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The bi-weekly *Tethys Blast* will update you with new information on *Tethys*, news articles of international interest, and opportunities in wind and marine renewable energy. We hope you find this a valuable tool to keep you connected to colleagues, new research, opportunities, and industry milestones.

Tethys on Social Media

Be sure to check out and follow our new *Tethys* [Instagram](#) account, as well as our existing [Facebook](#) and [Twitter](#) accounts!

Upcoming Funding Opportunities

The U.S. Department of Energy's (DOE) National Renewable Energy Laboratory (NREL) has released a [request for proposals](#) in support of the Technology Development and Innovation program to aid in the advancement of early stage wind-wildlife impact mitigation research, due 10 June 2019.

The New York State Energy Research and Development Authority (NYSERDA) has released an Environmental and Fisheries Research for Offshore Wind Energy Development [Program Opportunity Notice](#) (solicitation) making \$2M available to support independent research, due 14 May 2019.

Upcoming Conferences

[U.S. Offshore Wind 2019](#) will be held in Boston, Massachusetts on 10-11 June 2019. Early bird registration is available until 19 April 2019.

[All-Energy 2019](#) & [Dcarbonise 2019](#) will be held in Glasgow, Scotland on 15-16 May 2019. Registration for these co-located events is free.

The American Wind Energy Association's (AWEA) [WINDPOWER 2019](#) will be held in Houston, Texas on 20-23 May 2019.

New Documents on *Tethys*

New documents are regularly added to *Tethys*, hand-selected for their relevance to the environmental effects of wind and marine renewable energy. Short excerpts from new or popular documents are listed below, accessible by the accompanying *Tethys* links:

[Localised anthropogenic wake generates a predictable foraging hotspot for top predators](#) – Lieber et al. 2019

Strong currents interacting with man-made structures can generate complex three-dimensional wakes that can make prey more accessible. Whether localised wakes from man-made structures can generate predictable foraging hotspots for top predators is unknown. Here we address this question by quantifying the relative use of an anthropogenically-generated wake by surface foraging seabirds, verified using drone transects and hydroacoustics.

[Resource selection and wintering phenology of White-winged Scoters in southern New England: Implications for offshore wind energy development](#) – Meattley et al. 2019

Southern New England provides key wintering habitat for White-winged Scoters (*Melanitta fusca*). The U.S. Bureau of Ocean Energy Management (BOEM) has established 9 Wind Energy Area (WEA) lease blocks along the Atlantic Outer Continental Shelf in areas that may provide important staging and wintering habitat for scoters and other species of sea ducks. Concern over the potential impact of offshore wind energy on sea duck populations has led to efforts to develop models to understand their distribution, habitat use, and site fidelity.

[Interaction between hydrokinetic turbine wakes and sediment dynamics: array performance and geomorphic effects under different siting strategies and sediment transport conditions](#) – Musa et al. 2019

In-stream hydrokinetic energy conversion devices can be deployed in large scale rivers to produce energy with minimal infrastructure costs. They are however shown to actively interact with the channel bathymetry and sediment transport generating a scour and deposition pattern similar to bridge pier. Symmetric, streamwise, aligned turbine installations have shown to introduce only local effects, yet complex configurations may trigger non-local morphodynamic instabilities.

[Micrometeorological impacts of offshore wind farms as seen in observations and simulations](#) – Siedersleben et al. 2018

We present aircraft measurements and simulations showing an impact on temperature and humidity at hub height in the order of 0.5 K and 0.5 g kg⁻¹ even 60 km downwind of a wind farm cluster. We extend these simulations to explore a realistic future scenario, suggesting wakes in potential temperature and water vapor propagating more than 100

km downwind. Such impacts of wind farms are only observed in case of a strong stable stratification at rotor height, allowing wind farms to mix warmer air downward.

Wave energy drives biotic patterns beyond the surf zone: Factors influencing abundance and occurrence of mobile fauna adjacent to subtropical beaches – Schultz et al. 2019

Management of beach ecosystems often focuses on geomorphic and socio-economic issues. Yet understanding patterns and processes affecting fishes and invertebrates in this dynamic inshore environment will better inform ecosystem management. We used Baited Remote Underwater Video (BRUVs) to survey fish and mobile invertebrate assemblages immediately beyond the surf zone (in 5–8 m depth) across 12 beaches of varying energy and geomorphology, to assess drivers of abundance and occurrence.

Impact of pile-driving on Hector's dolphin in Lyttelton Harbour, New Zealand – Leunissen et al. 2019

Several dolphin species occur close inshore and in harbours, where underwater noise generated by pile-driving used in wharf construction may constitute an important impact. Such impacts are likely to be greatest on species such as the endangered Hector's dolphin (*Cephalorhynchus hectori*), which has small home ranges and uses this habitat type routinely. Using automated echolocation detectors in Lyttelton Harbour (New Zealand), we studied the distribution of Hector's dolphins using a gradient sampling design over 92 days within which pile-driving occurred on 46 days.

