10 July 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.

Announcements	MRE Documents	MRE News
Upcoming Events	Wind Documents	Wind News

Announcements

Request for *Tethys* Blast Content

Do you have a relevant announcement, job or funding opportunity, or upcoming event or webinar you would like highlighted in an upcoming *Tethys* Blast? If you have specific content you would like circulated to the greater wind and marine renewable energy communities, please send it to tethys@pnnl.gov for consideration.

Monitoring Datasets Discoverability Matrix Workshop

OES-Environmental is hosting an online workshop to describe and demonstrate the use of the Monitoring Datasets Discoverability Matrix, an interactive tool developed to organize and filter datasets from already consented (or permitted) projects to aid consenting of new MRE projects. This workshop is aimed at developers, researchers, and regulators involved in environmental effects of MRE but is open to all, and will be held at both 8:00am PDT and 5:00pm PDT on 21 July 2020. Instructions on joining the online webinars are available on *Tethys*.

Vineyard Wind Comment Period

The U.S. Bureau of Ocean Energy Management (BOEM) has completed a Supplement to its Draft Environmental Impact Statement (EIS) for the proposed Vineyard Wind I offshore energy project and is requesting public comment. Submit written comments here by 27 July 2020.

Call for Abstracts

The American Geophysical Union (AGU) is now accepting abstracts for the AGU Fall Meeting 2020, which will be held virtually from 7-11 December 2020. Please consider submitting an abstract to Session GC065 (Renewable Energy: Marine and Hydrokinetic), which will focus on the science, technology, and policy issues of MRE, including wave, current, tidal, riverine, and ocean thermal energy conversion. Studies focusing on environmental effects, environmental monitoring, and risk evaluation are all of interest and international and early career researchers are particularly encouraged to submit. This session will be held in coordination with Session GC066 (Renewable Energy: Solar and Energy Integration) and Session GC067 (Renewable Energy: Wind Energy). Abstracts submissions are due 29 July 2020.

Call for Papers

The Marine Technology Society Journal has extended its manuscript submission deadline for the special issue entitled, *Utilizing Offshore Resources for Renewable Energy Development: Marine Renewable and Offshore Wind Energy*. Manuscript submissions are now due 17 July 2020.

Funding/Testing Opportunities

The U.S. Department of Energy's (DOE) Water Power Technologies Office (WPTO) and the National Oceanographic and Atmospheric Administration's (NOAA) Integrated Ocean Observing System program have announced the focus of the next stage of the Powering the Blue Economy: Ocean Observing Prize. Starting this fall, the DEVELOP Competition will challenge U.S. innovators to integrate marine energy technologies to recharge autonomous underwater vehicles—specifically for the purpose of hurricane monitoring in the Atlantic Ocean.

The U.S. DOE WPTO's 2021 Marine Energy Collegiate Competition (MECC): Powering the Blue Economy application period will open in August 2020. Building on the inaugural MECC, the 2021 competition challenges competitors to unlock the power of the ocean through the development of next-generation technologies that build resilient coastal communities and provide power at sea. The competition is open to U.S. undergraduate and graduate-level students. Learn more here.

The U.K. Research and Innovation's Engineering and Physical Sciences Research Council (EPSRC) has issued a call to fund research grant proposals in wave energy. EPSRC is looking to fund proposals in the key areas highlighted by the Supergen Offshore Renewable Energy Hub's Wave Energy Roadmap, including novel designs for niche applications; modelling, forecasting, and evaluation of wave energy resource; and new materials for wave energy converters. An Intent to Submit is due by 14 July 2020 and the full proposal stage closes on 23 September 2020.

The Testing Expertise and Access for Marine Energy Research (TEAMER) program, sponsored by the U.S. DOE and directed by the Pacific Ocean Energy Trust, is accepting applications for its 1st Request for Technical Support application period. Applications are due by 5:00pm ET (9:00pm UTC) on 31 July 2020.

