#) – Howell et al. 2019

This thesis presents new understanding of social responses towards MRE projects and the social impacts MRE may have on communities. The research shows that the strong and unique cultural and historical identity of coastal communities, together with the economic fragility of the areas, influences how MRE, and those promoting it, are perceived. Responses to energy projects depend on the perception of change that will occur as a result of the project and vary significantly both within and between communities.

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## News and Current Events

### Marine Renewable Energy

#### [Wales' National Marine Energy Test Facility is Open for Business](#) – Marine Energy Wales

Marine Energy Wales has announced that phase 1 of its Marine Energy Test Area (META) project is officially open for business. The announcement was made during a launch event held at Pembroke Port and marks a significant step in the development of the project. With eight pre-consented sites located in and around the Milford Haven Waterway, META aims to help developers deploy, de-risk and develop their marine energy technologies to harness the enormous energy of the ocean further afield.

#### [Carnegie Secures Lifeline to Recapitalise Wave Business](#) – Marine Energy

Carnegie has raised the required \$5.5 million to continue with the final phases of the recapitalisation plan. Existing shareholders contributed approximately \$4.4 million, with around \$1.1 million coming from new investors under the Shortfall Offer. As announced earlier, the funds raised from the offer will be utilised for the development of the CETO

Technology, corporate overheads, operation of the Garden Island Microgrid, payment to the Creditor's Trust, costs associated with the offers and working capital purposes.

### **SME reveals plans for 9MW Pempa'q Tidal Energy Project - SME**

Sustainable Marine Energy (SME) and Minas Tidal LP (MTLP) have agreed to co-develop their adjacent berths at the Fundy Ocean Research Center for Energy (FORCE) and will utilise SME's PLAT-I floating in-stream tidal energy technology to deliver up to 9MW of tidal energy to the Nova Scotia grid. The combined project is to be called the Pempa'q In-stream Tidal Energy Project and will be delivered in phases starting next year. For Phase 1 SME will deliver three next generation PLAT-I platforms, each producing up to 420kW, providing a combined capacity of 1.26MW.

### **Inyanga-Tech Finalizes HydroWing Concept and Feasibility Study – Marine Energy**

Cornwall-based Inyanga-Tech has completed concept and feasibility development of the HydroWing tidal energy project. The concept and feasibility study was aimed at demonstrating that the technology is technically and commercially viable. HydroWing is Inyanga-Tech's patent-pending tidal energy technology which is based on a full-systems approach, targeted at subsea tidal energy arrays by addressing fundamental issues that have delayed the industrialization of the sector.

### **Wales and Ireland team up for marine energy with €4.2m 'Selkie' project – Silicon Republic**

The Government and the Science Foundation Ireland marine energy research centre MaREI announced a new international agreement aiming to boost Ireland's renewable energy capacity. The €4.2m Selkie project will be led by MaREI, with partners including Swansea University, Marine Energy Wales, Menter Môn, DP Energy Ireland, and Dublin-based Gavin and Doherty Geosolutions. It will establish a cross-border network of marine energy developers and supply chains in Ireland and Wales, with various multi-use technologies and models being created and trialled through pilot projects.

## **Wind Energy**

### **New York Teams With Ireland, Denmark On Renewable Energy R&D – North American Windpower**

New York State is pursuing new partnerships with Ireland and Denmark by signing two separate memoranda of understanding that will lead to improved electric infrastructure and the advancement of more renewable energy sources, including offshore wind. The agreement with Ireland's electric utility and grid operator lays out plans to model, create and test new solutions for energy systems as part of a collaborative electric utility research facility at the New York Power Authority.

## **[The world's largest offshore wind farm is nearly complete. It can power 1 million homes](#) – CNN Business**

The world's largest offshore wind farm is taking shape off the east coast of Britain, a landmark project that demonstrates one way to combat climate change at scale. Located 120 kilometers (75 miles) off England's Yorkshire coast, Hornsea One will produce enough energy to supply 1 million UK homes with clean electricity when it is completed in 2020. The project spans an area that's bigger than the Maldives or Malta, and is located farther out to sea than any other wind farm. It consists of 174 seven-megawatt wind turbines that are each 100 meters tall.

## **[California wants a carbon-free economy by 2045: Can floating offshore wind help it get there?](#) – Utility Dive**

Emerging floating offshore wind technologies could save California electricity customers billions in the next two decades and play a key role in achieving the state's ambitious climate and renewable energy goals, a new report concludes. But the mechanics of floating wind remain unproven at scale and developers face multiple permitting and financing hurdles. Nevertheless, California could be where floating offshore wind finally breaks into the U.S. market, developers and offshore wind researchers told Utility Dive.

## **[UN-OHRLLS and IRENA Agree to Support Renewable Energy in Climate Vulnerable Countries](#) – IRENA**

The United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS) and the International Renewable Energy Agency (IRENA) have underscored their commitment to strengthen cooperation aimed at advancing renewable energy in the Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS).

## **[Offshore wind developers building Northeast supply chain](#) – Workboat**

Offshore wind energy developers are moving to set up their first U.S. manufacturing and support bases, sensing momentum in the market with New York and New Jersey seeking a combined 12 gigawatts of new energy by 2030. The world's biggest wind company, Denmark-based Ørsted, has an agreement with a German steelmaker to set up a manufacturing hub in southern New Jersey to finish turbine foundations for its Ocean Wind project off Atlantic City, said Fred Zalzman, who heads market development for its U.S. division.