News and Current Events

Marine Renewable Energy

Ireland takes helm on ocean energy project – reNEWS

The Sustainable Energy Authority of Ireland (SEAI) is leading the Ocean Power Innovation Network (OPIN) project which aims to accelerate the development of the ocean energy sector. The €2.6 million pan-European initiative will run for three years. SEAI will partner with organisations in the UK, Belgium, France, Germany and the Netherlands to explore ways to unlock the potential of this renewable energy resource.

Wello Inks 30 MW India Deal – Marine Energy

Finnish technology company focused on ocean-wave energy conversion, Wello, has signed a letter of intent with Inix Group for two projects of 30MW total offshore India. In partnership with the Indian government, Ixin, part of Ixar Group, is looking to acquire Wello's Penguin Core package for the construction of 20MW and 10MW wave energy parks.

Recovery of D10 tidal turbine – Sabella

During the night of April 10th-11th, 2019, in the Fromveur Passage, the D10-1000 turbine was successfully lifted from its gravity-based foundation. After a very satisfactory operating period of the tidal turbine following its redeployment in October 2018 and a continuous electricity production over several months at the end of last year, SABELLA's team focused on testing new control methods at the beginning of 2019.

Edinburgh tidal energy firm lands £3.5m investment – The Scotsman

Edinburgh-based renewables firm Sustainable Marine Energy (SME) has netted almost £3.5 million to drive development of its tidal products for the Canadian market. The tidal energy specialist has secured the seven-figure equity investment to further develop its Plat-I platform system currently in use in Nova Scotia.

First textbook in marine renewable energy explores harnessing ocean power – The University of Rhode Island

“Fundamentals of Ocean Renewable Energy: Generating Electricity from the Sea,” written by M. Reza Hashemi, assistant professor in the Department of Ocean Engineering and Graduate School of Oceanography at the University of Rhode Island, in collaboration with Simon Neill, is the first textbook of its kind on ocean energy. Published by Academic Press Elsevier, the book covers a range of ocean renewable energy topics.

Wind Energy

Largest offshore wind farm in the Baltic Sea opened – E.ON

E.ON and Equinor's 385 MW Arkona offshore wind farm, located 35 kilometers northeast of the island of Rügen, went into operation with a festive event in the port of Sassnitz-Mukran. German Chancellor Angela Merkel, Mecklenburg-Vorpommern's Prime Minister Manuela Schwesig and Norway's Minister of Energy and Petroleum Kjell-Børge Freiberg launched power generation together this week.

Carbon Trust's Floating Wind Joint Industry Project reveals winners of dynamic export cable competition – Carbon Trust

The Carbon Trust announced the five winners of its dynamic export cable competition as a part of the Floating Wind Joint Industry Project (Floating Wind JIP), which aims to accelerate and support the development of commercial-scale floating wind farms. The competition was launched to address the lack of availability of high voltage dynamic export cables for the transmission of power from wind farms to shore.

LM Wind Power manufactures the world's first wind turbine blade beyond 100 meters! – LM Wind Power

The 107-meter blade has completed the molding process at our factory in Cherbourg, France. The blade is set to capture the wind for GE's Haliade-X 12 MW offshore wind turbine, the world's most powerful wind turbine to date.

Renewable could account for 86% of global power generation in 2050 – Enerdata

According to the International Renewable Energy Agency's (IRENA) reference scenario, electricity may become the central energy carrier, reaching a 50% share of final energy consumption by 2050 (from the current 20%). Renewable power development should benefit from the fall in the Levelized Costs of Electricity (LCOE), which should halve between 2010 (US\$80/MWh) and 2050 (US\$40/MWh) for wind power.

Saudi windpower market set for 6 GW growth – Renewable Energy World

Saudi Arabia will become a regional heavyweight in windpower by the early 2020's, according to new research. A report by analysts at Wood Mackenzie Power & Renewables states that developers will build 6.2 GW of wind capacity between now and 2028. And yet the report predicts that despite growth projections and imminent regional leadership, Saudi Arabia will fall short of its current 2030 renewables target.



[ORJIP Ocean Energy](#) is a UK-wide collaborative programme of environmental research with the aim of reducing consenting risks for wave, tidal stream and tidal range projects. Partnering with Annex IV, ORJIP provides content input to Tethys Blasts and wishes to make you aware of the following opportunities:

- The Scottish Government has relaunched the [£10 million Saltire Tidal Energy Challenge Fund](#) to help commercial deployment of tidal projects. Applications close 6 December 2019.