TEAMER is also accepting applications to add new facilities (both physical test infrastructure as well as expertise capabilities such as modelling and analysis services) to the TEAMER Test Facility Network. Facilities looking to apply are asked to submit the facility questionnaire by 17 July 2020 in order to be considered available for the 2nd Request for Technical Support testing and assistance period. See the New TEAMER Facility Process page for more information on how to apply as a facility.

Interreg North-West Europe's Ocean DEMO (Demonstration Programme for Ocean Energy Pilot Farms and Supporting Technologies) project recently opened its 3rd Call for Applications. Successful applicants will receive free access to test their ocean energy products and services in real sea environments at the project's network of test centers. Applications close 18 September 2020 at 7:00pm CEST (5:00pm UTC). An informational webinar is now available.

Employment Opportunity

SMRU Consulting, a marine mammal consultancy owned by the University of St Andrews, is seeking a Principal Scientist/Consultant to lead on consultancy and applied research projects. To apply, please email your CV and cover letter to info@smruconsulting.com by 20 July 2020.

Upcoming Events

Upcoming Workshop

The New York State Environmental Technical Working Group's 2020 State of the Science Workshop on the Cumulative Impacts to Wildlife from Offshore Wind Energy, originally rescheduled for mid-November in Rye Brook, New York (U.S.), will now be held virtually. Plenary presentations and Q&A panel discussions will occur throughout the week of 16-20 November 2020. Smaller working meetings will be held virtually in late 2020 and early 2021, and efforts will culminate in a final webinar in the Spring of 2021 to report the outcomes of the breakout group efforts. Registration will reopen this summer at a new reduced rate (TBD).

Upcoming Conferences

RenewableUK's Global Offshore Wind Virtual Conference and Exhibition (GOW V-Fest) will be held online from 22-24 July 2020. The registration deadline is 15 July 2020.

The Ecological Society of America (ESA) 2020 Annual Meeting will be held online from 3- 6 August 2020. The registration deadline is 23 July 2020.

New Documents on *Tethys*

Marine Renewable Energy

[Quantifying fish-turbine interactions using VEMCO's new high residency acoustic electronic tagging technology](#) – McLean et al. 2019

It remains unclear if fishes that occupy Canada's leading tidal energy test site will be negatively affected by turbine installations. Detection of effects on individuals are critical for listed endangered species where the loss of one individual may have a negative impact on the population. We used new, innovative Nova Scotian produced High Residency fish tracking technology from VEMCO to determine the spatial and temporal overlap, and interactions of Atlantic Salmon (two life-stages, smolts and kelts), Alewife, Striped Bass, and Atlantic Sturgeon with the FORCE test site in Minas Passage.

[Public perceptions of tidal energy: Can you predict social acceptability across coastal communities in England?](#) – Hooper et al. 2020

Early consideration of potential societal issues faced by the nascent tidal industry is important to facilitate public engagement and potentially avoid levels of conflict that have arisen within other renewable energy sectors; general expressions of public support do not always translate into approval for local developments. This study examined the attitudes of 963 people in South West England to hypothetical local tidal energy projects, analysing the results both by geographic location and according to the coastal community typology developed for England by the Marine Management Organisation.

[Tidal Patterns and Sediment Dynamics in a Hypertidal Estuary Influenced by a Tidal Power Station](#) – Rtimi et al. 2020

The Rance estuary is a relatively small low-inflow steep-sided *ria*, located in the Brittany coast of northern France, with a maximum spring tidal range of 13.5 m at the mouth. Taking advantage of this hypertidal regime, the first and largest operational tidal power station in the world was built at the estuary mouth and is in operation since the 1960s. In this study, tidal wave patterns and sediment dynamics are analyzed in this man-engineered system. A numerical model based on a two-dimensional depth-averaged approach is implemented to predict the tide propagation and currents along the estuary.

