PRIMRE: Providing Centralized Access to Marine Energy Data and Information

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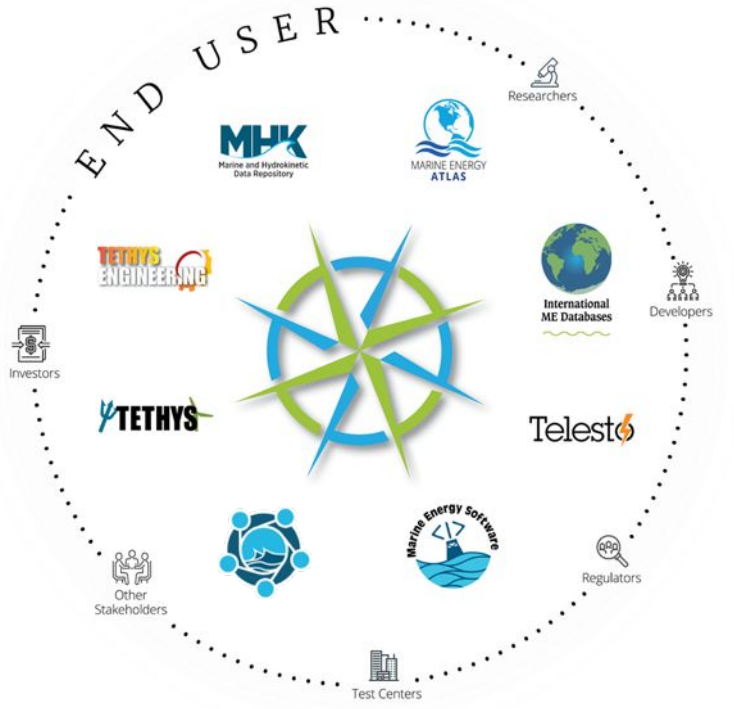
PRIMRE

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.

+ Ask PRIMRE

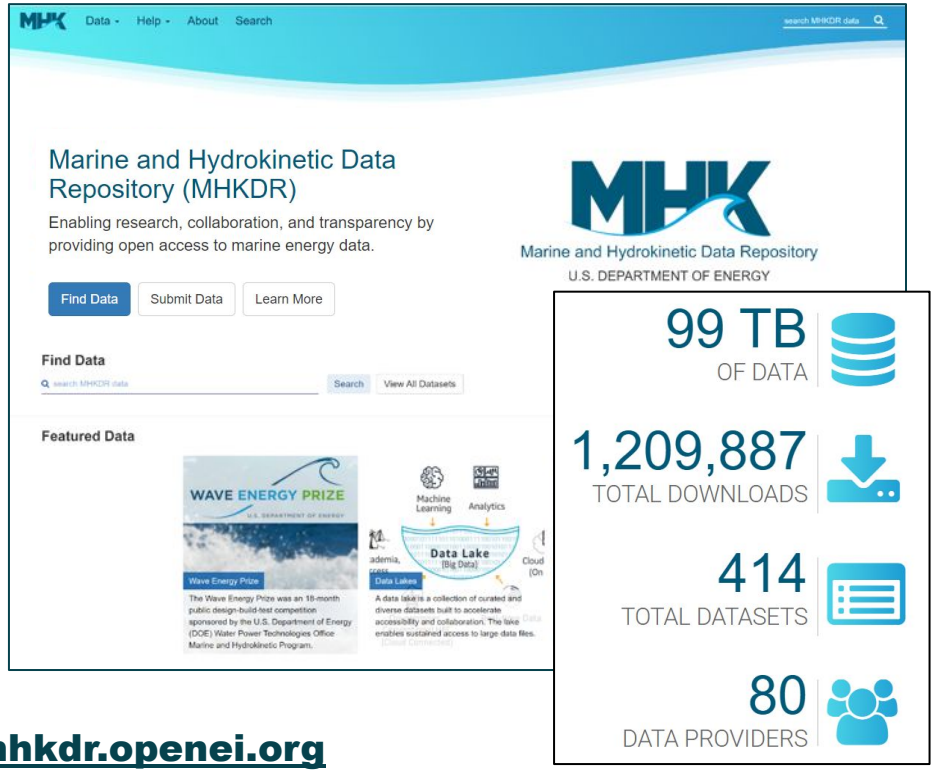
- **MHKDR** hosts data from WPTO-funded projects
- **Tethys** hosts documents on environmental effects
- **Tethys Engineering** hosts technical documents
- **Marine Energy Software** hosts software
- **Telesto** hosts resources for development lifecycle
- **Marine Energy Projects Database** hosts projects
- **Marine Energy Atlas** hosts GIS-based resource maps

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.



