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[Tethys](#) is a knowledge hub with information and resources on the environmental effects of wind and marine energy. The bi-weekly [Tethys Blast](#) highlights announcements and upcoming events; new documents in the [Knowledge Base](#); and international energy news. [ORJIP Ocean Energy](#) has partnered with [OES-Environmental](#) to provide additional content. [Email us](#) to contribute!

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Announcements

OSW Metadata Webinar Recording

The Tethys team recently hosted a webinar, “[Introducing Offshore Wind Environmental Metadata on Tethys](#)”! The webinar featured a live demonstration of the new [Offshore Wind Environmental Metadata](#) tool, highlighted several major offshore wind projects around the world, and described how offshore wind project developers can contribute. Watch the recording!

Marine Energy Graduate Student Research Program

The U.S. Department of Energy’s (DOE) Water Power Technologies Office (WPTO) and the Oak Ridge Institute for Science and Education (ORISE) recently opened applications for the [2024 Marine Energy Graduate Student Research Program](#), which supports graduate students working on marine energy by providing access to expertise, resources, and capabilities available at DOE offices, national laboratories, government and industry partners, and other approved facilities. Applications are due 1 December 2023.

BOEM Seeks Public Input

The U.S. Bureau of Ocean Energy Management (BOEM) is seeking public comments on the two [Draft Wind Energy Areas](#) identified off the coast of Oregon (due 31 October 2023) and on the draft Environmental Impact Statement for the proposed [Maryland Offshore Wind Project](#) (due 20 November 2023).

Earthshot Prize Applications

As an Official Nominator for [The Earthshot Prize](#), the European Marine Energy Centre (EMEC) is [inviting expressions of interest](#) from ocean energy, offshore wind, and green hydrogen related solutions through 30 October 2023.

Calls for Abstracts

The [Call for Abstracts](#) for [OCEANS 2024 Singapore](#) are now open through 15 October 2023. OCEANS will take place in 14-18 April 2024 in Singapore.

The [Call for Abstracts](#) for the [34th International Ocean and Polar Engineering Conference \(ISOPE 2024\)](#) is open through 20 October 2023. ISOPE 2024 will take place on 16-21 June 2024 in Rhodes, Greece.

The [Call for Abstracts](#) for the [43rd International Conference on Ocean, Offshore & Arctic Engineering \(OMAE 2024\)](#) is now open through 26 October 2023. OMAE 2024 will take place 9-14 June 2024 in Singapore.

The [Call for Abstracts](#) for the [Environmental Interactions of Marine Renewables Congress 2024 \(EIMR 2024\)](#) is now open through 17 November 2023. EIMR 2024 will take place on 15-19 April 2024 in Orkney, Scotland.

Call for Papers

The Marine Technology Society Journal is seeking manuscript submissions for a special issue on [Marine Energy - An Update on Developments Globally](#) through 1 March 2024. The issue will examine a variety of topics, including technology development, resource assessment, social and economic considerations, and the development of international standards and certification.

Funding & Testing Opportunities

The U.S. Testing Expertise and Access for Marine Energy Research (TEAMER) program is now accepting [Request for Technical Support 11 applications](#) until 3 November 2023. Applicants can apply to work with approved facilities on tank and flume testing, lab/bench testing, numerical modeling and analysis, and open water support.

The U.S. DOE is now accepting applications for the [Renewable Energy Siting through Technical Engagement and Planning \(R-STEP\)](#) program, which seeks to expand the decision-making capacity and expertise of state and local governments around large-scale renewable energy planning, siting, and permitting. Applications are due 3 November 2023.

The U.S. DOE and Department of the Interior recently released the [Installation Noise Reduction and Reliable Moorings for Offshore Wind and Marine Energy Funding Opportunity Announcement](#), which includes \$6.4 million for projects to improve the reliability of moorings for floating offshore wind energy and marine energy systems and \$10 million for projects to

reduce the noise associated with the installation of fixed-bottom offshore wind energy projects. Concept papers are due 9 November 2023 and full applications are due 29 February 2023.

