Tethys Blast

May 29, 2015

Welcome to the third May edition of the bi-weekly Tethys Blast!

Tethys Blasts will update you 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.

We need your help to ensure that Tethys functions at peak performance! Please notify us of any errors or broken links you come across within Tethys. The Tethys team is continuously on the lookout for these, but a short message with the name of the page or URL is extremely helpful! You can provide comments in the comment box on the bottom of each page. Thanks in advance!

New Articles on Tethys

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 prominent documents that can be accessed through the accompanying Tethys links:

Estimation of Acoustic Particle Motion and Source Bearing Using a Drifting Hydrophone Array Near a River Current Turbine to Assess Disturbances to Fish - Murphy 2015

> There is concern that sound from river hydrokinetic turbines could affect sockeye salmon (*Oncorhynchus nerka*), an important resource for small, subsistence based communities, commercial fisherman, and recreational anglers. The hearing sensitivity of sockeye salmon has not been quantified, but behavioral responses to sounds at frequencies less than a few hundred Hertz have been documented for Atlantic salmon (*Salmo salar*), and

particle motion is thought to be the primary mode of stimulation. Methods of measuring acoustic particle motion are well-established, but have rarely been necessary in energetic areas, such as river and tidal current environments.

Sound Exposure in Harbour Seals During the Installation of an Offshore Wind Farm: Predictions of Auditory Damage - Hastie et al. 2015

With ambitious renewable energy targets, pile driving associated with offshore wind farm construction will become widespread in the marine environment. Many proposed wind farms overlap with the distribution of seals, and sound from pile driving has the potential to cause auditory damage. We report on a behavioural study during the construction of a wind farm using data from GPS/GSM tags on 24 harbour seals *Phoca vitulina* L. Pile driving data and acoustic propagation models, together with seal movement and dive data, allowed the prediction of auditory damage in each seal.

Integrating Passive Acoustic and Visual Data to Model Spatial Patterns of Occurrence in Coastal Dolphins - Thompson et al. 2015

Fine-scale information on the occurrence of coastal cetaceans is required to support regulation of offshore energy developments and marine spatial planning. In particular, the EU Habitats Directive requires an understanding of the extent to which animals from Special Areas of Conservation (SAC) use adjacent waters, where survey effort is often sparse. Designing survey regimes that can be used to support these assessments is especially challenging because visual sightings are expected to be rare in peripheral parts of a population's range.

Attitudes and Perceptions of Fishermen on the Island of Ireland Towards the Development of Marine Renewable Energy Projects - Reilly et al. 2015

The expansion of the marine renewable energy (MRE) sector will increase pressure on sea space and existing maritime users which could potentially lead to conflict. Commercial fishing has been identified by many as the industry most likely to be affected by the development of MRE. In order to reduce the risk of spatial conflict and to enable decision-making based on the co-existence of the two sectors, it is important to gain a better understanding of the attitudes of fishermen towards the development of MRE projects in their locality.

Influence of Concrete Mix Design on CO2 Emissions for Large Wind Turbine Foundations - Berndt 2015

Large capacity wind turbines require sizeable foundations. Onshore turbines are commonly supported by massive spread foundations involving hundreds of cubic metres of concrete and tonnes of steel reinforcement. Concrete gravity base foundations for offshore wind turbines also employ significant quantities of concrete and reinforcement. The CO2 emissions associated with concrete foundations has been analysed to examine means of reducing the materials-related impact on the carbon footprint of wind power.

Current News

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

China to Build Three Marine Energy Test Sites

> China is planning to construct three ocean energy test sites off the coast of Shandong, Zhejiang and Guangdong provinces, authorities said Thursday. The three test sites will serve as a testing ground for ocean power generators and support the development of the marine energy industry, Xia Dengwen, vice head of the national center for marine technology under the State Oceanic Administration, said during a forum in Weihai City, Shandong province.

ORIX Participates in the Development of Kashima Port Large-Scale Offshore Wind Farm

> ORIX Corporation, a leading integrated financial services group, Wind Power Group K.K., a member of the Komatsuzaki Group, and SB Energy Corporation, announced today that ORIX has agreed to participate in the joint development and construction of Kashima Port Large-Scale Offshore Wind Farm which is to be built offshore of Kashima Port in Kamisu City, Ibaraki Prefecture. The equity investment by ORIX into the Project company was also completed today.

GE Providing Power Conversion System for Paimpol-Brehat Tidal Energy Array

> GE Power Conversion is supplying the electrical conversion system to be installed for a tidal energy array near Paimpol-Brehat, France, later this year. Electricite de France is spearheading development of this site. Irish manufacturer OpenHydro was chosen to supply two tidal turbines for installation at this site in June 2014. Each 16-meter turbine will be connected to a common subsea converter that will transform the current to high-voltage direct current with an electricity capacity of 1 MW. The power will be transmitted to the onshore station via a 16-km-long subsea cable and eventually feed into the electrical grid, according to a press release from GE.

Full power at Westermost Rough offshore wind farm

> Full power output has been achieved at the Westermost Rough offshore wind farm, a major renewable energy project located off the East Yorkshire coast. Westermost Rough is capable of generating enough electricity to meet the annual demands of more than 150,000 homes. It is the first offshore wind farm to make commercial use of the Siemens 6MW wind turbine, with each of the 35 turbines in use taller than the Humber Bridge.