TETHYS BLAST

August 4, 2017

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.

Upcoming Workshops at Conferences

European Wave and Tidal Energy Conference (EWTEC) 2017 in Cork, Ireland on August 27-September 1

Annex IV and ORJIP are hosting a workshop at EWTEC on August 31st on "*Exploring the State of Understanding and Practice used to Assess Social and Economic Risks and Benefits of Marine Renewable Energy Development.*" The aim of this workshop is to bring together regulators, stakeholders, industry, and researchers to examine frameworks for collecting data and practical management measures for social and economic risks and benefits of marine renewable energy. Register for the workshop by sending an email to orjip@aquatera.co.uk.

Conference on Wind and Wildlife (CWW) 2017 in Estoril, Portugal on September 6-8

WREN is hosting a workshop in conjunction with CWW on September 5th on "*Strategies and Concepts for Managing Wind and Wildlife Challenges: Risk- Based Management, Cumulative Effects Analysis, and Green versus Green.*" This workshop will engage participants in a discussion and information exchange about three white papers currently in development. Click here to register to attend.

Ocean Renewable Energy Conference (OREC) 2017 in Portland, Oregon, USA on September 13-14

POET is hosting the *2nd Annual Pacific Region Marine Renewables Environmental Regulatory Workshop* on September 12th in conjunction with OREC. The workshop will revisit the status of individual interactions of stressors from marine renewable energy devices with marine animals, habitats, and ecosystem processes. They will examine two specific interactions, delving into the potential of applying data from other locations or from other industries to new developments, and also explore the opportunity to narrow down the issues and standardize environmental monitoring programs for marine renewable energy devices. Register to attend the conference and workshop 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 introductions to new or popular documents are listed below, accessible by the accompanying Tethys links:

A Framework for Determining Improved Placement of Current Energy Converters Subject to Environmental Constraints - Nelson et al. 2017

> A modelling framework identifies deployment locations for current-energy-capture devices that maximise power output while minimising potential environmental impacts. The framework, based on the Environmental Fluid Dynamics Code, can incorporate site-specific environmental constraints. Over a 29-day period, energy outputs from three array layouts were estimated for: (1) the preliminary configuration (baseline), (2) an updated configuration that accounted for environmental constraints, (3) and an improved configuration subject to no environmental constraints.

Bat Detection and Shutdown System for Utility-Scale Wind Turbines - Electric Power Research Institute 2017

> At utility-scale wind energy facilities, blanket curtailment of turbines in response to wind speed may result in reduced bat fatalities, while sacrificing generation and revenue, particularly when curtailment remains in effect even when bats are absent. We Energies, EPRI, and its member companies funded a study to develop a turbine curtailment approach that minimizes such economic costs while ensuring lower fatality rates for bats.

Developing a Novel Risk-Based Methodology for Multi-Criteria Decision Making in Marine Renewable Energy Applications - Abaei et al. 2017

> This paper presents a novel risk-based methodology for selecting sites for WEC installation to minimize the overall economic risk. It provides WEC developers, investors, governments and policy makers a methodology for evaluating influencing parameters for potential site locations whilst also optimizing wave energy extraction. A Bayesian network is developed to model the probabilistic influencing parameters and then it is extended to an influence diagram for estimating the expected utility of installing the WEC equipment in a selected location.

Ocean Beliefs and Support for an Offshore Wind Energy Project - Bidwell 2017

> This article explores how underlying values and beliefs about the ocean influence public support for offshore wind energy. An intercept survey was conducted with more than 600 individuals on Block Island, site of the first offshore wind farm in the United States. Following a values-beliefs-norm framework, this survey measured respondents' underlying values, anticipated impacts of the proposed wind energy project, attachment to the island, and beliefs about the ocean. The results indicate that ocean beliefs and underlying values have direct and indirect associations with expectations and support for an offshore wind energy project development.

Marine Renewable Energy: Resource Characterization and Physical Effects - Yang & Copping 2017

This complete reference to marine renewable energy covers aspects of resource characterization and physical effects of harvesting the ocean's vast and powerful resources—from wave and tidal stream to ocean current energy. Experts in each of these areas contribute their insights to provide a cohesive overview of the marine renewable energy spectrum based on theoretical, numerical modeling, and field-measurement approaches. They provide clear explanations of the underlying physics and mechanics, and give close consideration to practical implementation aspects, including impacts on the physical system.

Two-Dimensional Thermal Video Analysis of Offshore Bird and Bat Flight - Matzner et al. 2015

Thermal infrared video can provide essential information about bird and bat activity for risk assessment studies, but the analysis of recorded video can be time-consuming and may not extract all of the available information. Automated processing makes continuous monitoring over extended periods of time feasible, and maximizes the information provided by video. This is especially important for collecting data in remote locations that are difficult for human observers to access, such as proposed offshore wind turbine sites. The authors developed new processing algorithms for single camera thermal video that automate the extraction of two-dimensional bird and bat flight tracks, and that characterize the extracted tracks to support animal identification and behavior inference.

