

# PRIMRE: Providing Centralized Access to Marine Energy Data and Information

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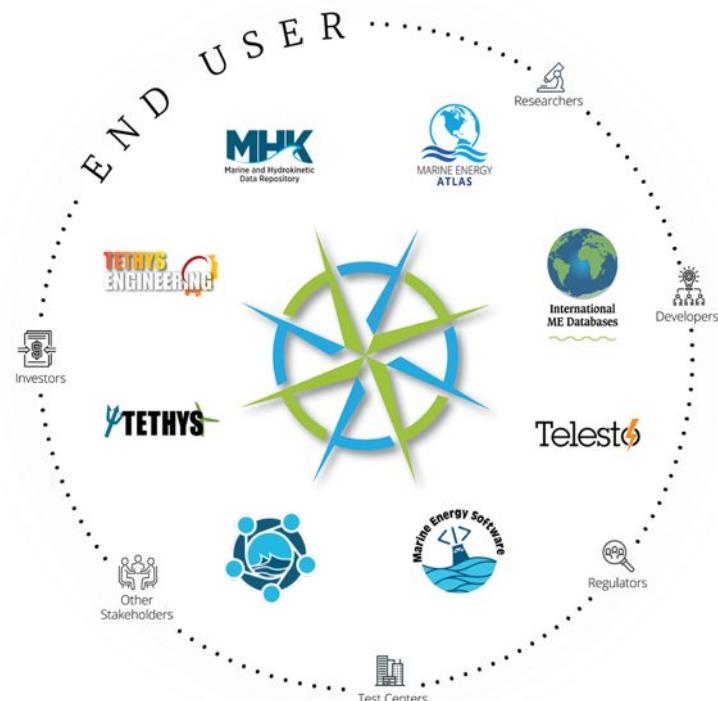
# PRIMRE



The **Portal and Repository of Information on Marine Renewable Energy (PRIMRE)** provides access to data, information, and resources.

Established in 2019 to collate, analyze, and disseminate all the data and information pertinent to the marine energy industry and research community.

PRIMRE is funded by the U.S. Department of Energy's Water Power Technologies Office and led by three national laboratories.