Wind Energy

[Integrating Wind Turbines and Fish Farms: An Evaluation of Potential Risks to Marine and Coastal Bird Species](#) – Benjamins et al. 2020

Integrating Marine Renewable Energy (MRE) generation technologies (e.g., wind turbines) into remote, off-grid aquaculture sites will reduce reliance on fossil fuels by allowing localised low-carbon power generation, but may also result in novel

environmental pressures. In this study, we undertook a thought experiment to assess the potential for increased collision risks to local marine and coastal bird species of integrating small wind turbines (4 units; combined capacity of 200 MWh) into a generalised marine fish farm in western Scotland (UK).

[Optimizing wind energy conversion efficiency with respect to noise: A study on multi-criteria wind farm layout design](#) – **Cao et al. 2020**

> Unsuitable wind farm layout design influences wind energy conversion efficiency as well as wind farm noise radiation. In the past, more attentions were paid on high energy efficiency wind farm design, but little progress was achieved on noise constrained wind farm optimization. The present work aims at developing a numerical optimization framework that combines the modelling of wind farm wake and wind farm noise with the annual energy production in an optimization algorithm.

[On the food-web ecology of offshore wind farms, the kingdom of suspension feeders](#) – **Mavraki 2020**

> In this PhD thesis, the effects of offshore wind turbines on the local food web properties were investigated at two levels: (a) detailed food web structure on one gravity-based foundation (Chapters 2 and 3), and (b) local (Belgian part of the North Sea) effects on primary productivity and on fish (Chapter 4 and 5). Colonising assemblages along the entire depth gradient of a gravity-based foundation in the Belgian part of the North Sea (BPNS) and fish species in close proximity to the same turbine were sampled to get insights in the in situ food web structure.

News & Press Releases

Marine Renewable Energy

[CorPower Ocean launches pioneering wave energy project in northern Portugal](#) – **CorPower Ocean**

> With a 16 million EUR investment plan, CorPower is establishing an R&D, Manufacturing & Service Centre for Wave Energy Converters in Viana do Castelo. The location has been chosen to support CorPower's flagship demonstration project HiWave-5, and for the long-term development of supply and service capacity for commercial wave energy farms. CorPower's work strongly complements the Portuguese Industrial Strategy for Ocean Renewable Energies, designed to create a competitive and innovative industrial export cluster for ocean renewable energy.

[Blue-GIFT call 2 recommends support to five ocean energy technologies](#) – **Blue-GIFT**

> The second call of the Interreg Atlantic Area funded Blue-GIFT (Blue Growth and Innovation Fast Tracked) project has recommended five ocean energy companies for

support to deploy their technology in the Atlantic Area region. This completes the second of three calls for applications in the Blue-GIFT project. The companies who received vouchers for testing their technology in the 2nd call are Blue Shark Power System, CorPower Ocean, Resolute Marine Energy, Tension Technology International Ltd, and Exponential Renewables S.L.

[Florida Company Develops Way to Generate Power By Harnessing The Gulf Stream](#) – **Forbes**

OceanBased Perpetual Energy has pioneered a way to generate electricity by harnessing the Gulf Stream, the steady-flowing ocean current that brings warm water from the Gulf of Mexico into the Atlantic and up the East Coast, past Greenland and all the way to Iceland and the British Isles. The Miami-based company is working with Florida Atlantic University (FAU) and together they have been testing five different types of turbines to determine which works most effectively while submerged 80 feet below the ocean's surface.

[Orbital Marine Power teams up with Black & Veatch for tidal turbine optimization](#) – **Orbital Marine Power**

Orbital Marine Power Ltd (Orbital), the world's leading developer of floating tidal stream turbines, has appointed Black & Veatch as Lead Engineering Partner to support technology optimisation and cost reduction engineering under the company's €5m R&D programme. Supported by the INTERREG France (Channel) England TIGER (Tidal Stream Industry Energiser) project, the four-year programme will build on Orbital's unique floating tidal turbine technology, the O2, in a focused initiative to identify and de-risk innovations capable of accelerating cost reductions for tidal stream energy.