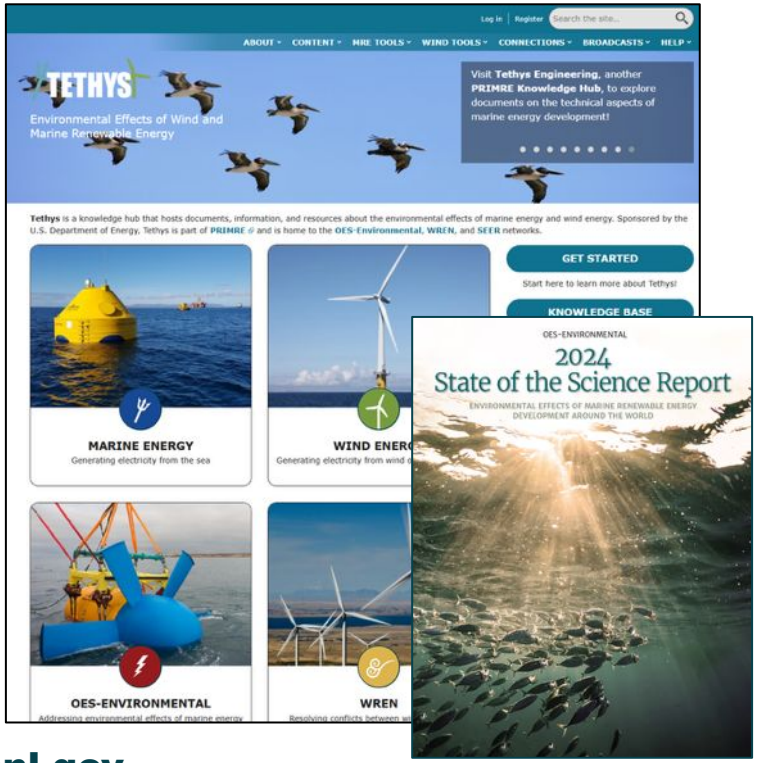
https://mhkdr.openei.org

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.



