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[Tethys](#) is an online knowledge base that facilitates the exchange and dissemination of information on the environmental effects of wind and marine renewable energy (MRE). The bi-weekly *Tethys Blast* highlights new publications in the [Tethys Knowledge Base](#); relevant announcements, opportunities, and upcoming events; and news articles of international interest. [ORJIP Ocean Energy](#) has partnered with OES-Environmental to provide additional content.

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Announcements

Waves to Water Prize

The Water Power Technologies Office at the U.S. Department of Energy has launched the second stage of the [Waves to Water Prize](#), which seeks to accelerate technology innovation in wave energy powered desalination systems. Submissions are due 13 March 2020.

Call for Abstracts

Abstracts are currently being accepted for the [5th Asian Wave and Tidal Energy Conference \(AWTEC 2020\)](#), which will be held in Hobart, Tasmania from 8-12 November 2020. Abstracts must be submitted through the presentation portal before 1 March 2020. Authors of accepted abstracts will then be required to submit a full paper through the conference portal before 20 June 2020.

Call for Papers

The Journal of Ocean Technology has launched a [call for technical papers, essays, and short articles](#) on marine spatial planning. The submission deadline for technical papers and expression of interest for essays and short articles is 21 February 2020. The submission deadline for essays and short articles is 24 April 2020.

Employment Opportunity

Natural Resources Wales is looking to expand its marine team to join its new Offshore Renewable Energy Programme. A full list of available positions, including those seeking expertise in offshore renewable energy, marine licensing, and marine mammals, can be found [here](#). Applications close 26 February 2020.

Funding Opportunities

The U.S. Department of Energy (DOE) has released a [Funding Opportunity Announcement](#) for the DOE Small Business Innovation Research and Small Business Technology Transfer programs. Applications are due 24 February 2020.

The European Maritime and Fisheries Fund has launched the [Blue Economy Window call](#) to support the sustainable development of small and mid-size enterprises across the European Union. The deadline of the call is 27 February 2020.

Upcoming Events

Upcoming Webinars

ETIP Ocean and DTOceanPlus will be hosting a [webinar](#) entitled, “Stage Gate Design Tool for Ocean Energy” on 25 February 2020 from 7:00-8:00am PST. Register [here](#).

The National Renewable Energy Laboratory (NREL) will be hosting a webinar entitled, “Overview of Floating Offshore Wind” on 26 February 2020 from 4:00-5:00pm ET. Register [here](#).

The Bureau of Ocean Energy Management (BOEM) is pleased to present the [West Coast Renewable Energy Science Exchange](#), a series of webinars about scientific research off the U.S. West Coast. The third webinar in the series will be held on 11 March 2020 at 10:00am PT and will provide an overview of BOEM-funded research about fish and fisheries.

The International Energy Agency Wind Technical Collaborative Program Task 34 (Working Together to Resolve Environmental Effects of Wind Energy [WREN]) will be hosting a webinar entitled, Experiences from Conducting Environmental Research at Land-Based and Offshore Wind Energy Facilities on 12 March 2020 from 8:00-9:00am PT. Details on how to access the webinar can be found [here](#).

Upcoming Conferences

The [Environmental Interactions of Marine Renewable Energy Technologies \(EIMR\) Conference](#) will be held in Oban, Scotland from 21-23 April 2020. Early bird registration closes 28 February.

[OCEANS 2020](#) will be held in Singapore from 6-9 April 2020. Early bird registration is available until 6 March 2020.

The [14th Austrian Wind Energy Symposium \(AWES 2020\)](#) will be held in Vienna, Austria from 17-18 March 2020.

New Documents on *Tethys*

Marine Renewable Energy

[Potential of coastal headlands for tidal energy extraction and the resulting environmental effects along Negeri Sembilan coastlines: A numerical simulation study](#) – Goh et al. 2020

Strong tidal currents can normally be observed around coastal headlands due to their geometrical effects. The effects of the physical characteristics of headlands, such as the size and location, as well as the channel width, on energy production have not been well explored to date. This study has been set to measure the energy production potential at four different sizes of coastal headlands along Negeri Sembilan coastlines, and to gauge the effects of tidal energy extraction poses to the coastal environment, using numerical modelling.