Career Opportunities

The University of Hull is seeking a [Senior Lecturer in Offshore Wind / Renewable Energy](#) with expertise in either environmental impacts, environmental economics or carbon management. Applications are due 20 October 2023.

National Renewable Energy Laboratory (NREL) is seeking a [Postdoctoral Researcher](#) to support projects evaluating and characterizing wave energy measurement technologies, developing wave measurement calibration methods, and researching methods to improve wave measurements. Applications are due 20 October 2023.

Upcoming Events

Upcoming Webinars

The National Academies of Sciences, Engineering, and Medicine is hosting a webinar to publicly release a new report, [Potential Hydrodynamic Impacts of Offshore Wind Energy on Nantucket Shoals Regional Ecology: An Evaluation from Wind to Whales](#), on 16 October 2023 from 11:00am-12:00pm EDT (3:00-4:00pm UTC). Register [here](#).

New York State Environmental Technical Working Group is hosting a webinar to discuss a draft document, “Guidance for Pre-and Post-Construction Monitoring of Marine Birds in Relation to Offshore Wind Development”, from 11:00am-1:00pm EDT (3:00-5:00pm UTC) on 16 October 2023. Register [here](#).

NREL and the Renewable Energy Wildlife Institute (REWI) are hosting a webinar series on [Compensatory Mitigation for Land-Based Wind Energy](#). The third webinar, “Compensatory Mitigation: Grouse Management and Conservation”, will take place on 20 October 2023 from 2:00-3:00pm EDT (6:00-7:00pm UTC). Register [here](#).

The Blue Economy Cooperative Research Centre is hosting a webinar, “[Ethics & Social Licence in the Blue Economy](#)”, on 24 October 2023 from 3:00-4:30pm AEDT (4:00-5:30am UTC). Register [here](#).

NREL and REWI are also hosting the fourth and final webinar of the series, “Compensatory Mitigation: Thinking Outside the Box”, on 1 November 2023 from 3:00-4:00pm EDT (7:00-8:00pm UTC). Register [here](#).

The U.S. WPTO is hosting an “[R&D Deep Dive Webinar: Spatial Environmental Assessment Tool - Connecting Marine Energy and the Environment](#)”, on 9 November 2023 from 1:00-2:00pm EDT (6:00-7:00pm UTC).

Upcoming Conferences

The [North American Wind Energy Academy \(NAWEA\)/WindTech 2023 Conference](#) will take place from 30 October to 1 November 2023 in Broomfield, Colorado, U.S. Register [here](#).

Wave Energy Scotland is hosting the [Wave Energy Scotland Annual Conference 2023](#) on 16 November 2023 in Edinburgh, Scotland.

Reuters Events is hosting [Floating Wind USA 2023](#) on 29-30 November 2023 in San Diego, California, U.S. Register [here](#).

WavEC Offshore Renewables, in collaboration with the Netherlands Embassy, is hosting the [2023 WavEc Seminar](#) on 6 December 2023 in Lisbon, Portugal. Register for free [here](#).

New Documents on Tethys

[Tethys](#) hosts thousands of documents on the environmental effects of marine and wind (land-based and offshore) energy, including journal articles, conference papers, and reports.

Marine Energy

[Tidal energy extraction modifies tidal asymmetry and transport in a shallow, well-mixed estuary](#) – Spicer et al. 2023

Tidal energy extraction is increasingly being studied as a potential renewable energy resource in estuaries worldwide. Although it is understood that energy extraction via tidal stream turbines can modify currents and transport within estuaries, it is not clear how the underlying nonlinear physical mechanisms dictating tidal hydrodynamics are modulated. This research investigates the influence of a hypothetical tidal stream turbine array on barotropic tidal processes in a shallow, well-mixed system: the Piscataqua River – Great Bay (PRGB) estuary, using a numerical model. The modeled turbine farm includes 180 turbines which would extract an estimated 44.7 GWh of energy, annually. The tidal hydrodynamic model for the existing condition is validated with *in-situ* observations of currents and water level before analyzing tidal asymmetry and transport with and without tidal turbines.