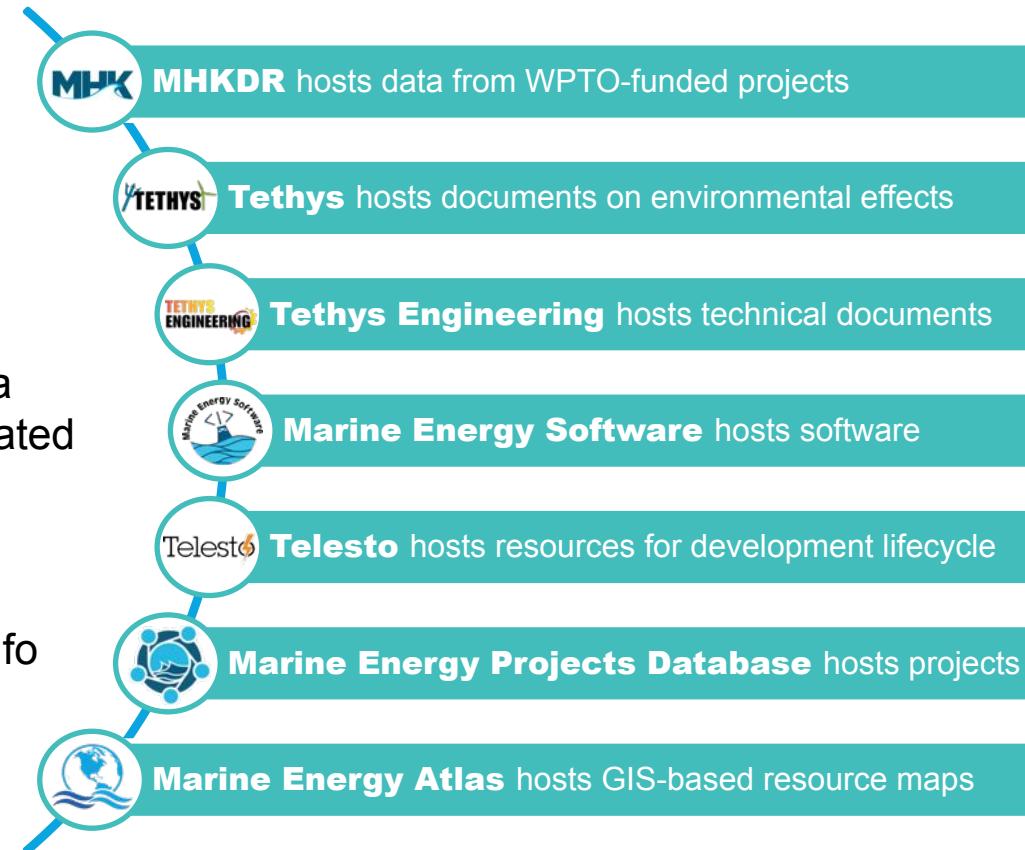
<https://primre.org>



# Knowledge Hubs

Each Knowledge Hub houses a different type of information related to marine renewable energy.

PRIMRE's centralized search allows users to find data and info across the knowledge hubs.



[https://primre.org/Knowledge\\_Hubs](https://primre.org/Knowledge_Hubs)



# MHK Data Repository



MHKDR provides free access to data generated from marine energy projects funded by DOE's Water Power Technologies Office.

Over 99 TB of data from all aspects of marine renewable energy research, development, and deployment.

The screenshot shows the MHKDR homepage. At the top, there is a navigation bar with links for Data, Help, About, and Search. A search bar is located in the top right corner. The main content area features a title 'Marine and Hydrokinetic Data Repository (MHKDR)' and a subtitle 'Enabling research, collaboration, and transparency by providing open access to marine energy data.' Below this are three buttons: 'Find Data', 'Submit Data', and 'Learn More'. A 'Find Data' search bar with a placeholder 'search MHKDR data' is also present. The 'Featured Data' section highlights the 'WAVE ENERGY PRIZE' and 'Data Lake'. The 'Data Lake' section includes icons for Machine Learning, Analytics, and Cloud (On). To the right, a summary box displays the following statistics:

99 TB	OF DATA
1,209,887	TOTAL DOWNLOADS
414	TOTAL DATASETS
80	DATA PROVIDERS

<https://mhkdr.openei.org>

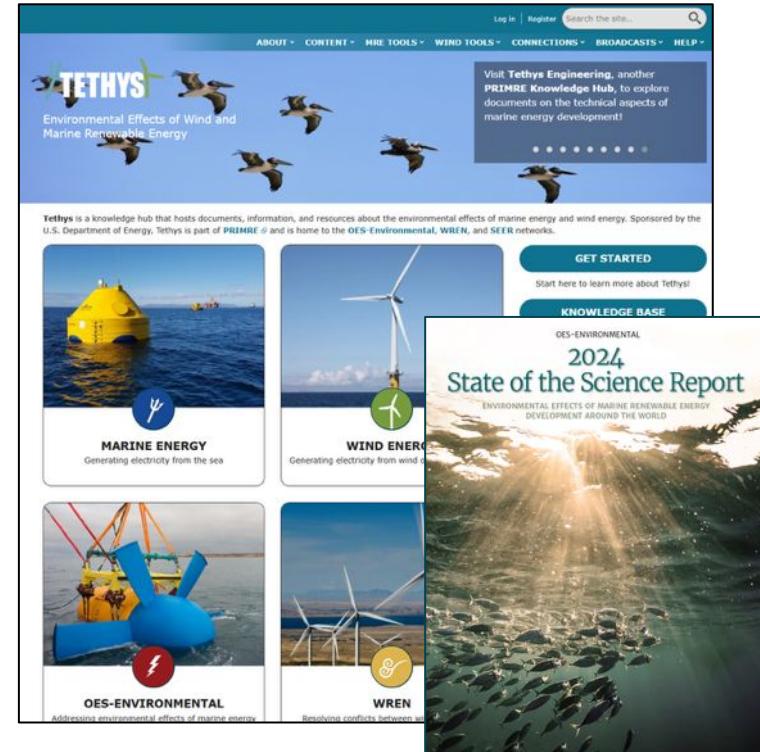


# Tethys

Tethys hosts information and resources on the environmental effects of wind and marine energy around the world.

