The Pacific Northwest mCDR Node - A Regional Marine Carbon Dioxide Removal Forum For Knowledge Sharing and Collective Problem Solving

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Abstract GC33C-0161

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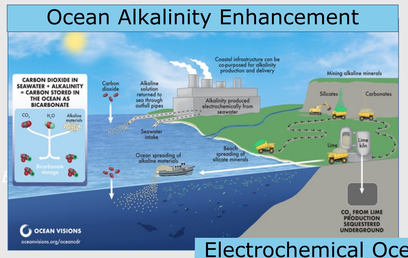
Drawing down atmospheric CO_2 via mineralization-based marine Carbon Dioxide Removal (mCDR) is a complex endeavor with intertwined scientific, engineering and societal challenges.



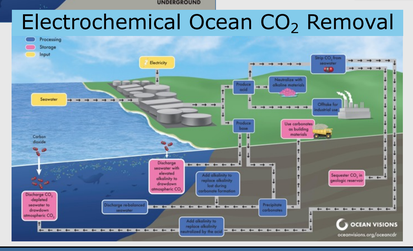


Image Credit: Ocean Visions
oceanvisions.org/oceancdr

Addressing these challenges will require concerted cross-disciplinary efforts, and local knowledge of coastal locations' unique environmental, economic and cultural contexts.

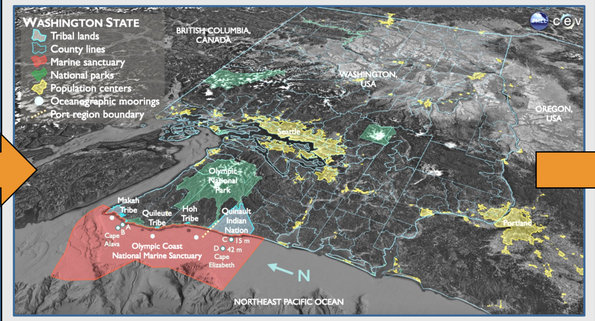
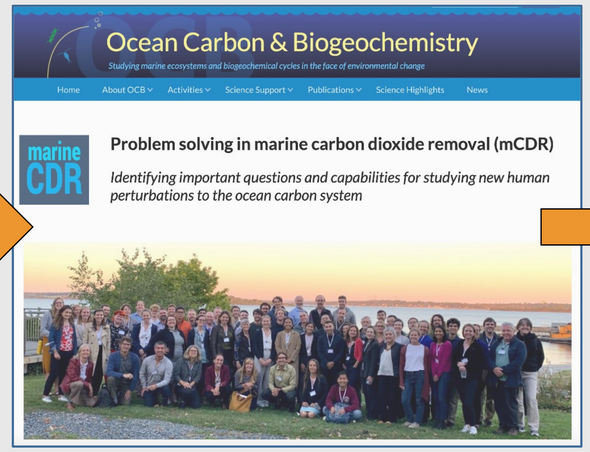


Image credit: Hunter Hadaway
https://doi.org/10.5670/oceanog.2023.216

The Ocean Carbon & Biogeochemistry Program recently launched five regional mCDR community 'Nodes' to facilitate place-based problem solving.



www.us-ocb.org/problem-solving-in-mcdr

In April 2024, the Pacific Northwest (PNW) mCDR Node invited mCDR community members* from Alaska, British Columbia, Washington, Oregon and beyond for an afternoon of regionally-focused discussions about permitting & regulations, social issues & engagement, modeling, and test beds.

PNW mCDR Node Member Observations

Engagement Social scientists need to insert themselves to better orient projects to local residents' priorities, concerns and benefits; we can learn from other contentious marine sectors (e.g. offshore wind); avoid overburdening the same groups and individuals with repeated requests for input (especially tribes); diverse perspectives → better outcomes. Recommendations: prioritize participatory engagement, co-design and innovative outreach methods.

Permitting & Regulations Challenges: permitting process length and complexity; mismatch between pace of industry developments and agency timelines; disconnect between existing laws and mCDR; more science needed to inform fit-for-purpose regulations and risk assessments.

Opportunities: support communication and mutual learning between among regulators, developers and communities.

Modeling Modeling is critical for MRV (especially in the far-field), but can also provide forecasts, help define uncertainty, guide decisions about project siting and monitoring, and facilitate permitting. Current models are imperfect, but perfection is neither necessary nor feasible at this point. Importantly, models can help us communicate mCDR in the context of global carbon cycle and climate change

Test Beds Desired qualities: capacity for high-quality physical, chemical and biological measurements and modeling; a confluence of the 'right' natural features; baseline understanding of system variability; support for interdisciplinary collaboration and public-private partnerships; access to local assets & expertise; robust data management plans; and opportunities to benefit and engage with communities. All things that the Pacific Northwest–with its unique culture, capacity and resources–is well-equipped to deliver.

Current & Future Outcomes

- Mobilizing Expertise
- Facilitating Communication
- Fostering Collaboration
- Building Community

Ask Me For Details!

2025 mCDR Law & Policy Symposium

We Want to Hear From You!

Use a sticky note to leave your feedback

What questions do *you* have about the Pacific Northwest mCDR Node?

Want to get involved with the PNW mCDR Node, or a Node in your region? Drop your contact information in the envelope.

* PNW mCDR Node Workshop Participant Affiliations

- **Federal:** Dept. of Energy (Pacific Northwest National Lab), EPA, NOAA, US Army Corps of Engineers
- **Tribal:** Makah Tribe Office of Marine Affairs, NW Indian Fisheries Commission, Partnerships For Tribal Carbon Solutions
- **State:** WA Dept of Commerce, WA Dept of Ecology, WA Sea Grant
- **Academic:** American University, Ocean Networks Canada, Oregon State University, University of Alaska Fairbanks, University of Washington, Western Washington University
- **Industry:** AirMiners, Banyu Carbon, Capture 6, Ebb Carbon, Nonlinear Ventures, Nori, Synapse Product Development, 48 North Solutions
- **NGO:** Carbon Business Council, Carbon to Sea Initiative, EDF, Fearless Fund, Fishery Friendly Climate Action, Global Ocean Health, PacCLEAN

Workshop Closing Remarks...

"**Build your mCDR program on the backs of those who have come before you**. We've had over 40 years of marine carbon research, and 20 years of ocean acidification research. Those groups have done exactly the same as you—gradually developed best practices and techniques to the best of their ability at the time and established great data systems for all to use. So **we have a lot of resources at our disposal**, including a best practices manual for ocean CDR... Make use of these approaches and resources, and make sure that all of your data gets included in the transparent GLODAP.info database, so we can all benefit from the important observations that we are making.

We all know this for certain: the oceans are under-sampled, so **everything that we provide will be very useful for a lot of different applications**." - *Richard Feely, NOAA PMEL Carbon Program Senior Scientist*

Read the Workshop Summary here:

Learn more about the OCB Program Regional mCDR Nodes here:

www.us-ocb.org/problem-solving-in-mcdr