# TETHYS BLAST

# September 21, 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.

## Upcoming Annex IV Webinar

Annex IV is hosting a public webinar on September 25 that will discuss Optimizing Permitting/Consenting for MRE through Data Transferability. More information and login instructions are available on Tethys.

## Webinar on Marine Renewable Energy Data

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Join us for a webinar on the status of PRIMRE, the Portal and Repository for Information on Marine Renewable Energy. PRIMRE seeks to provide broad access to engineering, resource characterization, and environmental effects information on marine renewable energy projects to facilitate the commercial development of the MRE industry. This webinar will highlight the current status of PRIMRE's development and future vision.

*Wednesday, October 3rd, 8:00 AM Pacific Daylight Time (Thursday, October 4th, 15:00 UTC)*

See the events page on PRIMRE (https://openei.org/wiki/Marine_%26_Hydrokinetic) for details to join the webinar.

## Upcoming Conferences

- The 1st Scottish Marine Energy Research (ScotMER) Symposium will be held in Edinburgh, UK on October 2.
- The 3rd International Conference on Renewable Energies Offshore will be held in Lisbon, Portugal on October 8-10.
- The American Wind Energy Association (AWEA) Offshore WindPower 2018 will be held in Washington DC, USA on October 16-17.
- Ocean Energy Europe will be held in Edinburgh, UK on October 30-31.

## Workshop on Fieldwork in Tidal Stream Sites

A workshop on *conducting fieldwork in tidal stream sites* will be held on 2 November 2018 as part of the 8th MASTS annual science meeting in Glasgow, UK. This workshop is centred on the challenges and best practices of working at high energy sites, and is aimed at a broad range of stakeholders, including technicians, marine renewable energy technology developers, scientific equipment companies, scientists and academics alike. Workshop details are available 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:

**Movement patterns of white-tailed sea eagles near wind turbines – Krone and Treu 2018**

> White-tailed sea eagles (*Haliaeetus albicilla*) exhibit one of the highest mortality rates at wind power plants (WPPs) among raptor species in Europe, but data on circumstances of collision and behavioral response to WPPs are scarce. We analyzed the effect of WPPs on movement patterns of sea eagles in Germany with satellite telemetry. We analyzed ranging behavior and environmental parameters that influence the behavioral flight response to WPPs using multiple regression models.

**Human dimensions of tidal energy: A review of theories and frameworks – Jenkins et al. 2018**

> This paper provides a comprehensive review of theories and frameworks for understanding and managing human dimensions of tidal energy. The methods for this review were: 1) the construction of an annotated bibliography of the human dimensions of marine renewable energy literature, 2) an analytical review of the core theories and frameworks found in the literature as applied to tidal energy development in the United States, and 3) an iterative process of conceptual refinement through peer review.

**Impact of wind farms on soaring bird populations at a migratory bottleneck – Martin et al. 2018**

> Collision with turbines at wind farms is expected to have a greater impact on birds at particular sites where high concentrations of individuals occur, such as migration bottleneck areas. The Strait of Gibraltar (southern Spain) has long been recognized as the most important bottleneck in western Europe for soaring bird migration. Moreover, this area is within one of the most important potential areas for wind energy generation in Spain.

**Automatic optical detection and classification of marine animals around MHK converters using machine vision – Brunton 2018**

> Optical systems provide valuable information for evaluating interactions and associations between organisms and MHK energy converters and for capturing potentially rare encounters between marine organisms and MHK device. The deluge of optical data from cabled monitoring packages makes expert review time-consuming and expensive. We propose algorithms and a processing framework to automatically extract events of interest from underwater video.

**Collision and displacement vulnerability to offshore wind energy infrastructure among marine birds of the Pacific Outer Continental Shelf – Kelsey et al. 2018**

> Marine birds are vulnerable to collision with and displacement by offshore wind energy infrastructure (OWEI). Here we present the first assessment of marine bird vulnerability to potential OWEI in the California Current System portion of the U.S. Pacific Outer Continental Shelf (POCS). Using population size, demography, life history, flight heights, and avoidance behavior for 62 seabird and 19 marine water bird species that occur in the POCS, we present and apply equations to calculate Population Vulnerability, Collision Vulnerability, and Displacement Vulnerability to OWEI for each species.

**Sensitivity of tidal lagoon and barrage hydrodynamic impacts and energy outputs to operational characteristics – Angeloudis and Flaconer 2017**

> The feasibility and sustainable operation of tidal lagoons and barrages has been under scrutiny over uncertainties with regards to their environmental impacts, potential interactions and energy output. A numerical modelling methodology that evaluates their effects on the hydro-environment has been refined to consider technical constraints and specifications associated with variable turbine designs and operational sequences.