[Task Force on Sustainable Tidal Energy Development in the Bay of Fundy Interim Report](#) – Fisheries and Oceans Canada & Natural Resources Canada 2023

On June 20, 2023, the Honourable Joyce Murray, former Minister of Fisheries, Oceans and the Canadian Coast Guard, and the Honourable Jonathan Wilkinson, Canada's Minister of Natural Resources, announced the establishment of a Task Force on sustainable tidal energy. The intention is to explore issues and opportunities associated with the deployment of tidal energy projects in the Bay of Fundy. The purpose of the Task Force is to: (1) build on work to date to clarify requirements for fish protection; (2)

improve transparency and methodology of risk assessment and decision making on tidal turbine deployments; and (3) reduce turnaround time for regulatory decisions for tidal energy projects in the Bay of Fundy. The purpose of this report is to provide an overview and update on the Task Force and its work to date.

[The Marine Spatial Planning Index: a tool to guide and assess marine spatial planning](#) – Reimer et al. 2023

Marine spatial planning (MSP) has the potential to balance demands for ocean space with environmental protection and is increasingly considered crucial for achieving global ocean goals. In theory, MSP should adhere to six principles, being: (1) ecosystem-based, (2) integrated, (3) place-based, (4) adaptive, (5) strategic, and (6) participatory. Despite nearly two decades of practice, MSP continues to face critical challenges to fully realize these principles, hindering its ability to deliver positive outcomes for people and nature. Here, we present the MSP Index, a tool for assessing progress in MSP processes based on MSP principles that can guide practitioners in operationalizing these principles. Using qualitative analysis of fundamental MSP guides, complemented with a literature review, we identified key features of MSP principles and developed these features into a scoring guide that assesses progress relative to each principle.

Wind Energy

[Decommissioning of offshore wind farms and its impact on benthic ecology](#) – Spielmann et al. 2023

At the end of their operational life time offshore wind farms need to be decommissioned. How and to what extent the removal of the underwater structures impairs the ecosystem that developed during the operational phase of the wind farm is not known. So, decision makers face a knowledge gap, making the consideration of such ecological impacts challenging when planning decommissioning. This study evaluates how complete or partial decommissioning of foundation structure and scour protection layer impacts local epibenthic macrofauna biodiversity. We assessed three decommissioning alternatives (one for complete and two for partial removal) regarding their impact on epibenthic macrofauna species richness.

[Griffon Vulture movements are concentrated around roost and supplementary feeding stations: implications for wind energy development on Mediterranean islands](#) – Cerri et al. 2023

Griffon Vulture (*Gyps fulvus*) populations occur on Mediterranean islands, where wind energy is developing fast. As griffons are subjected to collisions with wind turbines while foraging, it is necessary to understand which factors affect their movements to minimize the potential impact of wind farms. We assessed habitat use of 37 griffons (n. GPS locations = 130,218) and their overlap with wind farms in Sardinia (Italy), an island where both Griffon Vulture population and wind energy are significantly expanding. Griffons in Sardinia cover smaller areas (95% isopleth = $956.3 \pm 677.7 \text{ km}^2$, 50%

isopleth = $73.8 \pm 48.2 \text{ km}^2$) than in mainland Europe, restricting most of their movements within 5–10 km from colonies and roosts.

[Establishing baselines for predicting change in ambient sound metrics, marine mammal, and vessel occurrence within a US offshore wind energy area](#) – Van Parijs et al. 2023

Evaluating potential impacts on marine animals or increased sound levels resulting from offshore wind energy construction requires the establishment of baseline data records from which to draw inference. This study provides 2 years of baseline data on cetacean species' presence, vessel activity, and ambient sound levels in the southern New England wind energy area. With eight species/families present in the area for at least 9 months of the year, this area represents an important habitat for cetaceans. Most species showed seasonality, with peak daily presence in winter (harbour porpoise, North Atlantic right, fin, and humpback whales), summer (sperm whales), spring (sei whales), or spring and fall/autumn (minke whales).

