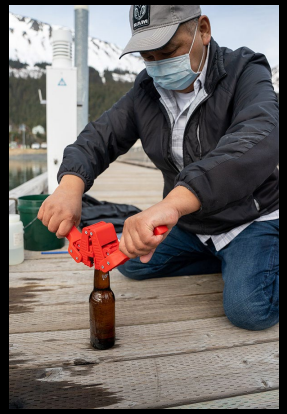
Alaskan Carbonate Chemistry: From OA Adaptation to Mitigation

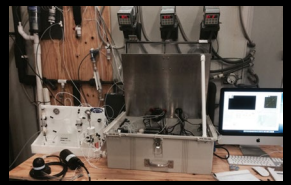
SCHOOL OF OCEANOGRAPHY
Jessica N. Cross, Ph.D.
Affiliate Professor
School of Oceanography
University of Washington
Oct 2026 – PICES S6

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OARC

Ocean Acidification Research Center

Alaska Ocean Acidification Network



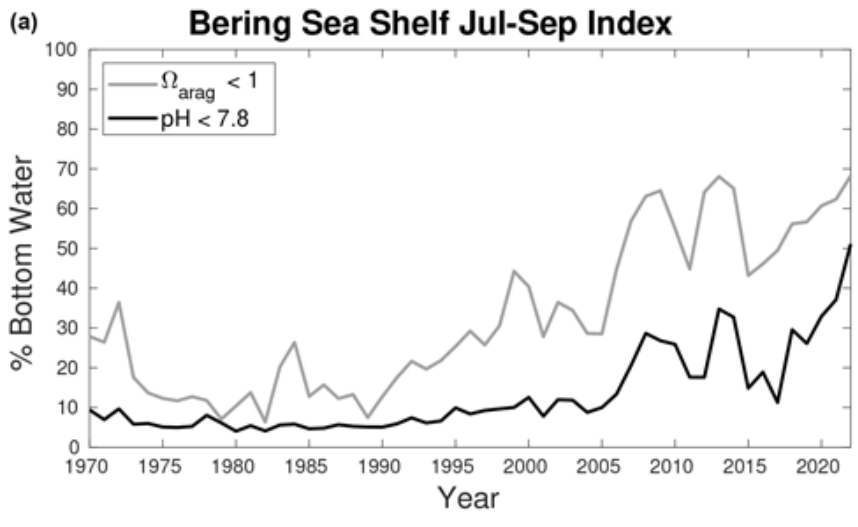




NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

UAF
UNIVERSITY OF ALASKA FAIRBANKS

AOOS

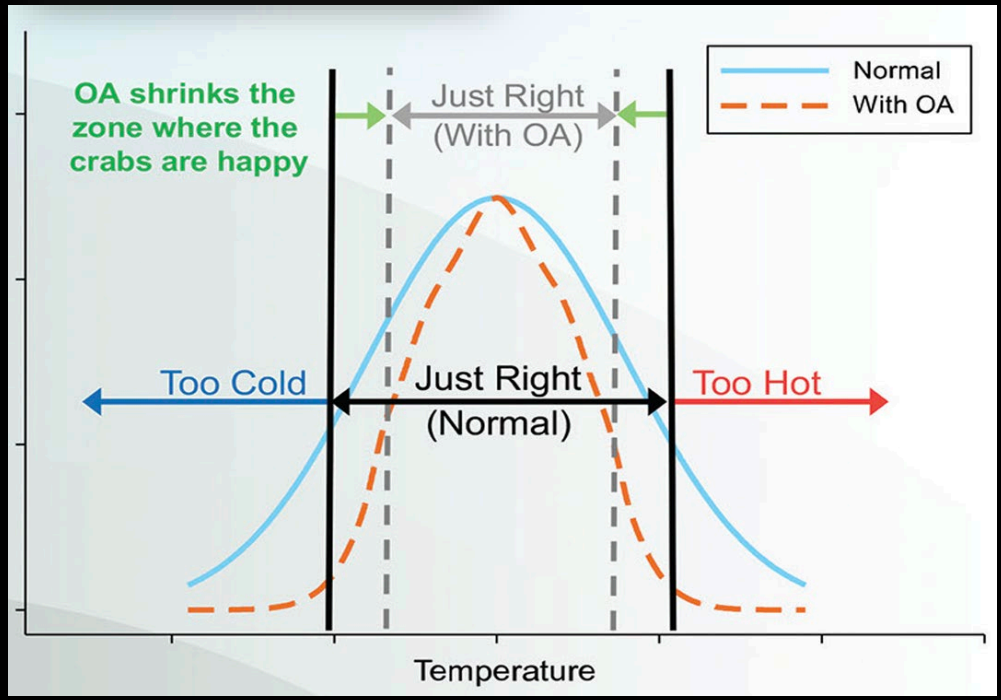


Amplified bottom water acidification rates on the Bering Sea shelf from 1970–2022

Darren J. Pilcher ⓒ, Jessica N. Cross, Natalie Monacci, Linquan Mu, Kelly A. Kearney, Albert J. Hermann, and Wei Cheng







