TETHYS BLAST

September 7, 2018

The bi-weekly Tethys Blast will update you with new information on Tethys, news article 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.

INORE Workshop at OREC

The International Network on Offshore Renewable Energy (INORE), an organization for students and early-stage researchers involved in offshore renewable energy, will be holding a workshop in parallel with the Ocean Renewable Energy Conference (OREC) on Tuesday, September 18. The focus of the workshop will be on exploring data sets in the US Department of Energy's (DOE) MHK-Data Repository and developing questions to be used for future collaborations.

The DOE is generously providing travel support for students to participate in the INORE workshop and attend the second day of OREC. If you know of students who would like to participate, please have them contact Caitlyn Clark or Aisha McKee.

Upcoming Webinar

Annex IV is hosting a public webinar on September 25 that will discuss Optimizing Permitting/Consenting for MRE through Data Transferability. More information and login instructions are available on Tethys.

Upcoming Conferences

- The 13th Ocean Renewable Energy Conference (OREC) will be held in Portland, Oregon, USA on September 18-19.
- The 1st Scottish Marine Energy Research (ScotMER) Symposium will be held in Edinburgh, UK on October 2.
- The American Wind Energy Association (AWEA) Offshore WindPower 2018 will be held in Washington DC, USA on October 16-17.

Workshop on Fieldwork in Tidal Stream Sites

A workshop on *conducting fieldwork in tidal stream sites* will be held on 2 November 2018 as part of the 8th MASTS annual science meeting in Glasgow, UK. This workshop is centred on the challenges and best practices of working at high energy sites, and is aimed at a broad range of stakeholders, including technicians, marine renewable energy technology developers, scientific equipment companies, scientists and academics alike. Workshop details are available here.

Upcoming NYSERDA Workshop

The New York State Energy Research and Development Authority (NYSERDA) is hosting a State of the Science workshop on November 13-14 about wildlife and offshore wind energy development. More information is available on the workshop site.

Research Fellow Position with University of Aberdeen

The University of Aberdeen is seeking a 3-year Research Fellow in Ecologically Sustainable Very Large Offshore Renewables. The research fellow will be part of the new Offshore Renewable Energy SuperGen Hub. Find more about the position here.

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 to new or popular documents are listed below, accessible by the accompanying Tethys links:

Quantifying avian avoidance of offshore wind turbines: Current evidence and key knowledge gaps – Aonghais et al. 2018

> The risk of collision between birds and turbines is seen as one of the key issues in the planning process for offshore wind farms. In some cases, predictions of collision risk have led to projects either being withdrawn from the planning process, or refused planning consent. Despite this, the evidence base on which collision risk is assessed is extremely limited and assessments rely on models which can be highly sensitive to assumptions, notably about bird collision avoidance behaviour.

Laboratory study on the effects of hydro kinetic turbines on hydrodynamics and sediment dynamics - Ramírez-Mendoza et al. 2018

> The need for hydrokinetic turbine wake characterisation and their environmental impact has led to a number of studies. However, a small number of them have taken into account mobile sediment bed effects. The aim of the present work is to study the impact of the presence of a horizontal-axis three-bladed turbine with the flow and a mobile sediment bed. We use a series of laboratory experiments with a scaled modelled turbine installed in a flume with a mobile sandy bed at the bottom.

Numerical modelling of the flight behaviour of bats to estimate the collision risk with wind turbines – Muller 2018

> In this thesis, we present a new approach for estimating the effects of wind turbines for a local bat population. We build an individual based model (IBM) which simulates the movement behaviour of every single bat of the population with its own preferences, foraging behaviour and other species characteristics. This behaviour is normalized by a Monte-Carlo simulation which gives us the average behaviour of the population. The result is an occurrence map of the considered habitat which tells us how often the bat and therefore the considered bat population frequent every region of this habitat.

Optimisation of an underwater imagery analysis method to characterise the reef effect caused by submarine power cables on epibenthic communities – Taormina et al. 2018

> The number of submarine power cables (SPC) will drastically increase in the next decades with the development of Marine Renewable Energy (MRE). Thus it becomes vital to better understand their potential impacts on the benthic compartment. Unburied SPC and associated protection/stabilisation structures represent artificial hard substrates available for benthic species. The spatio-temporal dynamics of this 'reef effect' depend on physical parameters (size, nature of structure) but also on biological characteristics of the surrounding area.

Collision Risk Model for "rufa" Red Knots (*Calidris canutus rufa*) Interacting with a Proposed Offshore Wind Energy Facility in Nantucket Sound, Massachusetts – Gordon and Nations 2016

> The objective of the present study was to produce a robust, quantitative prediction of fatality rates of "rufa" Red Knots (*Calidris canutus rufa*) resulting from collisions with the physical structures of a yet-to-be-constructed offshore wind energy facility (the "Facility") that has been approved for construction in federal waters of Nantucket Sound, Massachusetts. To accomplish this objective, we assembled a technical team consisting of field leading experts in offshore wind bird collision risk assessment, collision risk modeling, and Red Knot biology to synthesize existing technical information on this subject, and to use this synthesis as the basis for developing an original quantitative collision risk modeling effort.