News & Press Releases

Marine Energy

[Tocado concludes 8-year demonstration of Eastern Scheldt tidal energy array](#) – Offshore Energy

Tocado, a joint venture of QED Naval and HydroWing, has completed the demonstration of 1.25MW five-turbine tidal energy array in the Netherlands after eight years of operation. As 'the world's longest operational tidal array', the five Tocado T-2 turbines have demonstrated reliability and performance, instilling confidence in the team and key industrial stakeholders and providing valuable insights for the development of the next-generation T-3 turbine series, according to Tocado. The project, installed and operated at the Dutch iconic Eastern Scheldt barrier, has come to the end of its lifecycle, and the assets have been formally handed over to Rijkswaterstaat as part of the decommissioning process. The Eastern Scheldt Tidal Project represented over 50% of EU's operational tidal capacity today and contributed to over 30% of EU's total tidal power generation before its finalization.

[Celebrating success: wrap up of the INTERREG ENCORE project](#) – BlueSpring

Bluespring, the lead partner in the ambitious €8.5 million ENCORE project, proudly announces the successful wrap-up of the project aimed at "ENergising our Coasts with Offshore Renewable Energy". Over the course of three years, twelve partners collaborated to propel four innovative offshore solutions, setting new standards and creating a lasting impact in the sector through education. As the project has reached its formal closure, it reflects on the tangible successes, commendable achievements, and the role of Bluespring in steering this journey. A significant highlight was the application of

international standards developed under the International Electro-technical Committee (IEC) to reduce risks and validate the performance of four pilot projects.

Brand new NEMMO tidal turbine blades ready for a spin at sea – Offshore Energy

The collaborative EU-backed NEMMO project has reached its last and most significant milestone – producing novel-design tidal turbine blades, three of which are being shipped to be fitted on Magallanes Renovables’ ATIR tidal energy platform in Scotland. INPRE Composites, one of the 12 partners in the NEMMO project, completed the manufacturing of four novel-design blades in late September 2023. Short for ‘Next Evolution in Materials and Models for Ocean Energy’, the NEMMO project was launched to boost the competitiveness of tidal energy by optimizing tidal turbine blade design and performance. The project set an aim to create a larger, lighter and more durable composite blade for floating tidal turbines, enabling devices to reach capacities of over 2MW.

California Governor Gavin Newsom Signs Historic Wave Energy Legislation into Law – Eco Wave Power

Eco Wave Power applauds California Governor Gavin Newsom for signing California Senate Bill 605 into law – a historic moment for wave energy in America. The legislation directs the California Energy Commission to evaluate the feasibility of wave and tidal energy in California, including the costs and benefits of implementing the technology across the state’s coastline. The California Energy Commission will work with various state agencies and stakeholders to identify suitable locations for wave energy and tidal energy projects in both Californian and federal waters. This comes after California’s State Legislature set 2045 as its target for a 100 percent renewable and zero-carbon power grid, with its first benchmark target being 90 percent by 2035. As of 2022, net zero carbon and renewable energy made up 54.23 percent of California’s total energy supply.

Havkraft teams up with Equinor to explore wave power for lowering offshore drilling emissions – Offshore Energy

Norwegian company Havkraft has signed a contract with Equinor to conduct a feasibility study exploring the integration of wave energy as a sustainable energy source for powering mobile offshore drilling units. Havkraft’s wave energy converters are said to be capable of producing electricity in remote offshore areas, making them a viable solution for powering mobile offshore drilling units (MODUs), where emission reduction, environmental conservation, and sustainable development are desired, according to the company. Equinor, as one of the leading global energy companies, is eager to explore the potential of wave power as a sustainable energy source for the industry. Therefore, Equinor has engaged Havkraft to conduct a study that will investigate the feasibility of integrating wave power solutions on MODUs, with the goal of significantly reducing operational CO2 emissions and promoting sustainable development within the industry.