Over 10,500 journal articles, conference papers, reports, and other documents that can be filtered, searched, and sorted.

Outreach and engagement platform for OES-Environmental, a collaboration among 16 countries to share the state of the science.



<https://tethys.pnnl.gov>



# Tethys Engineering

Documents library with over 8,500 documents on the technical aspects of marine energy development.

Over 850 marine energy photos in the Tethys Engineering Photo Library.

New illustrations library!



<https://tethys-engineering.pnnl.gov>



# Marine Energy Atlas

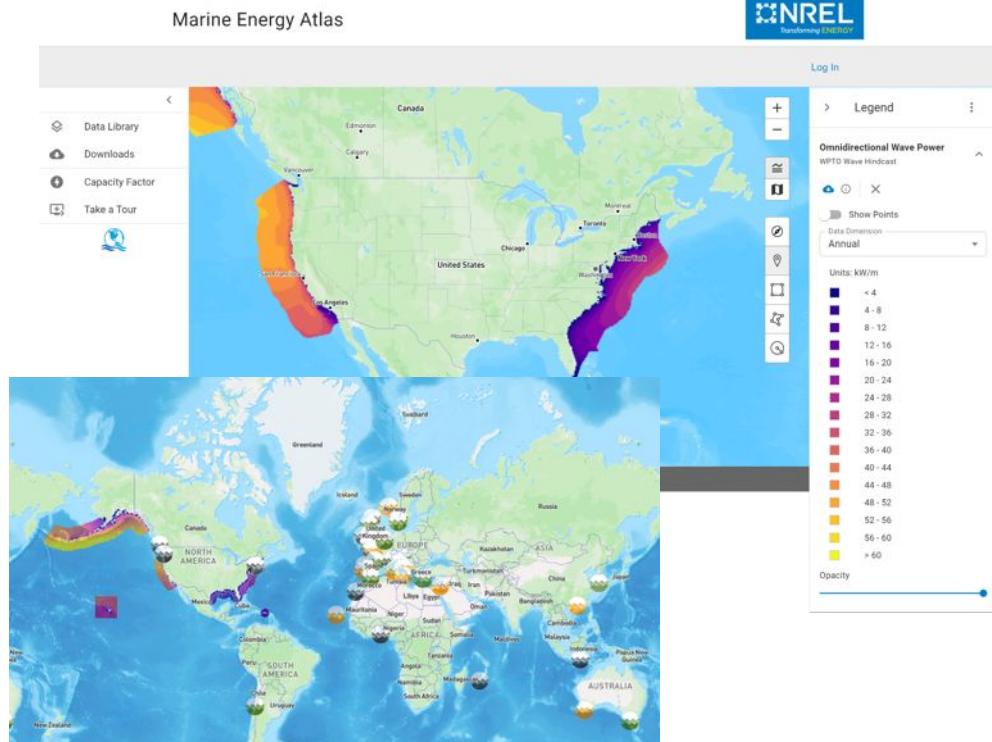


Geographic Information System  
that houses marine energy  
resource characterization data

Open-access, interactive  
mapping tool for marine energy

Includes data layers on U.S.  
wave, tidal, riverine current,  
ocean current, and ocean  
thermal resources

MECC - Designing to a regional  
market or use-case



<https://maps.nrel.gov/marine-energy-atlas/>

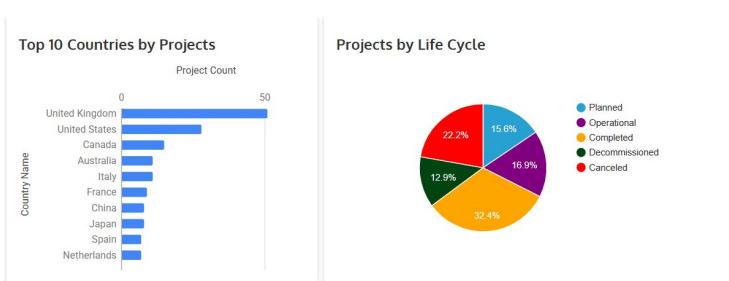


# Marine Energy Projects Database



Hosts information on over 1,100 records from marine energy projects, test sites, devices, organizations, and technologies.