Resilience is a cultural value and a daily lived experience for Arctic peoples



Pektayiinata = We are Resilient

Oscarville Tribal Climate Adaptation Plan

Oscarville Traditional Village, Oscarville, Alaska

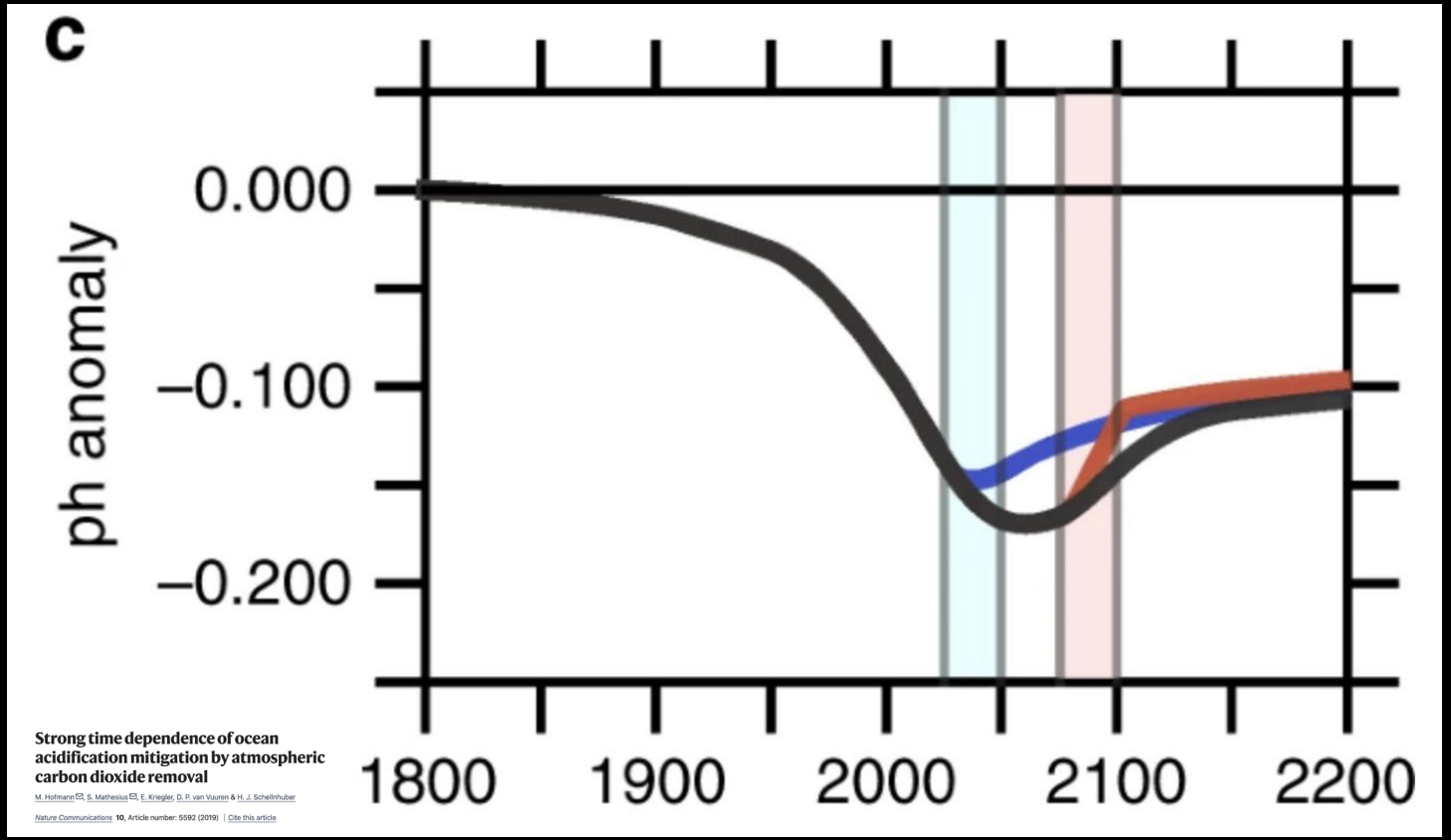

What can we do?
UNITED FISHERMEN OF ALASKA
UFA
I VOTE FISH!
UNITED FISHERMEN OF ALASKA

Adaptation Cycle:



What about Mitigation?

