TETHYS BLAST

5 April 2019

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.

Upcoming Webinar

WREN is hosting a public webinar on 5 April 2019 at 15:00 UTC entitled Multiple Uses for Offshore Space: Incorporating Wind Energy Development. Login instructions are available on *Tethys.*

New *Tethys* Story

Harbor porpoise (Phocoena phocoena) monitoring at the FORCE Test Site, Canada
By Melissa Oldreive, Dom Tollit, and Daniel J. Hasselman

The Fundy Ocean Research Center for Energy (FORCE) is Canada's leading center for research and demonstration of in-stream tidal energy technologies. A key component of monitoring at the FORCE site is Passive Acoustic Monitoring (PAM). PAM efforts (i.e., 'listening') helps us to understand how the sounds of an operating turbine contribute to the existing soundscape of the marine environment and how in-stream tidal energy turbines may impact marine animals, either directly or indirectly (read more).

Upcoming Funding Opportunity

National Renewable Energy Laboratory (NREL) intends to release a request for proposals during Spring 2019 in support of NREL's Technology Development and Innovation (TD&I) program to aid the development of wind-wildlife impact mitigation technologies that will facilitate more efficient and cost-effective wind energy deployment across the United States.

Upcoming Conference

The 5th Conference on Wind Energy and Wildlife Impacts (CWW 2019) will be held in Stirling, Scotland, 27-30 August 2019. Early-bird registration rates are available until April 2019. Abstracts are due 10 April.

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:

Wave farm effects on the coast: The alongshore position – Rodriguez-Delgado et al. 2018

> For wave energy to become a fully-fledged renewable and thus contribute to the much-needed decarbonisation of the energy mix, the effects of wave farms (arrays of wave energy converters) on coastal systems must be addressed. The objective of this work is to investigate the effects of wave farms on the longshore sediment transport and shoreline evolution of a gravel-dominated beach and, in particular, its sensitivity to the longshore position of the farm based on eight scenarios.

Wind and Energy Wildlife Impacts – Bispo et al. 2019

> This book provides a state-of-art overview of the significant advances in understanding the impacts of wind energy on wildlife. The book comprises a selection of the best contributions presented at the 4th Conference on Wind energy and Wildlife impacts, held in Estoril, Portugal, 2017. The contents promote the international cooperation among researchers, developers, regulators and stakeholders that have contributed to building knowledge on this topic.

Endogenous cycles, activity patterns and energy expenditure of an intertidal fish is modified by artificial light pollution at night (ALAN) – Pulgar et al. 2019

> The increase of global light emissions in recent years has highlighted the need for urgent evaluation of their impacts on the behaviour, ecology and physiology of organisms. In this study we measured the levels of artificial light intensity in the field and used these levels to conduct experimental trials to determine the impact of ALAN on an intertidal fish. Specifically, we measured ALAN effects on physiological performance (oxygen consumption) and behaviour (activity patterns) of “Baunco” the rockfish Girella laevifrons, one of the most abundant and ecologically important intertidal fish in the Southeastern Pacific littoral.

Modelling golden eagle habitat selection and flight activity in their home ranges for safer wind farm planning – Tikkanen et al. 2018

> Onshore wind farm development may impact vulnerable large eagles at both individual and population levels and requires appropriate assessment under the EU Bird and Habitat Directives. The present conservation policy (e.g. fixed safety zones around nest sites) improves species conservation but may not prevent habitat loss or reduce collision risk in the best possible way because this policy may not consider habitat-specific effects on eagle behaviour. Here, we develop a method for estimating habitat use and flying time distribution within Golden Eagle (*Aquila chrysaetos*) home ranges.

Marine Renewable Energy Law and Policy in the Bay of Fundy: The Impact of Ambiguous Domestic Boundaries in Canada on Nova Scotia's Regulatory Framework – Salcedo 2019

> Using a legal history methodology, this paper examines existing marine renewable energy law and policy in Nova Scotia with a focus on its application in the Bay of Fundy. This paper critically assesses the current approach to coastal management in light of recent recommendations summarized in the Fournier report. Through a historical account of shifting limits in the Bay of Fundy, this paper connects existing doubts and frictions associated with domestic offshore boundaries to ineffective coastal management in an attempt to renew interest in federal-provincial maritime delimitation.

Impact of the establishment of US offshore wind power on neodymium flows – Fishman and Graedel 2019

> Wind power is often posed as a greenhouse gas emission mitigation option, yet from a global perspective, the constrained supplies of rare-earth metals required for large-scale offshore wind turbines seem increasingly likely to provide limits to offshore wind power and other rare-earth-metal applications in the coming years. Our study addresses the neodymium material requirements that would be needed. We find that regional differences in deployment schedules will result in complex patterns of new capacity additions occurring concomitantly with turbine retirements and replacement needs.