[Ocean Power Technologies (OPT) Unveils Autonomous Surface Surveillance Solution for Offshore Territorial Applications](#) – **OPT**

Introducing the OPT PowerBuoy Surface Surveillance Solution, suitable for security monitoring of offshore areas. A single OPT Surface Surveillance Solution can monitor more than 1600 square miles of ocean surface on a permanent or temporary basis, with the ability to seamlessly link multiple surveillance assets together over large ocean areas giving end-users visibility into potentially damaging environmental or illegal activities. Customized solutions are also available including the addition of subsea sensors to monitor for acoustic signatures, tsunami activity, and water quality.

Wind Energy

[Dominion Energy Completes Construction of First Offshore Wind Project in U.S. Federal Waters](#) – **Dominion Energy**

Dominion Energy announced the successful installation of the two turbine, 12-megawatt Coastal Virginia Offshore Wind (CVOW) pilot project 27 miles off Virginia Beach. The

first offshore wind farm to be approved by the Bureau of Ocean Energy Management (BOEM) and installed in federal waters, and second constructed in the United States, was built safely and on schedule despite the worldwide impact from the coronavirus pandemic. The turbines will now undergo acceptance testing before being energized later this summer and producing enough clean, renewable energy, at peak output, to power 3,000 Virginia homes.

[Vattenfall gives green light to world's largest offshore wind project](#) – **Vattenfall**

With its installed capacity of 1,500 MW, the Hollandse Kust Zuid offshore wind farm will be the largest of its kind worldwide, when fully operational in 2023. It will have a renewable electricity output equivalent to the annual consumption of over two million Dutch households. Vattenfall was awarded permits for the construction of Hollandse Kust Zuid after winning two subsidy-free tender rounds in 2018 and 2019. The two projects have been combined into one wind farm to optimise the process. The wind farm will consist of 140 turbines of 11 MW installed offshore for the first time.

[GWEC launches Task Force to drive global growth of floating offshore wind](#) – GWEC

The Global Wind Energy Council (GWEC) has announced the formation of a Floating Offshore Wind Task Force with participation of key global industry players and associations to drive global growth of floating offshore wind. Floating offshore wind is a significant market opportunity and can increase offshore wind resource by tenfold by opening new markets where fixed-bottom offshore wind would not be possible. As of the end of 2019, 65.7 MW of floating offshore wind capacity was installed globally, in the UK, Japan, Portugal, Norway and France.

[Breakthrough Machine Learning Approach Quickly Produces 50X Higher-Resolution Climate Data](#) – NREL

Researchers at the U.S. Department of Energy's (DOE's) National Renewable Energy Laboratory (NREL) have developed a novel machine learning approach to quickly enhance the resolution of wind velocity data by 50 times and solar irradiance data by 25 times—an enhancement that has never been achieved before with climate data. The researchers took an alternative approach by using adversarial training, in which the model produces physically realistic details by observing entire fields at a time, providing high-resolution climate data at a much faster rate. This approach will enable scientists to complete renewable energy studies in future climate scenarios faster and with more accuracy.

[Ørsted and TSMC sign the world's largest renewables corporate power purchase agreement](#) – Ørsted

Ørsted and Taiwan-based TSMC have signed a corporate power purchase agreement (CPPA). TSMC will offtake the full production from Ørsted's 920MW Greater Changhua 2b & 4 offshore wind farm, making it the largest-ever contract of its kind within

renewable energy. The 20-year fixed-price contract period starts once Greater Changhua 2b & 4 reaches commercial operations in 2025/2026, subject to grid availability and Ørsted's final investment decision. TSMC, the world's largest semiconductor foundry, is also a world-leader in green manufacturing.