Treat the Cause



Treat the Symptoms: Closed System

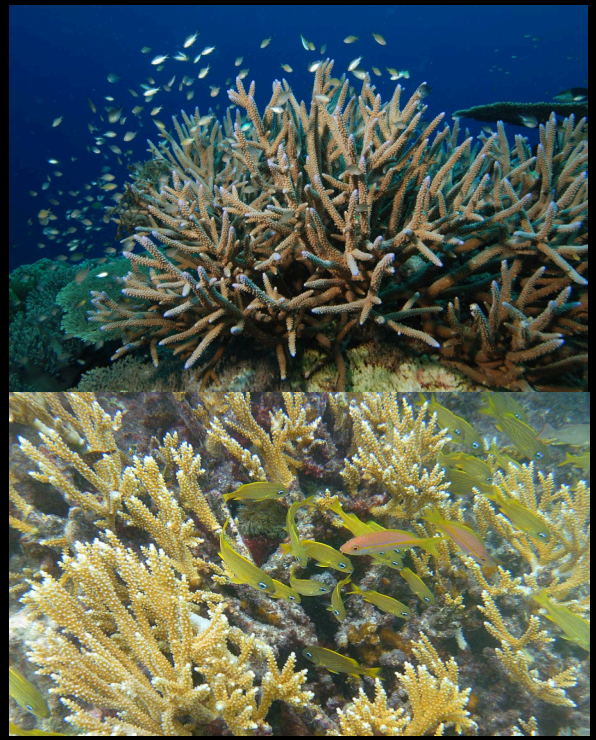


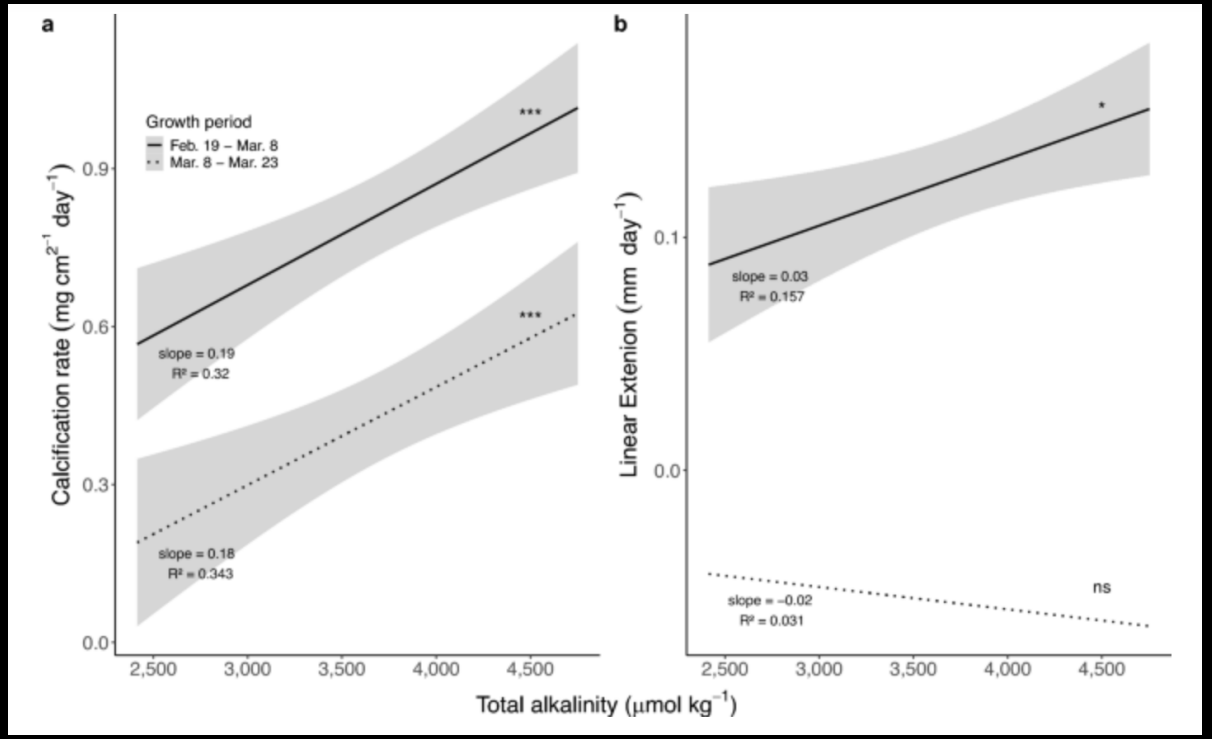






Treat the Symptoms: Closed System