Wind Energy

World's largest offshore wind farm produces power for the first time – Dogger Bank Wind Farm

The world's largest offshore wind farm under construction, Dogger Bank, has started producing electricity for the first time for British homes and businesses. The 3.6GW Dogger Bank Wind Farm is being constructed in UK waters 70 nautical miles (130km) off the coast of Yorkshire and in three 1.2GW phases known as Dogger Bank A, B and C. Power from the project's first offshore wind turbine at Dogger Bank A is now being transmitted to the UK's national grid via Dogger Bank's high-voltage direct current (HVDC) transmission system, marking the first-time use of HVDC technology on a UK wind farm. First power followed the installation of the first of GE Vernova's ground-breaking Haliade-X 13MW turbines, one of the largest and most powerful globally, at the Dogger Bank site. This is the first time Haliade-X units have been energised offshore anywhere in the world.

The Crown Estate refines plans for Celtic Sea floating wind – The Crown Estate

The Crown Estate has set out further details on its plans for Offshore Wind Leasing Round 5, which aims to establish new floating offshore wind technology off the coast of Wales and South West England. The update includes details on the final planned locations for the new windfarms, as well as further information on a multi-million-pound programme of marine surveys. Round 5 is expected to be the first phase of development in the Celtic Sea, with The Crown Estate working to catalyse and accelerate the UK's energy transition, and to de-risk developments to speed up their deployment. This includes investing in an upfront Habitats Regulation Assessment, an extensive programme of marine surveys and working with the Electricity System Operator on a coordinated approach to grid design.

Coalition of NGOs, wind industry and transmission system operators commit to work together for sustainable offshore wind and grid development in the Mediterranean Sea and adjacent Atlantic waters – BlueFloat

The Offshore Coalition for Energy and Nature – Mediterranean Sea (Med OCEaN) was officially launched on 28 September 2023. Med OCEaN brings together NGOs, wind industry and transmission system operators (TSOs) from across the Mediterranean basin and adjacent Atlantic waters. Med OCEaN aims to cooperate on the sustainable deployment of offshore wind and grid, while safeguarding nature and healthy marine ecosystems in the region. Over 15 founding Members have signed a Memorandum of Understanding and committed to working together. Med OCEaN will strive to fill knowledge gaps, monitor developments as well as impacts and efficacy of biodiversity measures applied to the offshore wind sector and grid infrastructure, and investigate innovative solutions.

French Floating Wind Pilot Project Stands Complete – Offshore Wind

The third and final wind turbine of the Provence Grand Large floating offshore wind project was installed 17 kilometres off the coast of Port-Saint-Louis-du-Rhône, France. Less than a month after the first departure from the Port of Marseille Fos, the other two wind turbines were in turn towed offshore and anchored at a depth of around 100 metres. Currently, the installation of an electrical connection is underway to transport electricity to the coast and feed it into the French network. The commissioning of the pilot project is planned for the beginning of 2024. The Provence Grand Large project features three Siemens Gamesa 8 MW wind turbines installed on tensioned line floats and designed by SBM Offshore and IFP Energies Nouvelles.

South Korea's First Commercial-Scale Offshore Wind Farm to Proceed – The Maritime Executive

South Korea's first commercial-scale offshore wind farm is moving forward with the project expected to begin construction and enter service by the end of 2024. Copenhagen Infrastructure Partners (CIP), through its fund Copenhagen Infrastructure III, and its partner SK E&S reached financial close and are proceeding with the project as their first step toward developing the country's offshore renewable energy industry. Jeonnam Offshore Wind Power was founded in 2020 as a 51-49 joint venture between SK E&S and CIP and the project is expected to become the first Korean commercial-scale offshore wind farm to go into operation in 2024. The project has been developed by a joint team comprised of SK E&S and Copenhagen Offshore Partners, the exclusive offshore wind development partner to CIP.