



7 August 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. If you have specific content you would like circulated to the greater wind and MRE communities, please send it to tethys@pnnl.gov for consideration.

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Announcements

Aggregate Search on *Tethys*

Tethys and [Tethys Engineering](#) are part of a larger framework of MRE databases known as [PRIMRE](#) (The Portal and Repository for Information on Marine Renewable Energy). As part of an effort to increase the accessibility and discoverability of information supporting MRE development, the search bar at the top of *Tethys* now allows users to simultaneously search for information hosted on *Tethys*, *Tethys Engineering*, and the [MHK Data Repository](#).

Matrix Workshop Recording Available

OES-Environmental hosted an online workshop on 21 July 2020 to demonstrate the use of the [monitoring datasets discoverability matrix](#), an interactive tool to organize and filter datasets from MRE projects. View the recording [here](#).

Funding/Testing Opportunities

The Wind Wildlife Research Fund released a [Request for Proposals](#) for research projects on bats and wind energy to start in early 2021. The Fund seeks research projects designed to increase our

understanding of bat behavior and ecology that influences temporal, spatial, and interspecific variation in collision risk and response to minimization strategies. Pre-proposals are due by 11:59pm PDT (6:59am UTC+1) on 24 August 2020. An [informational webinar](#) is now available.

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.

The Offshore Wind Growth Partnership (OWGP) has issued [two calls](#) to enable diversification, improve competitiveness, and drive innovation across the UK offshore wind supply chain. The Cross-Sector Support Call closes 18 September 2020 at 5:00pm BST (4:00pm UTC). Stage 1 of the Open Call closes 21 August 2020 at 5:00pm BST (4:00pm UTC).

The Swedish Energy Agency has [recently opened](#) a call for the development of cost-effective and sustainable marine energy systems. The call is open for project proposals related to generation, reliability and survivability, environmental impact, operational and maintenance strategies, and testing and demonstration. Applications are due 21 September 2020.

Employment Opportunities

The University of St Andrews is seeking a [Statistical Consultant](#) to support SMRU (Sea Mammal Research Unit) Consulting and the Centre for Research into Ecological and Environmental Modelling (CREEM). Apply [here](#) by 10 August 2020.

The University of Groningen is seeking a candidate for a [PhD Position in Climate-Energy Modelling](#) to support the Energy and Sustainability Research Institute Groningen (ESRIG) and the Royal Netherland Meteorological Institute (KNMI). Apply [here](#) by 6 September 2020.

Upcoming Events

Upcoming Webinars

The National Renewable Energy Laboratory (NREL) and Defenders of Wildlife will be hosting a free, nine-part webinar series, *Wildlife & Wind Energy Webinar Series: Considerations for monitoring and managing impacts*, from late August through mid-November 2020. Sign up [here](#) to receive updates on and invitations for all nine webinars in this series. All webinars will be recorded and hosted on *Tethys*.

The National Wind Coordinating Collaborative (NWCC) and the NREL will be hosting a webinar, "[Updated Wind Energy Development Scenarios in the U.S.: Tools to Understand Potential Wind-Wildlife Interaction](#)", on 18 August 2020 at 1:00pm EDT (5:00pm UTC). Register [here](#).

NWCC will also be hosting a [webinar](#) on 20 August 2020 at 1:00pm EDT (5:00pm UTC). In this webinar, U.S. Geological Survey (USGS) researchers will present preliminary results of two projects examining early-stage technologies aimed at minimizing the potential impacts of wind turbines on wildlife. Register [here](#).

The Pacific Ocean Energy Trust (POET) will be hosting a webinar, “[Wind Resource Assessments](#)”, on 27 August 2020 at 10:00am PDT (5:00pm UTC). The webinar will feature speakers from the National Renewable Energy Laboratory (NREL), Pacific Northwest National Laboratory (PNNL), and U.S. Bureau of Ocean Energy Management (BOEM). Register [here](#).

Upcoming Conferences

The Business Network for Offshore Wind’s [2020 International Partnering Forum](#) will be held online from 18-20 August 2020 with an Opening Plenary, virtual exhibit hall, CareerMatch job fair, poster sessions, and more. Register [here](#) before rates increase on 8 August 2020.

The [Irish Wind Energy Association’s \(IWEA\) 2020 Annual Conference](#) will be held online from 21-24 September 2020, followed by a face-to-face social event on 25 September 2020. Early bird rates are available until 13 August 2020. Register [here](#).

The Marine Alliance for Science and Technology for Scotland’s (MASTS) [10th Annual Science Meeting \(ASM\)](#) will be held online from 5-9 October 2020. Abstract submissions for 5-6 minute ‘flash talks’ are due by 4:00pm BST (3:00pm UTC) on 14 August 2020.