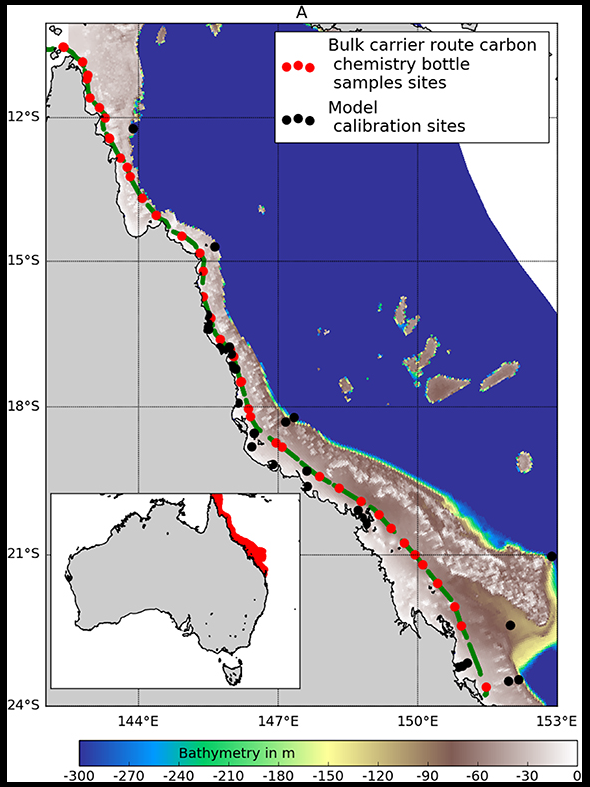


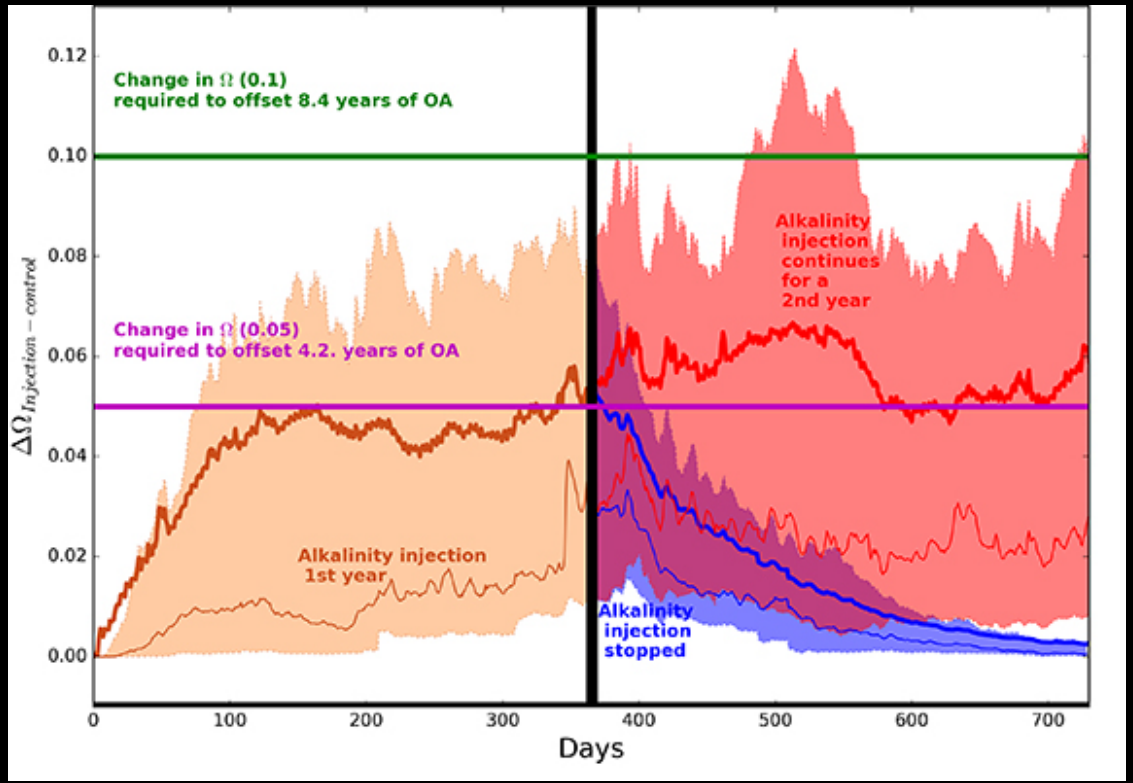


Alkalinity enrichment stimulates calcification and linear extension in *Acropora cervicornis*

Kenzie M. Cooke ✉, Ana M. Palacio-Castro, Albert Boyd, Nash Soderberg, Patrick M. Kiel, Ashley Stevens, Chris Langdon & Ian C. Enochs