News and Current Events

Marine Renewable Energy

Energy Department Announces $10 Million for Marine Energy Research and Testing Program – U.S. Department of Energy

> The U.S. Department of Energy (DOE) announced funding to establish a new testing program for marine energy technologies. The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) Program will bring together capabilities from universities and the national laboratory system to provide marine energy developers ready-access to unique, world-class testing facilities and expertise.

Eni starts wave power energy generation at the Ravenna offshore site – Eni

Eni has successfully installed and activated the Inertial Sea Wave Energy Converter (ISWEC) production unit, capable of converting energy generated by waves into electricity and adapting to different sea conditions, so as to guarantee a high continuity in energy production. The pilot plant was installed at the Ravenna offshore site by Eni's Central Northern District and has been integrated into the world's only hybrid smart grid system featuring photovoltaics and energy storage as well.

EMEC to Assess Free Flow System Performance at RITE Project – Verdant Power

The European Marine Energy Centre (EMEC) will provide an independent performance assessment of Verdant Power's 5th Generation (Gen5) Free Flow System to be deployed for commercial demonstration at the RITE Project in 2020. The deployment will be comprised of three Gen5 turbines mounted on a Verdant Power TriFrame™.

Wello wave device sinks off Scotland – reNEWS

A 1 MW wave energy converter installed by Finnish developer Wello has sunk at the European Marine Energy Centre (EMEC) off Orkney in Scotland. The Penguin device is "no longer visible above the sea surface" after an inspection earlier this week confirmed the unit was taking on water, said EMEC in a statement.

Energy System of the Future to be Demonstrated in Orkney – EMEC

The first phase of a new £28.5 million project to create a Virtual Energy System (VES) in Orkney, Scotland, has been launched to digitally link distributed and intermittent renewable generation to flexible demand. The ReFLEX (Responsive Flexibility) Orkney project will demonstrate a first-of-its-kind Virtual Energy System (VES) interlinking local electricity, transport, and heat networks into one controllable, overarching system.The project aims to create a 'smart energy island', demonstrating the energy system of the future, which will reduce and eventually eliminate the need for fossil fuels.

Wind Energy

Approval given for €31m floating wind project off the Mayo coast – The Irish Times

A €31 million floating wind project off the west coast has been approved. A full-scale floating wind turbine will be deployed for testing at a Sustainable Energy Authority of Ireland (SEAI) site near Belmullet, Co Mayo, by 2022. The project is led by the European Marine Energy Centre (EMEC) working in partnership with SEAI and the engineering company Saipem.

Reducing cyclone and earthquake challenges for wind turbines – DNV GL

DNV GL is calling on wind industry stakeholders to join a new Joint Industry Project (JIP) to mutually develop a new guideline to alleviate wind turbine structures from the impacts of cyclones and earthquakes. The ACE (Alleviating Cyclone and Earthquake Challenges for Wind farms) Joint Industry Project is aiming to gather experiences from cross-industry players to align wind turbine design methodologies for those extreme weather conditions.

SeaTwirl, Colruyt Group and Norsea Group sign Letter of Intent to collaborate in financing, developing and installing the SeaTwirl S2-1MW floating wind turbine – SeaTwirl

Both partners aim to contribute to a high degree to SeaTwirl's development and establishment in the offshore market. SeaTwirl is planning for installation and market introduction of SeaTwirl S2. To ensure success, SeaTwirl sought specific experience and expertise in establishing and operating offshore wind farms.

Deutsche Bucht substation touches down – reNEWS

Northland Power has completed installation of the offshore substation for the 269MW Deutsche Bucht wind farm in the German North Sea. The Seaway Strashnov vessel completed installation of the jacket foundation and 2700-tonne topside for general contractor Van Oord on 2 April. Deutsche Bucht will comprise 33 MHI Vestas V164-8.4MW machines on 31 monopile and two mono bucket foundations.

Australia's First Offshore Wind Farm A Step Closer – The Maritime Executive

The Australian Government has approved a license to allow Offshore Energy Pty Ltd (OEPL) to undertake resource exploration for an offshore wind farm about eight to 13 kilometers off the Gippsland coast in Victoria. OEPL's Star of the South project - which would be Australia's first offshore wind farm - is proposing the construction of 250 wind turbines that could generate up to 20 percent of Victoria's electricity needs and feed the power into the National Electricity Market via an underground cable to the Latrobe Valley.

Ocean Energy ORJIP working to accelerate offshore consenting

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.