New Documents on *Tethys*

Marine Renewable Energy

[Regional baselines for marine mammal knowledge across the North Sea and Atlantic areas of Scottish waters – Hague et al. 2020](#)

The construction, operation and decommissioning of renewable energy devices has the potential to impact sensitive marine species such as marine mammals, which are protected in Scotland under various pieces of legislation. A key requirement in understanding and mitigating any potential impacts on these animals is ascertaining how many individuals there are, which areas they use, and when they are present. This work represents the most comprehensive review of its kind for marine mammal baseline information in Scottish waters, bringing together a diverse dataset from key sources to provide geospatial and demographic information for cetaceans and seals.

[Cavitation observations, underwater radiated noise measurements and full-scale predictions of the Hydro-Spinna turbine – Rosli et al. 2020](#)

With research focusing on the hydrodynamic and design aspects of the technologies used, little is known of the impact of marine current turbine operation on marine life and

environment. This paper looks at the underwater radiated noise (URN) produced from the operation of a novel tidal turbine, the Hydro-Spinna. URN measurements were taken from a 280 mm diameter model tested in Newcastle University. The model results were extrapolated to predict the full scale URN level for three turbine diameters of 5 m, 10 m and 15 m and compared to the fish reaction level acoustic level provided by the International Council for the Exploration of the Sea (ICES) as a reference.

Review of Available Models for Environmental Effects of Marine Renewable Energy – Buenau et al. 2020

Development of marine renewable energy (MRE) has been hindered by the need for information about potential environmental effects. Monitoring of these effects, however, is expensive and it is not always clear how to efficiently collect data for a wide range of possible effects. Predictive modeling of environmental effects can help determine what needs to be monitored, while also estimating what effects might occur and their magnitude. We reviewed models of six categories of stressors: collision risk, underwater noise, electromagnetic fields (EMFs), changes in habitat, displacement of marine species, and changes in oceanographic systems.

Wind Energy

Genetic Approaches Are Necessary to Accurately Understand Bat-Wind Turbine Impacts – Chipps et al. 2020

Bats are killed at wind energy facilities worldwide and we must improve our understanding of why this is happening and implement effective strategies to minimize impacts. To this end, we need accurate assessments of which individuals from which bat species are being killed at individual wind projects and at regional and range-wide scales. Traditional fatality searches have relied on physical characteristics to ascertain species and sex of bat carcasses collected at wind turbines; however, the resulting data can be incomplete and inaccurate. In contrast, the use of readily available and low-cost molecular methods improves both the quality and quantity of available data.

Paint it black: Efficacy of increased wind turbine rotor blade visibility to reduce avian fatalities – May et al. 2020

As wind energy deployment increases and larger wind-power plants are considered, bird fatalities through collision with moving turbine rotor blades are expected to increase. Laboratory experiments have indicated that painting one of three rotor blades black minimizes motion smear ([Hodos 2003](#)). We tested the hypothesis that painting would increase the visibility of the blades, and that this would reduce fatality rates in situ, at the Smøla wind-power plant in Norway, using a Before–After–Control–Impact approach employing fatality searches. The annual fatality rate was significantly reduced at the turbines with a painted blade by over 70%, relative to the neighboring control turbines.

Wind turbine blade end-of-life options: An eco-audit comparison – Liu et al. 2019

Wind energy has developed rapidly over the last two decades to become one of the most promising economical and green sources of renewable energy, responding to concerns about use of fossil fuels and increasing demand for energy. However, attention is now turning to what happens to end-of-life wind turbine waste, and there is scrutiny of its environmental impact. In this study, we focus on one aspect of this, the blades. We analyse and compare end-of-life options for wind turbine blade materials (mainly glass fibre reinforced plastic and carbon fibre reinforced plastic) in terms of environmental impact, using our own data together with results gathered from the literature.

News & Press Releases

Marine Renewable Energy

Vestmannasund project update – Minesto

Minesto has completed the installation of subsea and onshore infrastructure in the company's tidal energy project in Vestmannasund, Faroe Islands. Minesto also successfully installed the first DG100 tidal energy converter, but during the initial commissioning phase a mechanical failure occurred in the powerplant's mooring interface and denied further operations. After the concluded installation of the subsea export cable, the Vestmannasund site infrastructure is now operational and the offshore site connected to the Faroese electricity grid. The DG100 kite system has been recovered for service and re-fitting of the failed component in the mooring system.

Release of 2 New Deliverables – DTOceanPlus

The DTOceanPlus team have produced two new important deliverables. Deliverable D7.3 - Scenarios Input Data describes the compilation of required data inputs for the various validation scenarios. Each scenario is characterised through a set of project data, inherent to the technology as well as metocean conditions and other location related data. Deliverable D8.2 - Analysis of the European Supply Chain analyses the value chain of ocean energy, regarding its stakeholders, structure, current engagement and breakdown of project costs. It explores opportunities for European companies and encompasses the typical project lifecycle activities.