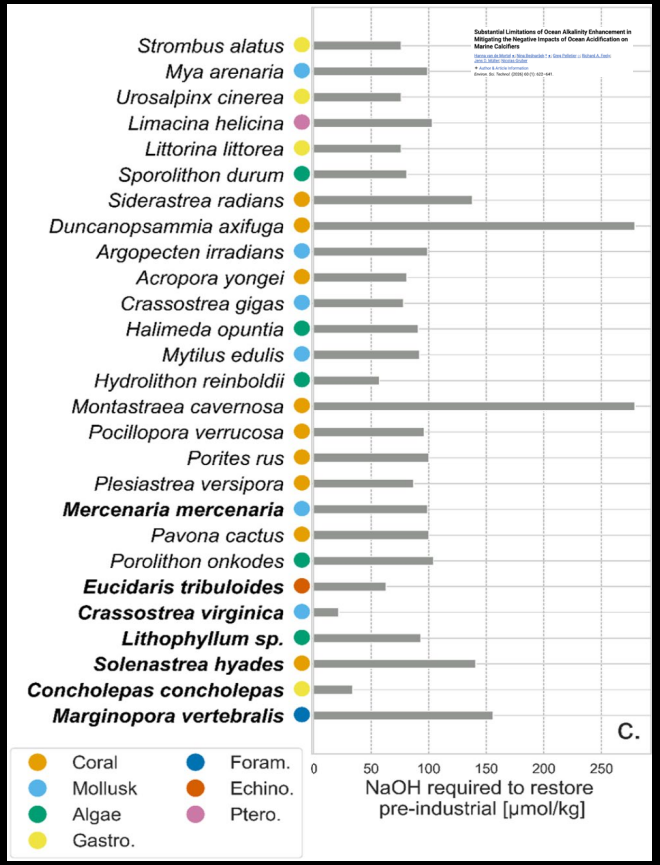
Treat the Symptoms: Open System

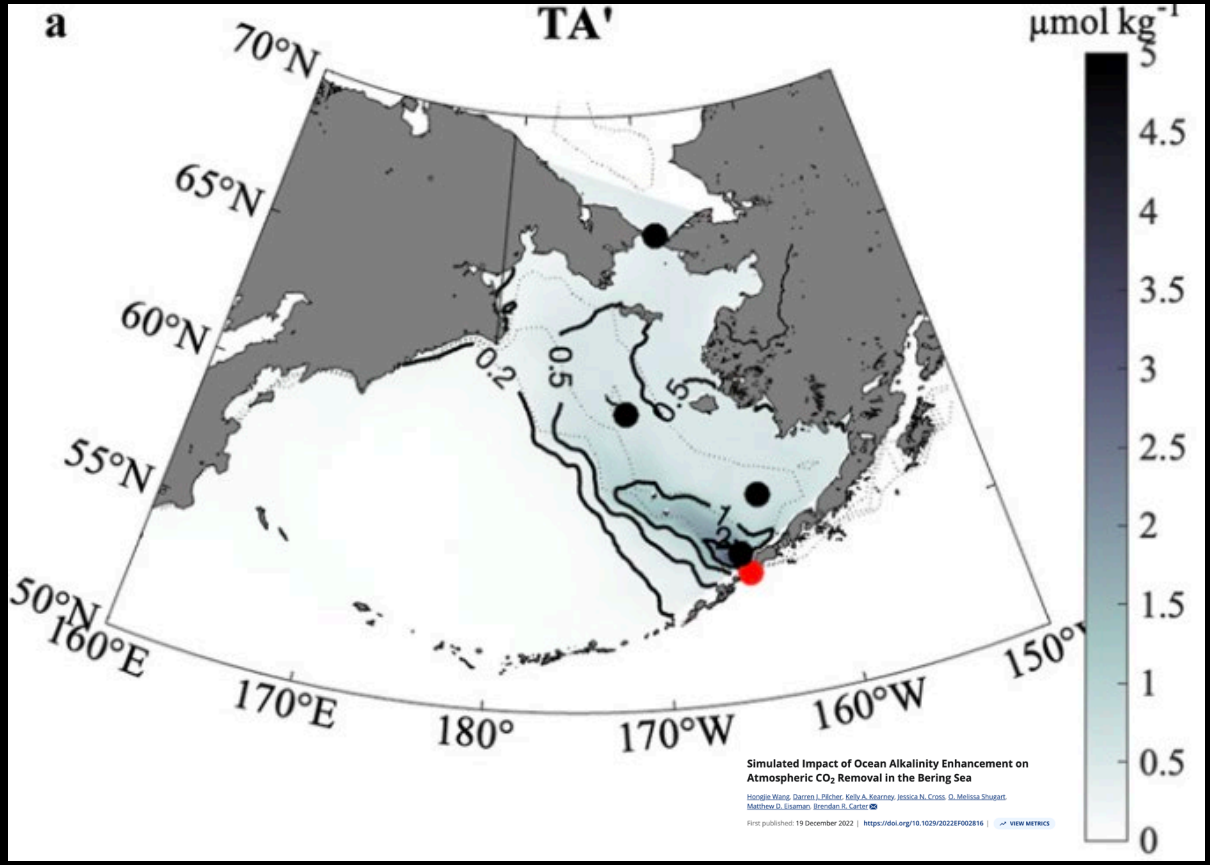




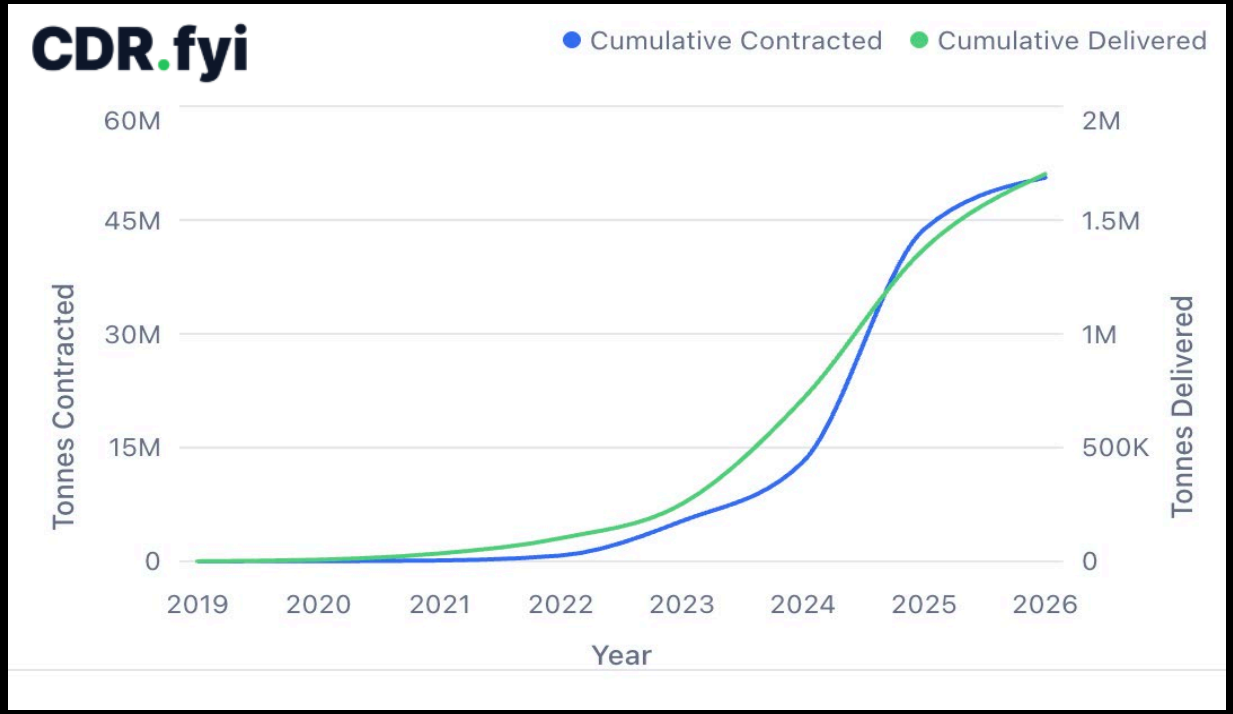
Reversing ocean acidification along the Great Barrier Reef using alkalinity injection
Matthieu Mongin, Mark E Baird, Andrew Lenton, Craig Neill and John Akl
Published 8 June 2021 • © 2021 The Author(s). Published by IOP Publishing Ltd
Environmental Research Letters, Volume 16, Number 6