All pages are semantically linked to one another to allow users to explore connections and trends.



PRIMRE About Knowledge Hubs Tools Basics Events Prizes Signature Projects STEM +

PRIMRE / Databases / Projects Database

## Marine Energy Projects Database

Projects Test Sites Devices Organizations Technologies

The PRIMRE Marine Energy Projects Database provides information on marine energy projects, test sites, devices, and organizations in the U.S. and around the world. The database includes information on wave, current, ocean thermal, and salinity gradient energy. Each of the pages in this database are semantically linked to one another, creating a rich data structure to explore the relationships between organizations operating in the marine energy sector, their projects, technologies being deployed, and the devices that they are developing. To learn more about the Projects Database visit the [About](#) page.

Showing 1117 Projects

3MW Lanzarote Wave Park Project  
Project Manager: Erenen Global Limited | Scale: Full-scale | Connectivity: Grid Connected | Status: Active | Country: Spain | Waterbody: La Santa, Lanzarote, Canary Islands

40 South Energy RIPS Device  
Technology Developer: 40 South Energy, DEMT Blue Energy | Technology Type: Point Absorber | Status: Inactive

40South Energy Organization  
Status: inactive | Country: Italy

48 North Solutions Organization  
Status: Active | Country: United States

4c Engineering Consultancy Organization  
Status: Active | Country: United Kingdom

AMOG Wave Energy Converter Device  
Technology Developer: Australian Marine Offshore & ANDRITZ Hydro Organization

ANDRITZ Hydro Organization  
Status: Active | Country: Austria

ANDRITZ Hydro HS1000 Device  
Technology Developer: ANDRITZ Hydro | Technology Type: Current | Status: Active | Country: United States

ANDRITZ Hydro HS1500 Device  
Technology Developer: ANDRITZ Hydro | Technology Type: Current | Status: Active | Country: United States

ADE Spoke Basin Test Project  
Project Manager: Accumulated Ocean Energy Inc | Status: Active | Country: United States | Waterbody: Santee Basin, British Columbia

APC-PIVS Device  
Technology Developer: Pipe Systems | Technology Type: Current | Status: Active | Country: United States

API Turbine-Lander Device

### WSE King Island Project

Wave Sweet Energy (WSE) installed its Uninova250 unit off King Island on January 10, 2010. WSE worked with Hydro Tasmania, the island's energy and network provider, to connect the unit to the island's electricity grid. The device has a rated power of 250kW and a peak power of 300kW. Tasmania separately monitored the energy produced by the unit to ensure it met the requirements of the King Island grid. The wave energy produced compensated Hydro Tasmania's existing hydro grid, further reducing Tasmania's dependence on fossil fuels and cutting down on electricity consumption on King Island. The unit was successfully decommissioned in March 2013.

Project Manager: Wave Sweet Energy Ltd  
Additional Information: Project Status: Inactive  
Project Life Cycle: Decommissioned  
Max Rated Power Capacity: 0.21 MW  
Operations Duration: January 2010 - March 2013  
Project Duration: 2010 - 2014  
Energy Resource: Wave  
Project Scale: Full-scale  
Number of Devices: 1  
Grid Connectivity: Grid Connected  
Location: King Island, Tasmania  
Site Characteristics: Erosion Potential: Tidal  
Country: Australia  
Environmental Details: Turbidity: Moderate  
Last Modified: 07 June 2020

[https://primre.org/Databases/Projects\\_Database](https://primre.org/Databases/Projects_Database)



# Telesto

Marine energy resources and guidance, organized along the development pathway:

- Plan
- Design & Build
- Test
- Deploy
- Decommission

Cross-cutting pages:

- Lessons Learned
- Performance Metrics
- Economics
- Standards
- Compliance

<https://primre.org/Telesto>



# Marine Energy Software



Collection of over 260 software packages relevant to marine energy applications, including both commercial and open source packages.

Faceted database with categorical filterers:

- Technology
- Programming Language
- License
- Cost
- TRL
- Life Cycle
- Collection Method

Register your own contributions.

