TETHYS BLAST

July 7, 2017

Welcome to the latest bi-weekly Tethys Blast, which will update you with new information available on Tethys, new features of Tethys, and current news articles of international interest on wind and marine renewable energy. We hope that this becomes a valuable tool to help you stay connected to your colleagues and to introduce you to new research, new contacts, and ongoing milestones in wind and marine renewable energy development.

Tethys Story: EMF Impacts on Elasmobranch & Lobster

At the University of Rhode Island in the United States, a study of electromagnetic field (EMF) impacts on elasmobranchs and lobsters is currently being conducted. The contract is led by the Bureau of Ocean Energy Management and the study aims to assess impacts of direct current (DC) cables on marine organisms. The study was prompted by the potential for the "Atlantic Wind Connection" venture, a high-capacity, lengthy DC cable supported by Google to connect all wind farms in the mid-Atlantic. For more details: https://tethys.pnnl.gov/tethys-stories/electromagnetic-field-impacts-elasmobranch-and-american-lobster-movement.

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

Thirty Years of North American Wind Energy Acceptance Research: What have we Learned? - Rand & Hoen 2017

> Thirty years of North American research on public acceptance of wind energy has produced important insights, yet knowledge gaps remain. This review synthesizes the literature, revealing the following lessons learned. The paper also identifies areas for future research on wind acceptance. With continued research efforts and a commitment toward implementing research findings into developer and policymaker practice, conflict and perceived injustices around proposed and existing wind energy facilities might be significantly lessened.

Ocean Wave Energy in the United States: Current Status and Future Perspectives - Lehmann et al. 2017

> The aim of this article is to provide a concise review of the current state of ocean wave energy conversion technologies and industry status in the United States including research and development as well as commercial activities and governmental support, concluding with a discussion of future industry perspectives. Existing facilities, softwares as well as laboratory and open-water test facilities and resources, active research groups and commercial activities have been identified.

Good or Bad Vibrations? Impacts of Anthropogenic Vibration on the Marine Epibenthos - Roberts & Elliott 2017

> Anthropogenic activities directly contacting the seabed, such as drilling and pile-driving, produce a significant vibration likely to impact benthic invertebrates. As with terrestrial organisms, vibration may be used by marine species for the detection of biotic and abiotic cues, yet the significance of this and the sensitivities to vibration are previously undocumented for many marine species. Exposure to additional vibration may elicit behavioral or physiological change, or even physical damage at high amplitudes or particular frequencies, although this is poorly studied in underwater noise research.

Possible Behavioural, Energetic and Demographic Effects of Displacement of Red-throated Divers - Dierschke et al. 2017

> Red-throated divers (*Gavia stellata*) use marine areas in the North Sea, Irish Sea and Baltic Sea during the non-breeding season. They are known to be displaced by various marine industry activities, including construction and operation of offshore wind farms. However, the consequences of displacement for individuals and consequently on the population as a whole are unknown. On 2nd May 2017, seven scientists with particular expertise in redthroated diver ecology and/or the energetic and demographic consequences of displacement for marine birds were invited to a workshop.

Variability in Suspended Sediment Concentration in the Minas Basin, Bay of Fundy, and Implications for Changes due to Tidal Power Extraction - Ashall et al. 2016

> The Bay of Fundy in eastern Canada has the world's largest tidal range of over 16 m with tidal currents up to 5 ms(-1) making it an ideal place for tidal power extraction using tidal in-stream energy conversion devices in the Minas Passage. Field observations collected from ship-based and bottom-moored sensors over an 8-day period in 2013 are used to validate a 3D hydrodynamic and sediment transport model of the Minas Basin with measurements of water levels, current profiles, waves, suspended sediment fluxes and suspended sediment concentration (SSC) profiles.

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. ORJIP wishes to make you aware of the following opportunities:

- FORESEA (Funding Ocean Renewable Energy through Strategic European Action) programme recently opened their third call for support package applications, giving free access to a network of test sites. The call runs until 29 September 2017.
- UKCMER (in association with Wave Energy Scotland) has launched a call for proposals for short research projects in wave and tidal energy. The deadline is 28 July 2017.
- The deadline for the Innovate UK Open Programme Round 3 competition is 9th August 2017.

News and Current Events

Marine Renewable Energy

Shetland tidal energy array to be extended

Tidal energy specialist Nova Innovation is to lead a 20m euro (£17.6m) project to extend a tidal energy farm off the coast of Shetland. The project will extend the existing Bluemull Sound tidal array to six or more turbines. Nova said the contract was a "flagship initiative" for the EU, which is contributing 14.9m euro (£13.1m) through its Horizon 2020 project.

Canada bolsters Nova Scotia tidal energy research

The government of Canada has invested $1 million in a project which aims to address knowledge gaps and challenges associated with tidal energy in Canada. The overarching research objective of the project is to address critical issues common to different tidal energy conversion technologies, which is expected to reduce uncertainty and investment risk and lower the cost of tidal electricity in Canada.

Council buys marine energy device for £1

Orkney Islands Council has taken over ownership of a Pelamis marine energy device for the tiny sum of just £1. The Council has paid the nominal sum for the Pelamis P2 device, which was previously owned by the European Marine Energy Centre (EMEC). The aim is to look at the potential for alternative uses to be found for the machine, which is the last of the wave energy converters to be built by Pelamis and tested at EMEC's Billia Croo test site.

Atmocean to deploy wave system off Canada

US-based wave energy developer Atmocean plans to install its wave energy system off Newfoundland in Canada for a third round of ocean testing. Atmocean informed it will collaborate with the College of the North Atlantic to deploy its next generation point absorbing pump in September 2017 off the town of Lord's Cove. The scheduled deployment follows five rounds of wave tank testing at Texas A&M in 2016, and ocean tests carried out in Peru a year earlier, as well as the additional modeling conducted by Sandia National Labs this year.

Wind Energy

No subsidy for this Dutch offshore wind farm

Sites I and II of the Hollandse Kust wind farm is scheduled to open this autumn, initially with a procedure without subsidies. Minister of Economic Affairs Henk Kamp has announced this in a letter to the House of Representatives, yesterday on 28 June 2017. In this tender, market parties may submit a bid for the realization of the wind farm without subsidies.

Jan De Nul finishes turbine installation for Finish offshore wind farm

Jan De Nul Group's offshore jack-up vessel Vole au vent installed the very last blade of the last wind turbine at the Tahkoluoto offshore wind farm in Finland. The construction of the wind farm started in April 2016 with seabed preparations for the foundation and cable installation. The works resumed in April 2017.

Massachusetts Issues New RFP for 400 MW of Offshore Wind Energy Projects; December 2017 Bid Deadline

This week, the Massachusetts investor-owned electric distribution companies, in coordination with the Massachusetts Department of Energy Resources (DOER), issued a joint request for proposals (RFP) for 400 MW of Offshore Wind Energy Generation and associated transmission to enter into long-term contracts of 15 – 20 years. The RFP also allows for procurement of up to approximately 800 MW in limited circumstances.

Wärtsilä to enhance the reliability of world's largest offshore wind farm

The technology group Wärtsilä signed in January a contract with Babcock International Group plc to design and build a number of switchboards and distribution boards for the world's first offshore reactive compensation station, a vital part of transmitting to shore the electricity produced sustainably by the offshore wind farm.