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

- Ente Vasco de la Energia (Basque energy funding agency) has launched a €500m fund for investment in the demonstration and validation of emerging renewable technologies. The deadline for applications is 31 October 2017.
- 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.
- The deadline for the Innovate UK Open Programme Round 3 competition is 9th August 2017.

News and Current Events

Marine Renewable Energy

Japan builds tidal demonstrator for Kuroshio trials

HI Corporation and New Energy and Industrial Technology Development Organization (NEDO) have built a 100kW floating tidal device, called Kairyu, that will be deployed mid-August 2017 for trials to verify power generation and control systems. It will be installed at the water depth of 100 meters at a site located 5 km off the coast of Kuchinoshima island.

New marine research centre opens in Western Australia

The University of Western Australia recently opened the Indian Ocean Marine Research Centre (IOMRC). The centre brings together more than 300 marine scientists across a variety of disciplines who will collaborate to increase knowledge in areas such as biodiversity, commercial and recreational fishing, tourism, indigenous engagement climate change, oceanography, sustainable use of marine resources and the conservation of marine life and ecosystems.

Canada's Black Rock Tidal confirms 2018 slip

Black Rock Tidal Power (BRTP) has confirmed deployment of its 2.5MW Triton device at Canada's Bay of Fundy will be delayed until next year due to an ongoing design review. The Nova Scotia company aims to complete the review by the autumn and proceed immediately to fabrication of the device's superstructure by autumn.

Canada's Tribute to buy out Tocardo, focus on tidal energy

Canadian energy company Tribute Resources Inc plans to buy the 53.5% stake it does not already own in Dutch tidal turbines developer Tocardo International BV. The Ontario-based company announced it has executed a term sheet that calls for Tribute Resources to exchange 53 million of its own common shares for the remaining interest in Tocardo.

Wave Energy Concept Ready for Ship Propulsion

ZShips is a Canadian company readying a proprietary wave power system that uses oscillating water columns integrated into a ship's hull. ZShips' concept involves converting wave energy into stored energy in the form of compressed air. The compressed air can be stored as potential energy or used on demand to generate electricity. The company is initially looking to retrofit its technologies on fishing vessels.

Wind Energy

Deepwater Wind is Proposing a 144-megawatt Revolution Wind Farm

Deepwater Wind has unveiled plans for its newest project off the American coast: Revolution Wind, a utility-scale offshore wind farm paired with an energy storage system. “Revolution Wind will be the largest combined offshore wind and energy storage project in the world,” said Deepwater Wind Chief Executive Officer Jeffrey Grybowski. Deepwater Wind is proposing the 144-megawatt Revolution Wind farm – paired with a 40 megawatt-hour battery storage system provided by Tesla.

Nelja Energia, Hiiu Municipality sign contract to build offshore wind farm in Estonia

Renewable energy producer Nelja Energia and Hiiu Municipality on the Western Estonian island of Hiiumaa signed a cooperation agreement on Monday for the construction of Estonia's first offshore wind farm. According to the company, the wind farm will help Estonia reach EU renewable energy goals. Nelja Energia is planning on building a 700-1,100 megawatt wind farm in the sea off the northern coast of the island of Hiiumaa for a cost of up to €2 billion.

The world's first floating wind farm is being built off the coast of Scotland — here's how it works

This summer five wind turbines are being towed out into the North Sea, where they will be the first ever floating offshore wind farm. The turbines, built in Norway this year, have been dragged across the ocean to Scotland, where they will start working just off the coast. The project — known as Hywind Scotland — cost a total of NOK 2 billion (£193 million, or $253 million).

Vattenfall’s 288-MW Sandbank offshore wind farm officially inaugurated

Vattenfall and Stadtwerke München (SWM) officially put the Sandbank offshore wind farm, which is located 90 kilometers west of the island of Sylt, into operation. Sandbank is the second great “Energiewende” project (after Dan Tysk), that Vattenfall and Stadtwerke München have now realized together. The project gives both companies a combined portfolio of 576 MW of installed capacity, making Vattenfall and Stadtwerke München some of the largest producers of green electricity in the German Bight.

European oil majors seek to harness U.S. offshore wind

Some European oil majors have made inroads into the emerging U.S. offshore wind energy market, aiming to leverage their experience of deepwater development and the crowded offshore wind arena at home. Late entrants to the offshore wind game in Europe, which began with a project off Denmark 25 years ago and is now approaching maturity, they are looking across the Atlantic at what they view as a huge and potentially lucrative new market.