<https://software.primre.org/>

The image shows a composite view of the Marine Energy Software website and its underlying database interface. The top half is a screenshot of the website homepage, which features a header with the Marine Energy Software logo, a search bar, and navigation links for Home, Search Software, Register Software, Resources, and About. Below the header is a banner with the text 'A collection of software relevant to marine energy development'. The main content area includes a 'Search Software' section with a search bar and a 'Browse Software' link, followed by a 'New Open Source Releases' section displaying three items: 'dfm\_tools v0.39.0', 'ros2 release-jazzy-20230620', and 'Open'. The bottom half of the image shows two side-by-side screenshots of the database interface. Both screens display a 'Software Catalog' with various filters and search options. The left screen shows a list of software packages, while the right screen shows a more detailed view with charts and graphs. Logos for 'PRIMRE', 'Data Repository', 'Environmental Documents', 'Technical Documents', and 'Projects Database' are visible at the bottom of the website screenshot.



# AskPRIMRE

## AI-powered Research Assistant

Uses a Large Language Model (LLM) trained on metadata and documents from PRIMRE Knowledge Hubs.

- Pulls answers from PRIMRE data, articles, and supporting documents
- Will not speculate
- Will not go to the internet for answers
- Only pulls from vetted, curated info
- Always cites its sources

### Limitations:

- Cannot do math or analysis
- Cannot provide novel insights
- Answers limited to published materials

What can I help you with today?

Welcome to AskPRIMRE. I have access to all metadata and supplemental information across the PRIMRE Knowledge Hubs. While I am trained as a virtual research assistant, I am not fully conversational. Please note that each question you ask is independent.

What is WEC-Sim?

WEC-Sim (Wave Energy Converter SImulator) is an open-source software developed in Matlab / Simulink for simulating wave energy converters (WECs). It has been jointly developed by the National Renewable Energy Laboratory (NREL) and Sandia National Laboratories (Sandia) since its initial release in 2014. WEC-Sim simulations are performed in time domain based on the radiation and diffraction using hydrodynamic coefficient derived from boundary element method (BEM)-based frequency-domain potential flow solvers. The software can handle floating body hydrodynamics, mechanical and electrical power generation methods, advanced control implementation, mooring systems, and other unique applications such as desalination.

Sources:

- [New Developments and Capabilities Within WEC-Sim](#)
- [Advanced Features and Recent Developments in the WEC-Sim OpenSource Design Tool](#)

Type your question here

Ask PRIMRE

Subscribe to PRIMRE Blast

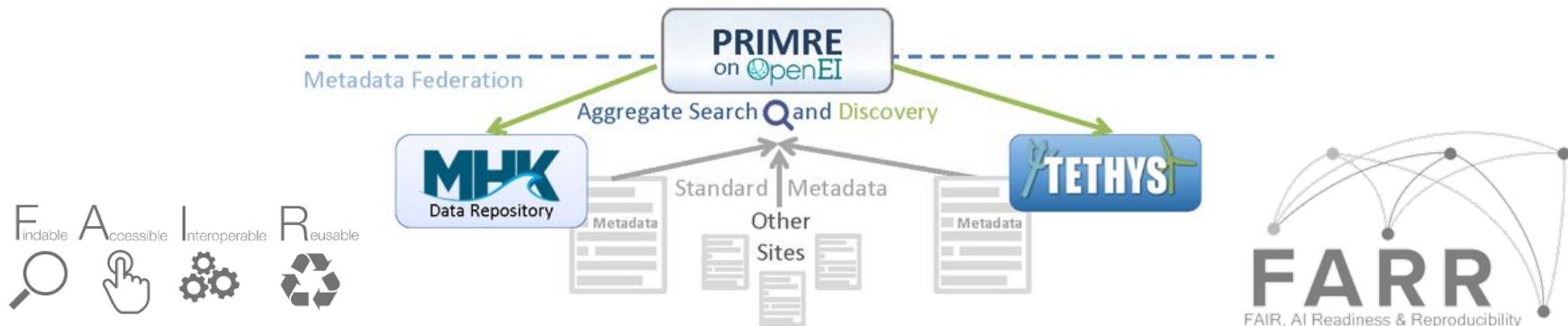
Contribute to PRIMRE

<https://primre.org/AskPRIMRE>



# Marine Energy Data Sharing

PRIMRE aims to meet the **FAIR** (Findable, Accessible, Interoperable, Reusable) and **FARR** (FAIR, AI Readiness & Reproducibility) guiding principles for data sharing.