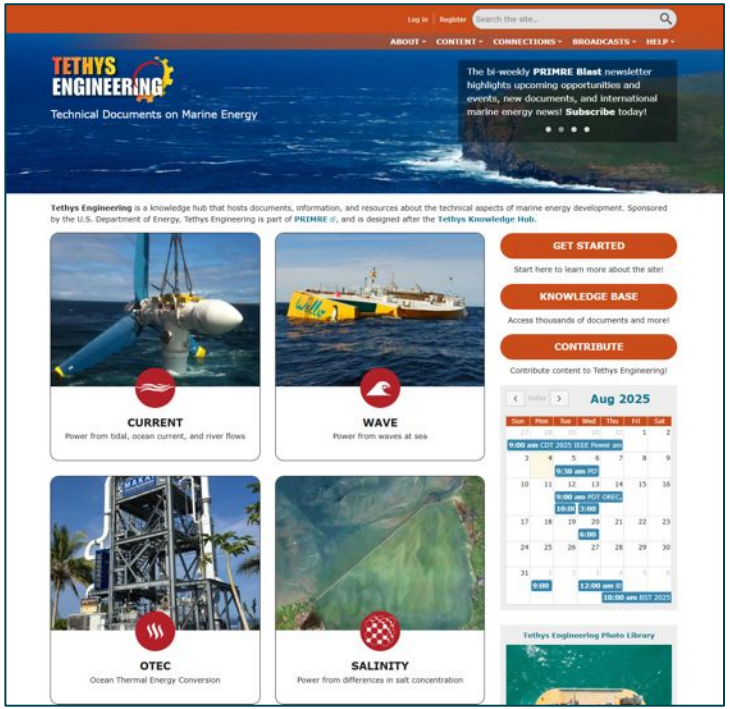
https://tethys.pnnl.gov

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

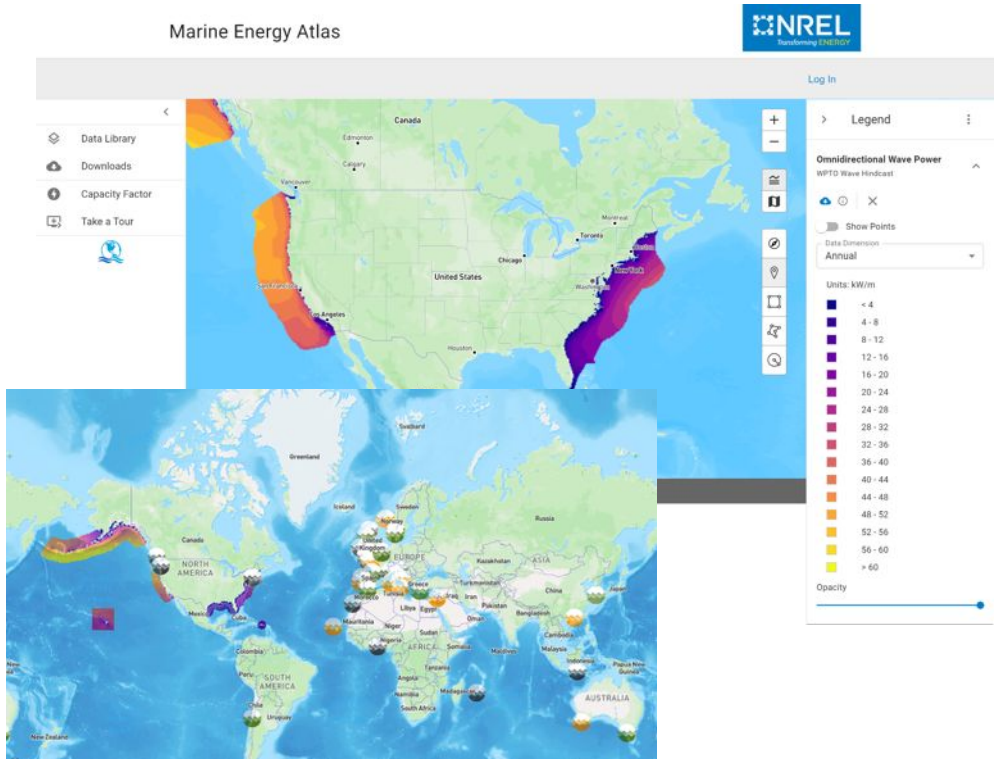
Marine Energy Atlas

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

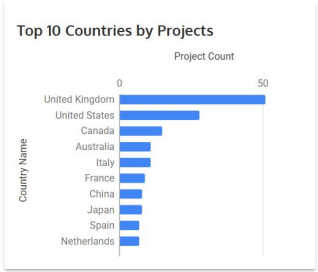


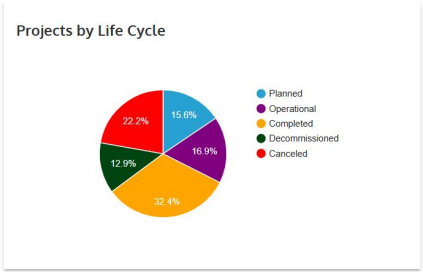
https://maps.nrel.gov/marine-energy-atlas/

