TETHYS BLAST

June 29, 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.

US DOE to Fund Advanced Wind Research to Reduce Costs and Improve Environmental Performance

US Department of Energy's Wind Energy Technologies Office has released a Notice of Intent regarding a Funding Opportunity Announcement (FOA) entitled "Advanced Wind R&D to Reduce Costs and Improve Environmental Performance." This FOA will support efforts aimed at catalyzing technical and operational solutions to reduce environmental compliance costs and improve environmental performance of turbines. The FOA is anticipated to fund projects aimed at the following:

- Reducing costs and improving performance associated with bat curtailment at wind farms
- Developing advanced components and other instrumentation aimed at developing deterrent technologies that could be used in lieu of curtailment in the future
- Developing offshore wind instrumentation for environmental monitoring and mitigation.

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:

The Indirect Impacts of Wind Farms on Terrestrial Mammals: Insights from the Disturbance and Exclusion Effects on Wolves (*Canis lupus*) – da Costa et al. 2018

> Due to the technical and functional characteristics of wind turbines, impact assessment studies have focused mainly on flying vertebrates. Nevertheless, evidence from the little available knowledge indicates potential impacts on large terrestrial mammals resulting from habitat fragmentation and increasing human disturbance. Over the last 15 years,

more than 900 wind turbines were built inside the range of the Portuguese wolf. Due to the endangered status of this large carnivore in Portugal, several monitoring plans were conducted, resulting in a reasonable amount of information being collected on the effects of wind farms on wolves.

Modeling underwater noise propagation from marine hydrokinetic power devices through a time-domain, velocity-pressure solution – Halfa et al. 2018

Marine hydrokinetic (MHK) devices generate electricity from the motion of tidal and ocean currents, as well as ocean waves, to provide an additional source of renewable energy available to the United States. These devices are a source of anthropogenic noise in the marine ecosystem and must meet regulatory guidelines that mandate a maximum amount of noise that may be generated. In the absence of measured levels from in situ deployments, a model for predicting the propagation of sound from an array of MHK sources in a real environment is essential.

Predator attack rates and anti-predator behavior of side-blotched lizards (*Uta stansburiana*) at Southern California wind farms, USA – Keehn and Feldman 2018

Wind energy sites are characterized by high levels of anthropogenic disturbance (e.g., noise, roads, structures, etc.) that can facilitate the use of wind farms by some species, while fragmenting and degrading habitat for others. We lack an understanding of how these species-specific responses to changes in habitat quality will affect patterns of species interactions. Here, we test whether changes in habitat quality alter predator attack rates and anti-predator behavior in Side-blotched Lizards (*Uta stansburiana*) at wind farms relative to reference sites in the San Gorgonio Wind Resource Area (SGWRA) of Southern California, USA.

Understanding the effects of electromagnetic field emissions from Marine Renewable Energy Devices (MREDs) on the commercially important edible crab, *Cancer pagurus* (L.) – Scott et al. 2018

The effects of simulated electromagnetic fields (EMF), emitted from sub-sea power cables, on the commercially important decapod, edible crab (*Cancer pagurus*), were assessed. Stress related parameters were measured (l-Lactate, d-Glucose, Haemocyanin and respiration rate) along with behavioural and response parameters (antennular flicking, activity level, attraction/avoidance, shelter preference and time spent resting/roaming) during 24-h periods. Exposure to EMF had no effect on Haemocyanin concentrations, respiration rate, activity level or antennular flicking rate.

Burbo Bank Extension Offshore Wind Farm: Environmental Impact Assessment Scoping Report – Sørensen et al. 2010

This Scoping Report sets out the proposed content, methodologies and key issues to be included in the Environmental Impact Assessment (EIA) and the resulting ES to be submitted with the DCO application. The purpose of this document is to support a request for a scoping opinion for an EIA from the IPC. It is also intended that this report builds upon consultation carried out to date and supports ongoing consultation with statutory

and non-statutory consultees and stakeholders on the scope of the EIA required for the Burbo Bank Extension offshore wind farm.

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:

- NeSSIE (North Sea Solutions for Innovation Corrosion for Energy) project consortium launches first stage of competition to implement projects demonstrating anti-corrosion solutions in offshore renewables. Due 7 August 2018.

News and Current Events

Marine Renewable Energy

Government rejects plan for £1.3bn tidal lagoon in Swansea – The Guardian

The government has rejected plans for a £1.3bn tidal lagoon in Swansea Bay, dashing industry hopes of Britain leading development of a new source of renewable energy and sparking widespread criticism. Ministers said the project, which would have been subsidised through household energy bills for decades, was too expensive compared with alternatives such as offshore windfarms and nuclear power.