PRIMRE developed a standard metadata schema and connects with other data systems through Application Programming Interface exchanges to enable data sharing.

<https://primre.org>

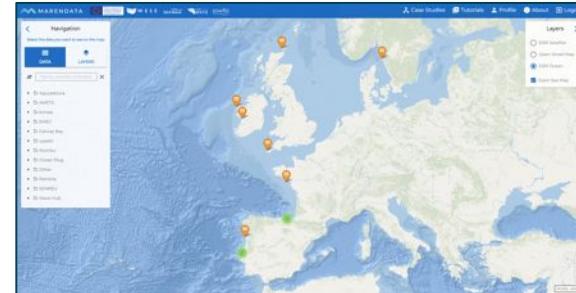


# International Data Sharing

PRIMRE and Ocean Energy Systems host an annual workshop to discuss marine energy data sharing:

- Value of data sharing, barriers, and opportunities.
- Levels of data sharing and standardization.
- Data sharing principles (e.g., FAIR, FARR).
- Potential applications of machine learning.
- Analytics, metrics, and measuring success.

Marine energy databases around the world (e.g., MARENDA, Marine Data Exchange) present updates and explore opportunities to connect.

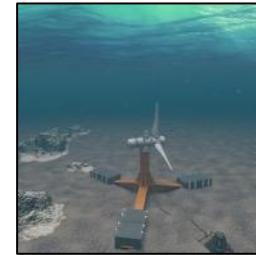
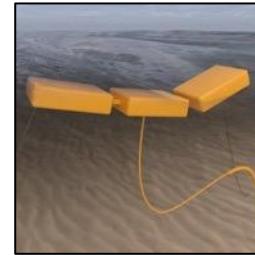




# Additional PRIMRE Resources



- Newsletters
- Events Calendar
- Marine Energy Basics
- Educational Resources
- Marine Energy Photo Library
- Marine Energy Illustration Library
- Prizes & Competitions
- Signature Projects
- Online Tools



<https://primre.org>



# Contribute to PRIMRE



## How can I contribute?

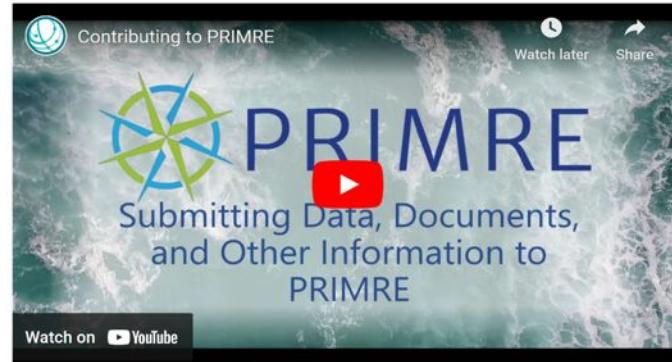
Visit PRIMRE or email us!

[PRIMREHelp@groups.nrel.gov](mailto:PRIMREHelp@groups.nrel.gov)

Submissions are highly encouraged!

## What can I contribute?

- Datasets
- Documents
- Information
- Software
- Upcoming Events
- Job/Funding Opps.
- Photos/Illustrations
- Wiki content



EMEC



Orbital Marine Power

<https://primre.org>



# Thank You!

## Contact Us:

- **Lysel Garavelli** ([lysel.garavelli@pnnl.gov](mailto:lysel.garavelli@pnnl.gov))
- **PRIMRE** ([PRIMREHelp@groups.nrel.gov](mailto:PRIMREHelp@groups.nrel.gov))

## PRIMRE Team:

- Principal Investigators: Jon Weers, Jonathan Whiting, Cesar Castillo
- NREL: Hanna Fields, Sean Morris, Erika Curry-Elrod, Jay Huggins, and Austin Venhuizen
- PNNL: Andrea Copping, Hayley Farr, Abigail Snortland, and Lysel Garavelli
- Sandia: Kelley Ruehl, Will Peplinski, and Megan Anderson