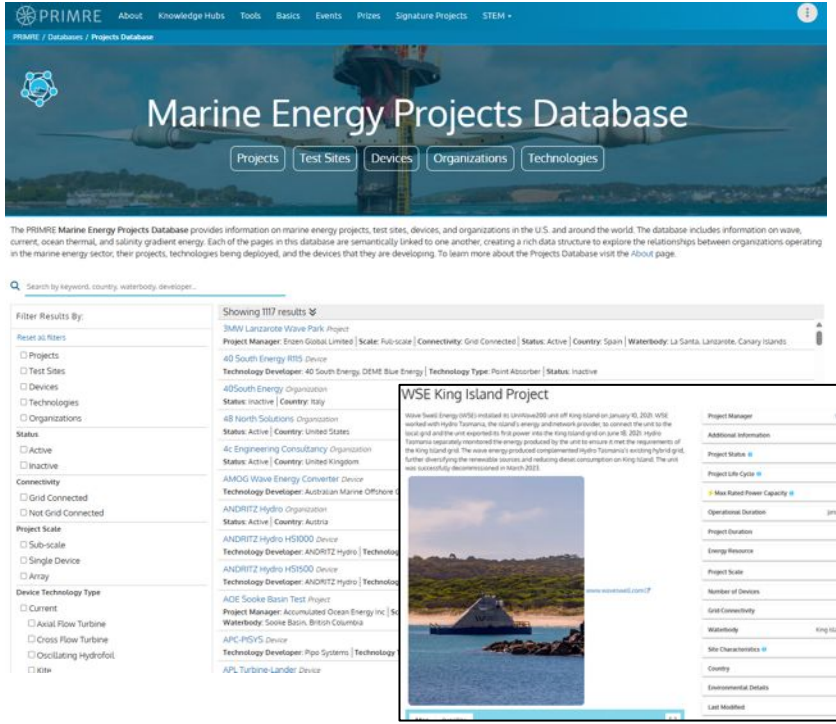
Marine Energy Projects Database

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.