International Conference on Ocean Energy 2020 will be hosted by Washington, D.C. – Ocean Energy Systems

The IEA Ocean Energy Systems (OES) approved the next International Conference on Ocean Energy (ICOE) in 2020 to be held in Washington, DC, United States, organized by the National Hydropower Association (NHA). The new host for ICOE 2020 has been announced during ICOE 2018 at Cherbourg, France.

Clean Ocean Energy: 2 new projects to share €1.5 million from the European Maritime and Fisheries Fund (EMFF) – EASME

The European Commission has just granted over 1.5 million euros worth of support to two new international projects, which will help understand the interaction between the future devices and the ecosystems. The results will provide guidance to the countries' national authorities, which will one day be called upon to grant access to maritime space

and consent ocean energy farms. (1) Strategic Environmental Assessment of Wave energy technologies (SEA Wave) and (2) Wave Energy in Southern Europe (WESE).

Sweden pumps in €8.2M for full-scale CorPower device – Marine Energy Biz

The Swedish Energy Agency has granted CorPower Ocean a little over €8 million (SEK 85 million) to support the construction and testing of a full-scale device and subsequent wave energy park demonstration. The demonstration wave energy park will feature three full-scale CorPower units, according to the Swedish Energy Agency.

GEPS Techno launches the construction of its mid power wave prototype - GEPS

As part of the IHES R&D program, GEPS Techno has launched the construction of its medium-power autonomous platform prototype dedicated to a test campaign at Centrale Nantes' SEMREV test site. This decision is based on the effective completion of the first stage of a fundraising end of April 2018 for an amount of one million euros, which will be completed by a second operation of one million euros in September 2018.

OSCAR takes clean dive offshore California – Marine Energy Biz

A spinout from wave energy company Atmocean – Ocean-Based Climate Solutions – has deployed a scaled wave energy-powered solution used to isolate and store atmospheric carbon dioxide on the seafloor. The 1:3 scaled OSCAR system – short for Ocean Surface Carbon Relocation – was deployed off the coast of San Diego in California for the first round of sea trials.

Wind Energy

Batteries make offshore wind energy debut - UPI

The first battery used to store energy from wind power from a facility offshore Scotland was installed Wednesday, Norwegian energy company Equnior said. Equinor, formerly known as Statoil, started handing out contracts to deliver a 1 megawatt Lithium battery storage system for the Hywind wind farm off the Scottish coast last year. The company said Wednesday the system was connected so that Hywind power could move through submarine cables to the battery storage facility and then onto the Scottish grid.

Connecticut Approves 250 Megawatts of Clean Energy Including 200 Megawatt Revolution Offshore Wind Farm – Clean Technica

The State of Connecticut has this week approved 250 megawatts (MW) worth of renewable energy projects submitted to a recent Request for Proposals, including what will be the state's first offshore wind farm, the 200 MW Revolution Wind Project proposed by Deepwater Wind. Connecticut Governor Dannel P. Malloy and the state's Department of Energy and Environmental Protection (DEEP) Commissioner Robert Klee

announced the projects awarded out of DEEP's recent Clean Energy Request for Proposals.

GES to build 244-MW wind farm in Mexico – Renewables Now

Global Energy Services (GES), a Spanish construction company that serves the wind and solar sectors, said on Monday it will break ground on a 244-MW wind farm located in Mexico this September. The wind farm, which will be built in the municipality of China, Nuevo Leon state, is expected to generate 850 GWh per year and offset 390,000 tonnes of carbon dioxide (CO2) emissions a year.

Ørsted makes largest single order in offshore wind history – Renewables Now

Ørsted has officially placed a "multi-million pound" order for Siemens Gamesa Renewable Energy SA to deliver turbines for the 1,386-MW Hornsea Project Two offshore wind farm in British waters. The Danish energy group said on Thursday it has purchased 165 units of SGRE's 8-MW machines, which is the largest single order in the history of offshore wind energy.

From China to Brazil, these are the world titans of wind power - CNBC

The wind industry added over 52 gigawatts (GW) of wind power last year, according to a recent report from the Global Wind Energy Council (GWEC). China maintained its position as a wind energy powerhouse, installing 19.7 GW, while the European Union added 15.6 GW of capacity. The U.S. installed a little over 7 GW of capacity. Here, Sustainable Energy looks at the countries with the largest cumulative capacity as of December 2017, according to the GWEC's Global Wind Report for 2017.