Tidal Energy Fish Impact: Method Development to Determine the Impact of Open Water Tidal Energy Converters on Fish – Smit et al. 2016

> The goals of the proposed project are: 1. to develop a robust method and experimental set-up to determine behaviour of fish in the vicinity of tidal turbines and collision risk in the strong turbid currents of the Marsdiep based on DIDSON technology, 2. to provide a first insight and measure avoidance and collision rate of fish, 3. to develop data analysis methodology since analysing large DIDSON datasets manually is very labour-intensive and will enhance the efficiency of future large scale studies using DIDSON.

News and Current Events

Marine Renewable Energy

Mexican Wave Energy Project Moving Forward – Marine Technology News

> Energy from the ocean breakers that pound Mexico's Pacific Coast could soon be turned into electricity as an Israeli joint venture finalizes permits and financing for the country's first wave energy plant. Wave power development has long lagged renewable rivals such as solar, but Eco Wave Power says it could prove an effective way to deliver power to coastal communities in countries such as Ghana or Kenya that have little access to electricity.

Integrated subsea cable monitoring system tested at EMEC - EMEC

> An Innovate UK funded project focused on developing a smart integrated monitoring system for offshore energy subsea cables has drawn to a close following successful tests at the European Marine Energy Centre (EMEC) in Orkney. The novel technology will ultimately lead to better maintenance and repair of underwater cables, reducing costs in the offshore energy sector, part of a 12-month Innovate UK funded CLEMATIS (Cable Lifetime Enhancement via Monitoring using Advanced Thermal and electrical Infrastructure Sensing) project.

HACE device rides French waves – Marine Energy Biz

> Hydro Air Concept Energy (HACE) has conducted the first launch of its 50kW wave energy prototype in the Port of La Rochelle, located in the Biscay Bay, in the western France. HACE has over the past 4 years been developing a wave energy technology that divides the swell to recover energy from all types of waves, with the ability to produce power from small waves of up to 30 cm in height.

Pearl Clean Energy acquires Protean wave technology – Protean Energy

> Australian clean energy company, Pearl Clean Energy, has signed a binding term sheet agreement to acquire Protean Energy's Wave Energy Converter (WEC) technology assets – designed to convert ocean waves to electricity. The Protean WEC is an innovative wave energy technology that is designed to convert all six degrees of wave motion into a usable form of energy.

EU tidal energy project receives EC approval to enter next delivery stage – Power Technology

> The European Commission (EC) has given the go ahead for the EU's flagship tidal energy project, Enabling Future Arrays in Tidal (EnFAIT), to progress into its next stages of delivery. "Over the next four years, the EnFAIT project will see an expansion to the Bluemull Sound array to six turbines."

Wind Energy

The largest offshore wind farm on the planet opens – CNBC

> The world's largest operational offshore wind farm will officially open. Located in the Irish Sea, the Walney Extension Offshore Wind Farm has a total capacity of 659 megawatts and is capable of powering nearly 600,000 homes in the U.K, Danish energy business Orsted said Thursday. The scale of the facility, Orsted's eleventh operational offshore wind farm in the U.K., is considerable. It has 87 turbines - 47 MHI Vestas turbines and 40 Siemens Gamesa turbines.

Mammoth 860 Megawatt Triton Knoll Offshore Wind Farm Reaches Financial Close – Clean Technica

> German energy company innogy SE announced late last month that its mammoth 860 megawatt (MW) Triton Knoll Offshore Wind Farm had reached financial close, would be built using wind turbines supplied by MHI Vestas, and would supply 100% of the power generated to Ørsted through a 15-year Power Purchase Agreement (PPA).

US Navy now considering plans for ocean wind farms – and Morro Bay is a top prospect – The Tribune

> Efforts to build fields of floating wind turbines off the coast of California are gaining momentum, and Morro Bay might be at the front of the line. Despite a lack of publicity, activity on the West Coast has been moving along, according to Morro Bay city administrator Eric Endersby. Endersby has been working to help Seattle-based Trident Winds find a home in Morro Bay for a multimillion dollar project that would tie into the grid in the city where the mothballed Dynegy power plant has sat idle since 2014.

Equinor explores floating wind turbines to power North Sea oilfields - Reuters

> Norway's Equinor said on Tuesday it is considering whether to build a pioneering offshore wind farm with floating turbines to supply electricity to two North Sea oilfields as part of a strategy to curb greenhouse gas emissions. The project at the Gullfaks and Snorre oilfields would cost around 5 billion Norwegian crowns ($592 million) and could reduce Norway's emissions of carbon dioxide by more than 200,000 tonnes per year, Equinor said.

Ørsted lining up Taiwanese suppliers – Renewables Now

> Ørsted A/S is lining up local suppliers as it prepares to build the first 900-MW portion of its Greater Changhua offshore wind projects in Taiwan. The Danish offshore wind developer said on Monday it has signed 60 contracts with 30 local suppliers and expects to award another 10 more major contracts within the next two months for the construction phase of the projects, including an engineering, procurement and construction (EPC) contract for the first onshore substation.

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 International Network on Offshore Renewable Energy (INORE) has announced a call for Blue Energy Collaborative Scholarship (BECS) proposals to support collaborative projects between INORE members. Deadline is 31 August.
- Horizon2020 funding call on "developing the next generation of renewable energy technologies." Deadline is 16 October 2018.