https://primre.org/Databases/Projects_Database

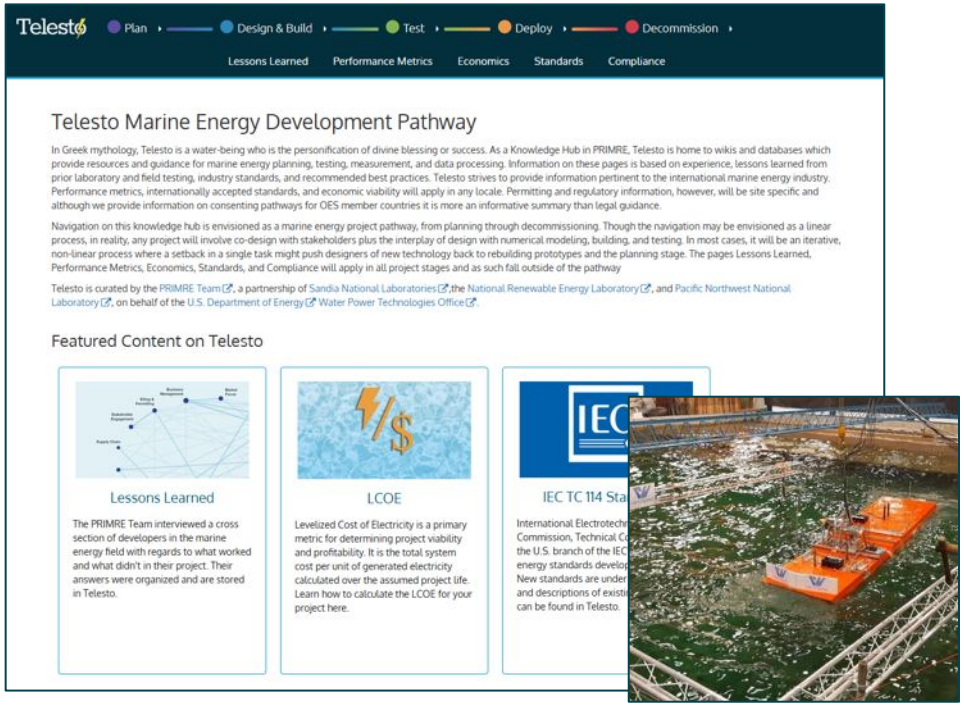
Telesto

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

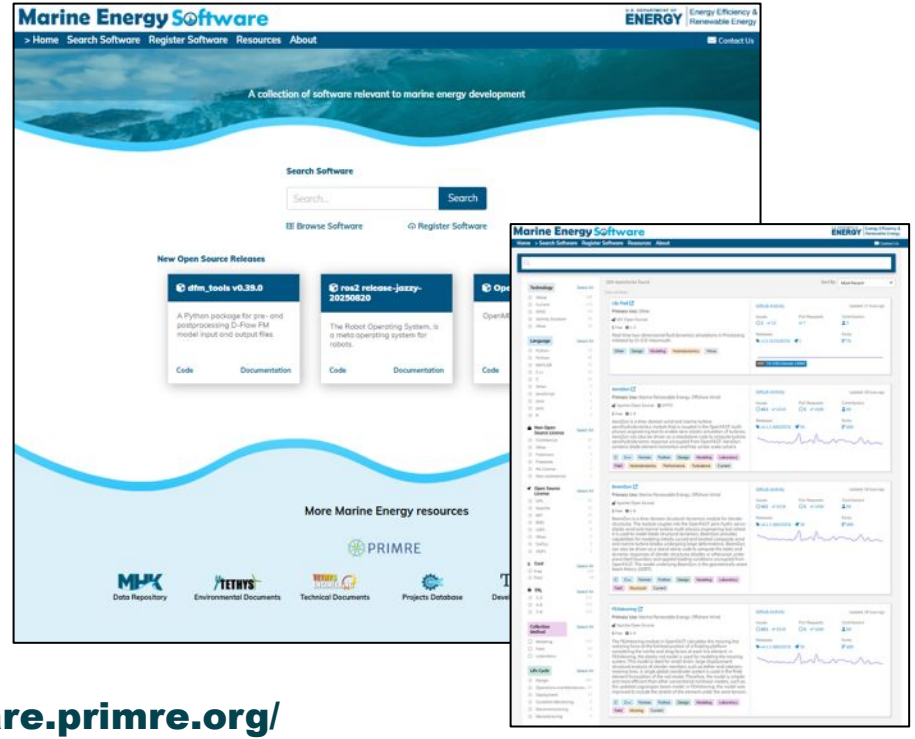
Marine Energy Software

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/

AskPRIMRE

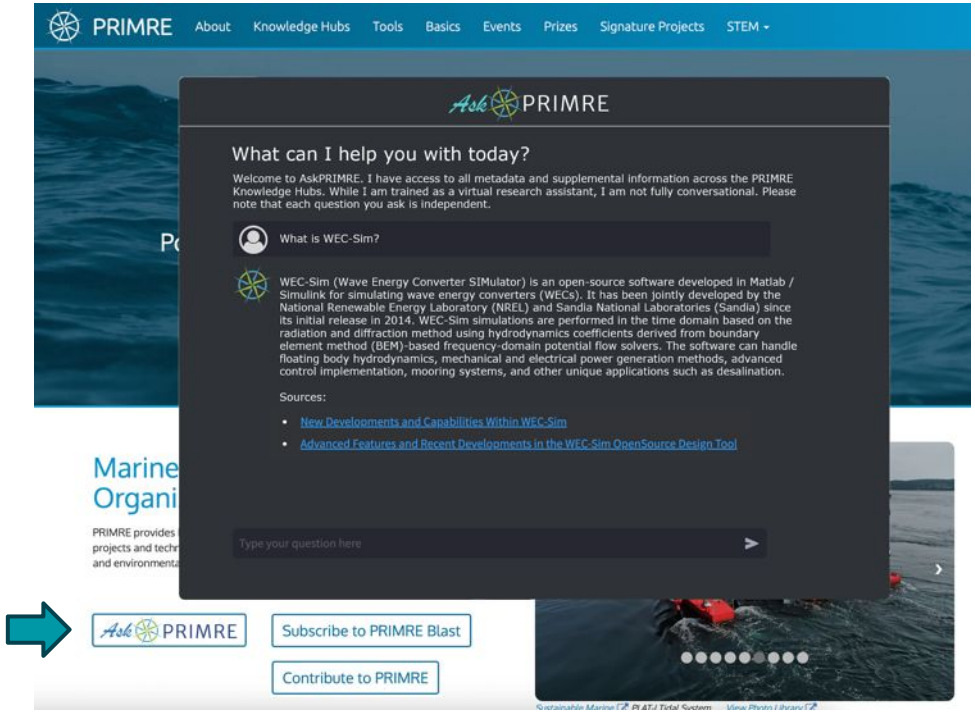
AI-powered Research Assistant

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:

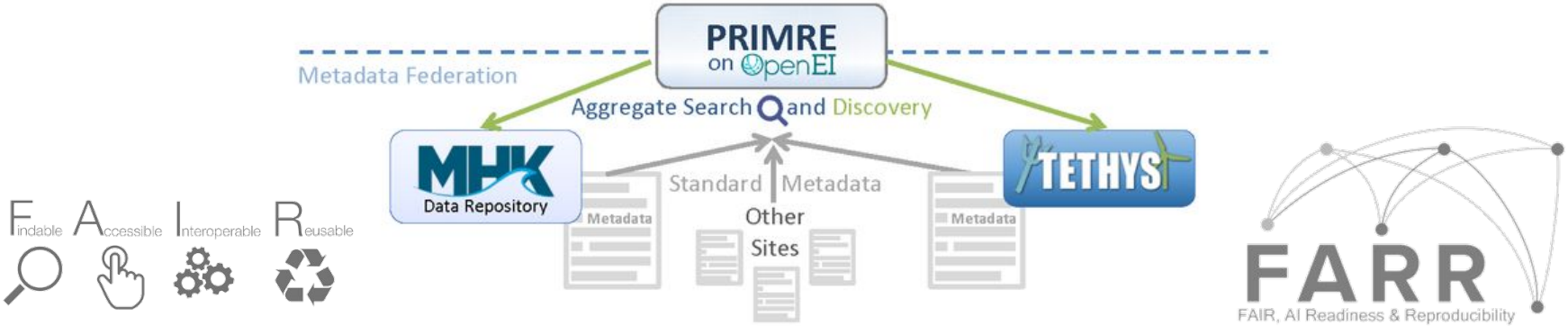
- Cannot do math or analysis
- Cannot provide novel insights
- Answers limited to published materials



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.

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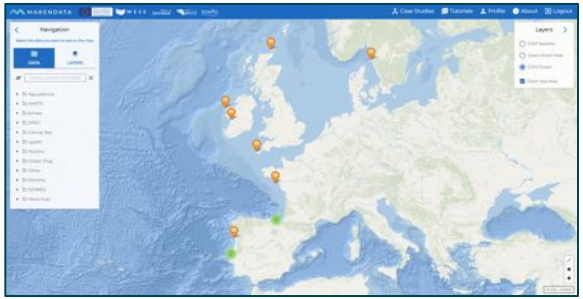
International Data Sharing

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., MARENDATA, Marine Data Exchange) present updates and explore opportunities to connect.



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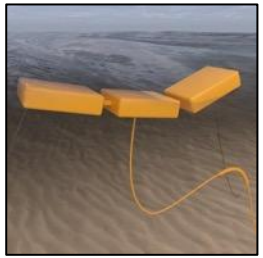
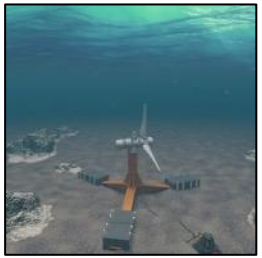
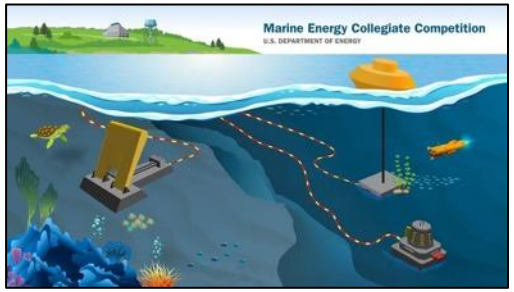
Additional PRIMRE Resources

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

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Contribute to PRIMRE

How can I contribute?

Visit PRIMRE or email us!
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

https://primre.org

Thank You!

Contact Us:

- **Lysel Garavelli (lysel.garavelli@pnnl.gov)**
- **PRIMRE (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

U.S. DEPARTMENT of ENERGY
NREL NATIONAL RENEWABLE ENERGY LABORATORY
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