# News and Current Events

**Marine Renewable Energy**

**Wave and Tidal Energy Converters for commercial energy production – 40South Energy**

> On September 13th the 40South Energy H24-50 unit deployed off Marina di Pisa started putting wave energy into the Italian electricity grid! Thanks to the teams at 40South Energy Italia SRL and Elements Works SRL for their competence and dedication, which made this achievement possible. This result brings commercial viability of wave energy conversion one step closer and puts 40South Energy Italia at the forefront of the global race to harness this new renewable energy source.

**Magallanges Renovables' ATIR En Route from Spain to EMEC – EMEC**

The European Marine Energy Centre (EMEC) is looking forward to welcoming Spanish tidal energy developer Magallanes Renovables to its tidal energy test site off Eday. Their full scale ATIR tidal turbine which has been successfully validated and optimised is currently being towed north from Vigo in Spain and is expected to arrive in Orkney waters in mid-September. Once the device arrives in Orkney, local marine contractor Leask Marine will install the ATIR at EMEC's Fall of Warness grid-connected tidal test site.

**Cape Sharp's monitoring system switched on – Marine Energy.biz**

The Cape Sharp tidal turbine has started showing signs of life following some month and a half of being disengaged after the liquidation of OpenHydro. However, this is only in terms of environmental monitoring, while the turbine is still disconnected from the electricity grid. According to Emera, a shareholder which is in the process of withdrawing from the Cape Sharp Tidal partnership, all environmental monitoring devices required for regulatory compliance are now working and transferring data to shore.

**Scotrenewables Tidal Power Commences Site Preparation for Commercial Production Unit – Scotrenewables**

Record breaking SR2000 turbine to be recovered from European Marine Energy Centre in Orkney ahead of site preparations for optimised production model. In a move to start site preparation work for their optimised 2MW floating tidal turbine, Scotrenewables Tidal Power have started work to remove the SR2000 turbine from its test berth at EMEC. The SR2000's withdrawal from service at EMEC follows a record breaking year of testing which saw it generate in excess of 3GWh of renewable electricity.

**SIMEC Atlantis Energy Unveils World's Largest Single Rotor Tidal Turbine, the AR2000 – SIMEC Atlantis Energy**

The Turbine and Engineering Services Division of SIMEC Atlantis Energy (SAE), a diversified sustainable energy generation company, is delighted to have unveiled today the design for its new 2.0-megawatt tidal power turbine system which includes the largest and most powerful single axis turbine available on the commercial market.

**Wind Energy**

**Ørsted Divests 50% of 1,218 Megawatt Hornsea 1 Offshore Wind Farm – Clean Technica**

Danish wind power company Ørsted announced on Wednesday that it had agreed to divest 50% of its stake in the 1,218 megawatt (MW) Hornsea 1 Offshore Wind Farm to Global Infrastructure Partners. The Hornsea 1 Offshore Wind Farm will, upon completion in 2020, be the world's largest offshore wind farm, coming in at 1,218 MW — but to be surpassed by the equally massive 1,386 MW Hornsea 2 Offshore Wind Farm.

**Brazil's Copel starts test operations at 181-MW wind farm – Renewables Now**

Brazilian power utility Copel (BVMF:CPLE6) announced on Wednesday the start of test operations at its 180.6-MW wind farm in Rio Grande do Norte. The Cutia Wind Complex, as it is named, is comprised of seven wind farms. It is currently working with 50% of its total wind turbines under test operations. The other half will come online gradually.

**Offshore wind farms could protect coastlines – Physics World**

Offshore wind farms may have a greater capacity for coastal protection than first imagined. Scientists had shown previously that arrays of turbines placed in the sea may buffer storm surge and flooding. Now simulations featuring data from Hurricane Harvey suggest that smart wind farm designs have the capacity to protect coastlines from heavy rains.

**Central Puerto Announces the Approval of the Commercail Operation of Achiras I Wind Farm (48 MW) – Business Insider**

Central Puerto S.A. ("Central Puerto") (NYSE: CEPU), the largest private sector power generation company in Argentina, as measured by generated power, announced the approval of the Commercial Operation of wind farm Achiras I with an installed capacity of 48 MW (net power), starting on September 20, 2018.

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 and wishes to make you aware of the following opportunities:

- Horizon2020 funding call on "Developing the next generation of renewable energy technologies." Deadline is 16 October 2018.