[Defining project envelopes for marine energy projects: Review and Tidal energy test facility and marine mammals case study](#) – Sparling and Smith 2019

This report provides a detailed description of a set of guiding principles that should inform the development and definition of Project Design Envelopes (PDEs) for multiple technology marine energy sites. A PDE approach is a consenting approach that allows a project proponent to submit an assessment of the potential maximum impacts of a range of design parameters within its application. This allows the project proponent with the flexibility to build out a number of potential design options, as long as the project is constructed and operated within the range of parameters assessed.

[Impact of magnetic fields generated by AC/DC submarine power cables on the behavior of juvenile European lobster \(*Homarus gammarus*\)](#) – Taormina et al. 2020

The number of submarine power cables using either direct or alternating current is expected to increase drastically in coming decades. Data concerning the impact of magnetic fields generated by these cables on marine invertebrates are scarce. In this context, the aim of this study was to explore the potential impact of anthropogenic static and time-varying magnetic fields on the behavior of recently settled juvenile European lobsters (*Homarus gammarus*) using two different behavioral assays. Day-light conditions were used to stimulate the sheltering behavior and facilitate the video tracking.

Wind Energy

[The impact of onshore wind power projects on ecological corridors and landscape connectivity in Shanxi, China – Guo et al. 2020](#)

The wind power industry has developed rapidly in China, but the effect of wind power projects on the ecosystem is far from being clearly understood. The objective of this study is to evaluate the negative impact of wind power plants on the ecosystem. In this research, least-cost distance and least-cost path models were employed to establish potential ecological corridors based on the resistance at the site of the wind power projects—which is located in the ecological function area in Qinyuan, South Shanxi Province, China.

[Attracted to the outside: a meso-scale response pattern of lesser black-backed gulls at an offshore wind farm revealed by GPS telemetry – Vanermen et al. 2019](#)

Among seabirds, lesser black-backed gulls (*Larus fuscus*) are considered to be at high risk of colliding with offshore wind turbines. In this respect, we used GPS tracking data of lesser black-backed gulls caught and tagged in two colonies along the Belgian North Sea coast (Ostend and Zeebrugge) to study spatial patterns in the species' presence and behaviour in and around the Thornton Bank offshore wind farm (OWF). We found a significant decrease in the number of GPS fixes of flying birds from up to a distance of at least 2000 m towards the middle of the wind farm.

[Wind turbine audibility and noise annoyance in a national U.S. survey: Individual perception and influencing factors – Haac et al. 2019](#)

With results from a nationwide survey sponsored by the U.S. Department of Energy, factors that affect outdoor audibility and noise annoyance of wind turbines were evaluated. Wind turbine and summer daytime median background sound levels were estimated for 1043 respondents. Wind turbine sound level was the most robust predictor of audibility yet only a weak, albeit significant, predictor of noise annoyance. For each 1 dB increase in wind turbine sound level, the odds of hearing a wind turbine on one's property increased by 31% and the odds of moving to the next level of annoyance increased by 9%.

News & Press Releases

Marine Renewable Energy

[Minesto signs PPA with electric utility SEV for utility-scale tidal energy installations – Minesto](#)

Leading marine energy developer Minesto has signed a power purchase agreement (PPA) with the Faroese electric utility company SEV, advancing the parties' collaboration to

integrate tidal energy in the Faroe Island's electricity mix. The PPA comprises both the planned installations of two 100kW systems of Minesto's subsea kite technology and an additional 2MW capacity allocated for installations of utility-scale tidal energy systems in the Faroe Islands.

Malin to Build AWS Ocean Energy's Wave Energy Converter – Marine Energy

Malin Renewables has secured a £1 million contract by AWS Ocean Energy to supply a fifty-tonne wave energy converter. Malin will build the half scale Archimedes Waveswing power generation device, designed for offshore wave energy production. The Waveswing will be fabricated and assembled at Malin's Westway Park site in Renfrew. Activity will start immediately to create the first partial-scale converter, which will work to verify the concept to drive forward grid scale and micro grid scale variants.

