TETHYS BLAST

December 1, 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.

Top Viewed Documents This Year

This list shows the publications in Tethys that received the most pageviews since January 2017.

Wind Energy:

1. WREN Adaptive Management White Paper - Hanna et al. 2016
2. Fatalities at Wind Turbines may Threaten Population Viability of a Migratory Bat - Frick et al. 2017
3. Wingbeat Frequency of Birds in Steady Cruising Flight: New Data and Improved Predictions - Pennycuick 1996
4. A Synchronized Sensor Array for Remote Monitoring of Avian and Bat Interactions with Offshore Renewable Energy Facilities - Suryan et al. 2016
5. Impacts on Biodiversity of Exploitation of Renewable Energy Sources: The Example of Birds and Bats - Hötker et al. 2006

Marine Renewable Energy:

1. Annex IV State of the Science Report: Environmental Effects of Marine Renewable Energy Development - Copping et al. 2016
2. Assessment of Strike of Adult Killer Whales by an OpenHydro Tidal Turbine Blade - Carlson et al. 2014
3. Environmental Effects of Marine Energy Development around the World: Annex IV Final Report - Copping et al. 2013
4. Research Priorities for Assessing Potential Impacts of Emerging Marine Renewable Energy Technologies: Insights from Developments in Wales (UK) - Roche et al. 2016
5. Monitoring the Condition of Marine Renewable Energy Devices through Underwater Acoustic Emissions: Case study of a Wave Energy Converter in Falmouth Bay, UK - Walsh et al. 2017

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 Spatial Explicit Agent Based Model Approach to Evaluate the Performance of Different Monitoring Options for Mortality Estimates in the Scope of Onshore Windfarm Impact Assessments - Santos et al. 2017

> Despite the environmental benefits associated with wind energy, studies have confirmed the occurrence of significant levels of bat and bird fatalities at windfarms, which raise concerns about the long-term effects of these infra-structures on these populations. Reliable estimates of windfarm fatalities are fundamental for accurate environmental assessment studies and supporting management actions. A spatially explicit agent-based model (ABM) was developed to investigate how searcher “controlled” variables, i.e., different field monitoring protocols, monitoring periods and periodicities influence the success of carcasses detection in field trials and estimator accuracy.

Determining the Water Column Usage by Seals in the Brims Lease Site - Evers et al. 2017

> The report describes how adult harbour seals and grey seal pups use the water column within the Brims tidal energy lease site. Telemetry data from 12 adult harbour seals and seven grey seal pups diving within the Brims lease site were analysed to extract descriptors of dive behavior. Dive data were summarised to provide estimates of the proportion of time seals spent at different depths relative to the sea surface and relative to the seafloor. In addition to estimates of the proportion of time at depth, the number of times seals transited through different depth bins relative to the sea surface and sea floor was also determined.

Determining Fine-Scale Use and Movement Patterns of Diving Bird Species in Federal Waters of the Mid-Atlantic United States Using Satellite Telemetry - Spiegel et al. 2017

> Offshore wind energy development in the United States is projected to expand in the upcoming decades to meet growing energy demands and reduce fossil fuel emissions. There is particular interest in commercial offshore wind development within Federal waters (i.e., > 3 nautical miles from shore) of the mid-Atlantic. In order to understand the potential for adverse effects on marine birds in this area, information on distribution and behavior (e.g., flight pathways, timing, etc.) is required for a broad suite of species. In areas where offshore wind development is likely to occur, such information can be used to identify high use areas during critical life stages.

Harbour Seals Avoid Tidal Turbine Noise: Implications for Collision Risk - Hastie et al. 2017

> Tidal stream energy converters (turbines) are currently being installed in tidally energetic coastal sites. However, there is currently a high level of uncertainty surrounding the

potential environmental impacts on marine mammals. This is a key consenting risk to commercial introduction of tidal energy technology. Concerns derive primarily from the potential for injury to marine mammals through collisions with moving components of turbines. To understand the nature of this risk, information on how animals respond to tidal turbines is urgently required.

Improving Efficiencies of National Environmental Policy Act Documentation for Offshore Wind Facilities - Case Studies Report - English et al. 2017

The United States is currently embracing offshore wind farm development as part of its expanding renewable energy generation objectives in response to renewables targets, financial incentives, and technological advancements… In light of increased numbers of applications for offshore wind development and associated increases in case load, as well as the ambitions of the Council on Environmental Quality (CEQ) Regulations, BOEM has recognized the need to streamline the preparation, review and, analysis of associated environmental information required under National Environmental Policy Act (NEPA).

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:

- The EU's Executive Agency for Small and Medium-sized Enterprises (SMEs) and the European Maritime Fund launched a call for proposals around environmental monitoring of wave and tidal devices, due by 19 January 2018.
- Funding Ocean Renewable Energy through Strategic European Action (FORSEA) launched their 4th call for support packages, due by 29 June 2018.

