Tethys Blast

March 6, 2015

Welcome to the first March edition of the bi-weekly Tethys Blast!

Tethys Blasts will keep you updated with new information available on Tethys, new features on Tethys, and current news articles of international interest on offshore 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 renewable ocean energy development.

New Tethys Story

Tethys Stories are an opportunity to learn more about organizations, events, ideas, and news from the perspective of someone closely involved with the topic. If you are interested in submitting a Tethys Story, reply to tethys@pnnl.gov. Check out our most recent story:

Planning for Effects of Wave Energy Development Before Going to Sea

> As interest has grown in developing a range of low carbon renewables, harnessing the vast energy from ocean waves has become desirable. Although few arrays of wave energy converters (WECs) have been deployed worldwide, planning for wave farms requires that we understand the maximum amount of energy that can be extracted from waves, while ensuring that environmental responsibilities are met. Numerical models allow us to simulate arrangements of WECs to minimize harm to the environment, while optimizing the production of power, without incurring the enormous costs of deploying WECs in coastal waters. These efforts to develop useful computer tools include the modified SWAN model (Simulating Waves Nearshore) that has been produced by researchers at Sandia National Laboratories.

New Articles on Tethys

A total of 3 new documents have been added to Tethys in the last two weeks. These documents have been hand-selected for their relevance to the environmental effects of offshore renewable energy. The listings below are short introductions to several popular documents that can be accessed through the accompanying Tethys links:

A Probabilistic Model for Hydrokinetic Turbine Collision Risks: Exploring Impacts on Fish - Hammar et al. 2015

> A variety of hydrokinetic turbines are currently under development for power generation in rivers, tidal straits and ocean currents. Because some of these turbines are large, with rapidly moving rotor blades, the risk of collision with aquatic animals has been brought to attention. The behavior and fate of animals that approach such large hydrokinetic turbines have not yet been monitored at any detail. In this paper, we conduct a synthesis of the current knowledge and understanding of hydrokinetic turbine collision risks.

The Influence of Large Offshore Wind Farms on the North Sea and Baltic Sea - A Comprehensive Literature Review - Clark et al. 2014

> This literature review summarizes research on the environmental impacts of offshore wind farms, identifies gaps in current knowledge related to offshore wind energy, and makes recommendations for future research. The offshore wind energy industry in Europe is expected to grow rapidly: in the European Union, 69 wind farms in 11 countries have a combined capacity greater than 6.5 gigawatts (GW), and some projections predict a capacity of 40 GW by the year 2020.

Statistical Modelling of Seabird and Cetacean Data: Guidance Document - Mackenzie et al. 2014

> CREEM were commissioned to review statistical modelling methods currently used in the marine renewables industry. We also compared the performance of these methods and appropriate alternatives not presently in use.

Describing and Comparing Variability of Fish and Macrozooplankton Density at Marine Hydrokinetic Energy Sites - Jacques 2014

> Marine hydrokinetic (MHK) operating licenses require biological monitoring to quantify effects of devices on aquatic organisms, but regulations for instrumentation, measurements, and sampling effort have not been standardized. Assuming stationary acoustic surveys are more cost effective than repeated mobile surveys, the abilities of stationary echosounders, ADCPs, and acoustic cameras to characterize fish densities were compared at a MHK site in Admiralty Inlet, WA.

Offshore Wind Farms Development in Relation to Environmental Protected Areas - Spiropoulou et al. 2015

> The potentiality of offshore wind energy development in the western coast of Greece in relation to all the protected areas in this region was investigated. Major factors such as minimum distances from constraining the offshore wind farm installations, ports and Natura sites were analyzed as environmental constraints in the region. The results indicate that even if all the protected areas are excluded as well as places of economical activity like ports, the available surface is adequate for the massive development of the alternative energy source of offshore wind.

Current News

Current news articles of international interest on offshore renewable energy include:

Deepwater Wind Acquires Financing For US Offshore Wind Farm

> Following the disappointment that was (and is) the Cape Wind project off Cape Cod, many had doomed the American offshore wind industry to deep water, but Deepwater Wind has just announced that it has fully financed the Block Island Wind Farm, set to be developed in Rhode Island.

Cardiff tidal energy lagoon 'could power every home in Wales'

> A “tidal lagoon” capable of powering all the homes in Wales could be built off the Cardiff coast, under Government-backed plans for a series of tidal electricity schemes around the UK.

World's Cheapest Offshore Wind Farm Underway

> Sweden's state-owned Vattenfall has won a tender to build a wind park off Denmark, which is expected to produce the world's cheapest offshore wind energy, Denmark's ministry of climate and energy said on Friday.

Scotland To Establish Wave Energy Technology Body

> The Scottish Government has announced its intention to establish Wave Energy Scotland, a new wave energy technology development body intended to accelerate development of the renewable technology.