Mocean teams up with subsea sector – Mocean Energy

Mocean Energy has teamed up with energy major Chrysaor, subsea energy storage experts EC-OG and autonomous underwater vehicle (AUV) specialist Modus in a project to look at using renewables for subsea power. The project, funded by the partners together with the Oil and Gas Technology Centre (OGTC), will look to use Mocean Energy's Blue Star wave energy converter and EC-OG's HALO subsea energy storage system to power subsea tiebacks or residential AUVs.

NOVACAVI Cables for ISWEC Prototype – Marine Energy

NOVACAVI has contributed to the development of technologies that convert sea wave power into electrical energy, with a special custom cable engineered to connect the pilot unit moored offshore to the network of the ISWEC prototype (Inertial Sea Wave Energy Converter) within the Eni MaREnergy research programme. Installed offshore Ravenna by ENI, ISWEC is the world's first example of the "smart grid" system for the production of wave energy combined with photovoltaic and energy storage.

Ocean Drones Energized by Seatrec, a Monrovia Company – Monrovia Weekly

Dr. Yi Chao, the founder and CEO of Seatrec, a company founded in 2012 and based in Monrovia, recently spoke at a MADIA Tech Launch meetup to share the evolving success story of this innovative technology. The company's ocean drone technology is now poised for significant growth as it enters a new phase of manufacture and distribution. The drones are floating cylinders with materials that expand and contract with temperature changes. As the company simply states, "we create electricity from temperature differences."

Wind Energy

ERM gets go ahead to develop green hydrogen at scale from offshore wind – ERM

ERM has been awarded £3.12m from the UK Government to further develop its ERM-Dolphyn project, concerning the production of ‘green’ hydrogen at scale from floating, offshore wind turbines. ERM believes through their Dolphyn project a 400 turbine ‘farm’ (20 x 20 array) will have a capacity of 4GW, producing sufficient supply to heat more than 1.5 million UK homes with no carbon emissions. The development plan for the project has a target date for the operational start-up of the 2MW prototype facility by summer 2024.

[Africa and Middle East add 894MW of wind energy capacity in 2019, market expected to grow by over 10GW by 2024](#) – GWEC

The latest data released by the Global Wind Energy Council (GWEC) shows Africa and the Middle East installed 894MW capacity of wind power in 2019, a decrease of 7 per cent on the previous year which saw 962MW installed. However, faster growth is on the horizon with GWEC Market Intelligence’s preliminary forecasts expecting 10.7GW of wind energy capacity to be installed between 2020-2024, an increase of 167% on current market status.

[BOEM Delays Vineyard Wind Project](#) – The Maritime Executive

The Department of Interior’s BOEM has released a revised permitting timeline for the Vineyard Wind I offshore wind project. The timeline indicates the Final Environmental Impact Statement (FEIS) for the Vineyard Wind I project will be issued in December, over a year later than its previous target of August 2019. BOEM says it needs to evaluate the impact that offshore wind projects will have on commercial fishing and navigation along the east coast.

[New Spanish wind farm will boast “the most powerful onshore wind turbine”](#) – Renewable Energy World

Spanish utility Iberdrola will build its next wind farm, the Herrera Complex, with the most powerful onshore wind turbine installed to date – the Siemens Gamesa SG 4.5-145 4.5 MW wind turbine, which is almost seven times more powerful than the first wind turbines installed in Spain more than two decades ago. The Herrera Complex, which will be built in Burgos province, is made up of three wind farms – La Huesa, Valdesantos and Orbaneja, and will have an installed capacity of 63 MW, distributed between a total of 14 wind turbines. Forecasts indicate that the project will be operational later in 2020.

[Shell, EDP Set Record-Low Price for U.S. Offshore Wind Power](#) – Bloomberg Green

Royal Dutch Shell Plc and EDP Renovaveis SA agreed to sell power from a wind farm they’re building in the Atlantic Ocean for a record-low price. The 804-megawatt Mayflower wind farm, located south of Martha’s Vineyard, will supply electricity to utilities in Massachusetts for \$58 a megawatt-hour over the life of the contract. That’s less than a previous deal for \$65 agreed to with the similarly located 800-megawatt Vineyard Wind project, state energy officials said on a conference call Tuesday.