News and Current Events

Wind Energy

How do offshore wind farms affect ocean ecosystems? - Deutsche Welle

The global shift to renewable energy is well underway, including large-scale deployment of offshore wind farms. There are already about 3,600 turbines operating along European coasts, with 14 more wind farms under development. Even more wind energy is needed to meet the goals of the Paris climate agreement — but the push to boost European offshore wind power 40-fold by 2030 will change regional ocean ecosystems in profound and unexpected ways, according to researchers studying how the turbines affect the environment.

World's first floating wind farm in Scotland to use a 1.3MWh battery - Clean Energy News

> Norwegian oil and gas company Statoil's Batwind project in Scotland, combining wind turbines with energy storage, will have a battery system installed by system integrator Younicos. Batwind is under development through a partnership between Statoil and Masdar, the renewables and energy efficiency company owned by a government investment group in the United Arab Emirates' Abu Dhabi.

Statoil Completes Work on 402MW Offshore Wind Farm in the UK - Commercial Property Executive

> Around 25 miles off the coast of Norfolk in England, a new 402-megawatt offshore wind farm has begun operation. The project, dubbed Dudgeon, is the result of a joint venture including Statoil, Masdar and Statkraft. The wind farm is equipped with 67 six-megawatt turbines, providing renewable energy to around 410,000 homes. The project took three years to be delivered and nearly $1.7 billion, below the initial cost estimated at around $2 billion.

Fraunhofer IWES to test Siemens Gamesa's 8-MW offshore turbine - Renewables Now

> The nacelle of Siemens Gamesa Renewable Energy SA's recently-launched 8-MW offshore wind turbine will undergo performance tests from April 2018 at the Fraunhofer Institute for Wind Energy and Energy System Technology (IWES). Siemens Games and Fraunhofer IWES have signed a contract for the comprehensive validation of the SG 8.0-167 DD, research institute Fraunhofer said on Thursday. The wind turbine maker announced the launch of the new direct drive (DD) offshore wind turbine, with a rotor diameter of 167 metres, earlier this week.

Utilities say CapX2020 transmission project prompting wind energy growth - Midwest Energy News

> Finished in late September after more than a decade of planning and construction, the 800-mile-long CapX2020 transmission project has prompted more than 3,600 megawatts of clean energy project proposals, according to Xcel Energy. While not all the proposals are likely to be approved by regulators, the flood of applications represents the tangible impact of CapX2020 in moving electrons from windier parts of the Midwest to dense population centers to the east.

Marine Renewable Energy

Sustainable Marine Energy deploys Plat-I device off Oban - ReNews

Sustainable Marine Energy has installed its next-generation Plat-I floating tidal platform for tests in the Connel Sound off Oban. The 280kW steel trimaran device deployed 500 metres offshore features four Schottel Hydro SIT 250 turbines each rated at 70kW. The platform will undergo non-grid connected sea acceptance tests before being deployed in the Philippines next year.

URI On Tap As First To Employ New Bourne Tidal Test Site - Cape News

The University of Rhode Island is expected to be the first users of the new Bourne Tidal Test Site recently installed in the Cape Cod Canal in Buzzards Bay. A release from the Marine Renewable Energy Collaborative (MRECo), owners of the test site, said that engineers from URI have expressed interest in using the new testing facility to collect data on variations in water velocity. The work platform for the testing site was secured in an area near the railroad bridge during the two weeks leading up to Thanksgiving.

Scotrenewables Tidal Power hits 1GWh in record time at EMEC, Orkney - EMEC

Scotrenewables Tidal Power has set another record with its SR2000 2MW floating tidal turbine with the unit clocking up over 1GWh in a record pace for the European Marine Energy Centre (EMEC) in Orkney. Andrew Scott, Chief Executive Officer of Scotrenewables Tidal Power said: “This is an astonishing achievement by our technology and by the Scotrenewables team who have worked so hard to make it happen.

£400m tidal barrage - Fleetwood Today

Ambitious plans for a £400m tidal barrage scheme at Fleetwood have moved a step closer thanks to a new land agreement - and the scheme could be operational in just over five years. Renewable energy firm Atlantis has signed heads of terms with the Duchy of Lancaster to lease the land required to build the barrage and flood protection project on the Wyre estuary.

OERA & NSERC Reach Agreement to Enhance Offshore Energy Research & Development - OERA

The Offshore Energy Research Association of Nova Scotia (OERA) and the Natural Sciences and Engineering Research Council of Canada (NSERC) have signed a Memorandum of Understanding that will jointly fund marine energy research projects in Nova Scotia. These projects will support academic research carried out in collaboration with Canadian companies over the next three years. Through the OERA-NSERC Collaborative Research & Development (CRD) and Applied Research & Development (ARD) grants, innovative new projects will provide companies that operate in Canada access to the unique knowledge, expertise and educational resources available in Nova Scotia’s universities.