Oscilla Aims to Deliver Cost Competitive Power With its Triton Wave Energy Systems – Renewable Energy Magazine

There's a huge potential resource of wave power, but developing a system that can withstand harsh ocean environments and convert ocean waves into electricity efficiently has so far proven to be a formidable challenge. Thanks to modern advances in computing power and engineering simulation software, wave technology companies such as Oscilla Power are now able to more accurately model how devices will react in real ocean waves,

including extreme waves. This helps them to more quickly evaluate and optimize different designs, developing innovative and efficient wave energy technology solutions.

This demolished wall might be all we ever see of the £1.3 billion Swansea Bay tidal lagoon – WalesOnline

The developer behind the Swansea Bay tidal lagoon wants to sit down with council and Government representatives to find a way forward, despite the authorities stating that the £1.3 billion project no longer has planning permission. Richard Ambrose, project director at Tidal Power plc, said it would take tens of millions of pounds to start from scratch again and move forward any new tidal lagoon proposal. The UK Government has said Tidal Power's five-year development consent order (DCO) for its £1.3 billion project lapsed at the end of June - a position shared by Swansea Council.

Ocean Aware Project Announcement – Canada’s Ocean Supercluster

Alongside project partners, Canada’s Ocean Supercluster recently announced the Ocean Aware project, which will develop and commercialize world-class solutions for monitoring fish health, fish movement, and the environment, and supporting both profitable and sustainable practices in the ocean. With a total project value of \$29 million, the Ocean Supercluster will provide \$13.74 million in funding for the project, with \$15.7M in funding coming from industry partners. Ocean Aware represents the first-of-its-kind collaboration across ocean sectors in fisheries, aquaculture, energy, shipping, and ocean technology.

Wind Energy

First Semi-Submersible Floating Wind Farm Fully Operational – North American Windpower

Following the connection of the last of the three platforms to the 20-meter export cable connecting the WindFloat Atlantic to the substation at Viana do Castelo, Portugal, the construction of the floating offshore wind farm has been completed. WindFloat Atlantic, which has a total installed capacity of 25 MW, is the world’s first semi-submersible floating wind farm. This milestone cements the success of a decade-long project by the Windplus joint venture, ensuring access to wind resources in water depths that have previously been inaccessible.

CrossWind wins tender for Hollandse Kust (noord) wind farm – Eneco

The CrossWind consortium, a joint venture between Shell in the Netherlands and Eneco, has been awarded the tender for the subsidy-free offshore wind farm Hollandse Kust (noord). The consortium plans to have Hollandse Kust (noord) operational in 2023 with an installed capacity of 759 MW, generating at least 3.3 TWh per year. The offshore wind farm will include five technology demonstrations that could be implemented at full-scale in the future (a floating solar park, short-term battery storage, turbines that are optimally

tuned to the network to minimise ‘wake’-effects, and ‘green hydrogen’ made by electrolysis as a further storage technique).

GE Research Uses Summit Supercomputer for Groundbreaking Study on Wind Power – General Electric

GE scientists have been authorized by the U.S. government to access one of world’s fastest supercomputers to advance offshore wind power, which could be a significant part of the Wind Energy sector that is projected to provide 20% of all U.S. energy needs in the next 10 years. GE engineers have been granted access to the Summit supercomputer at Oak Ridge National Laboratory in Tennessee, through the U.S. Department of Energy’s competitive Advanced Scientific Computing Research Leadership Computing Challenge program. The goal of this groundbreaking effort, just launched, is to use supercomputer-driven simulations to conduct otherwise infeasible research that will lead to improved efficiencies in offshore wind energy production.

PivotBuoy and X1Wind floating platform under construction – PivotBuoy

The offshore wind floating platform PivotBuoy is already under construction and about to be installed this fall in the Canary Islands. In March, the PivotBuoy mooring system and floating platform design phase was completed and the design was approved by the consortium partners at the Detailed Design Review meeting held at X1Wind offices in Barcelona. After the design was approved for fabrication, the manufacturing of the PivotBuoy and the floating platform started at DEGIMA facilities in Santander. The manufacturing of the platform is to be finished during August, and it will be transported to its final destination in Gran Canaria after the summer.

Sunny with a Strong Chance of Wind: NREL Resource Characterization Efforts Guide Offshore Wind System Decisions – National Renewable Energy Laboratory (NREL)

Assessments of offshore sites—which offer some of the greatest potential capacity for generating electricity from wind—include additional variables such as water currents, depths, and temperatures, along with volatile weather patterns. Meteorologists, engineers, and geographic information system experts at the Department of Energy’s NREL are leading wind resource characterization efforts essential to the development of offshore wind. In collaboration with industry, academic, and government partners, the laboratory is providing measurements, data, and modeling needed for decisions by policymakers and commercial enterprises.