Treat the Symptoms: Open System





Understand scale…

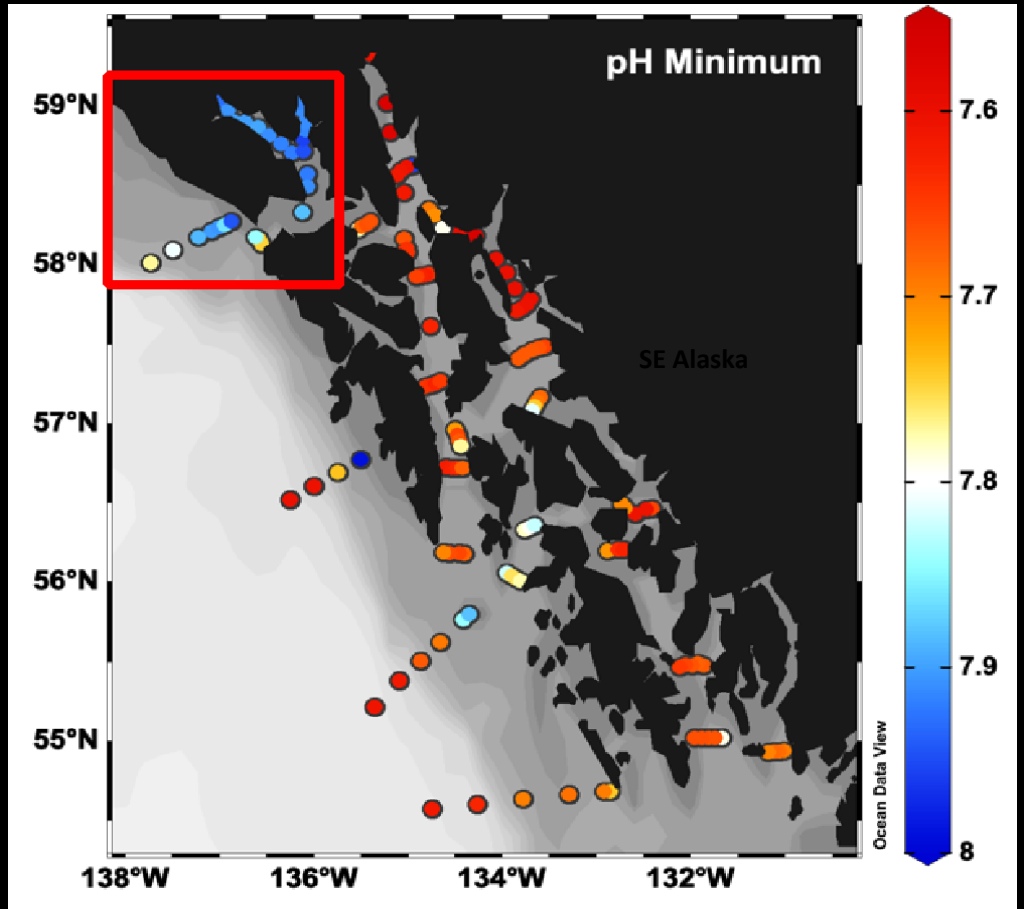


Total US R&D 2024: ~$200 Bn

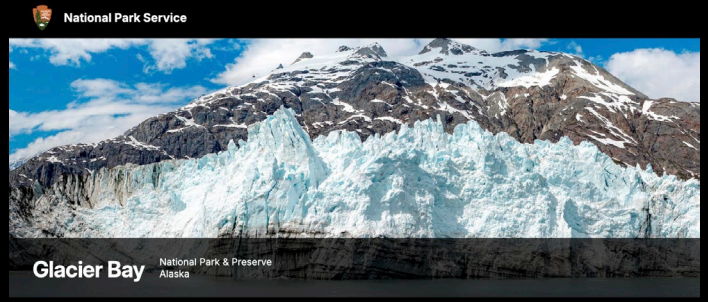
Global AI investment 2025: $1.5 T

…and use time wisely

Study Side Effects

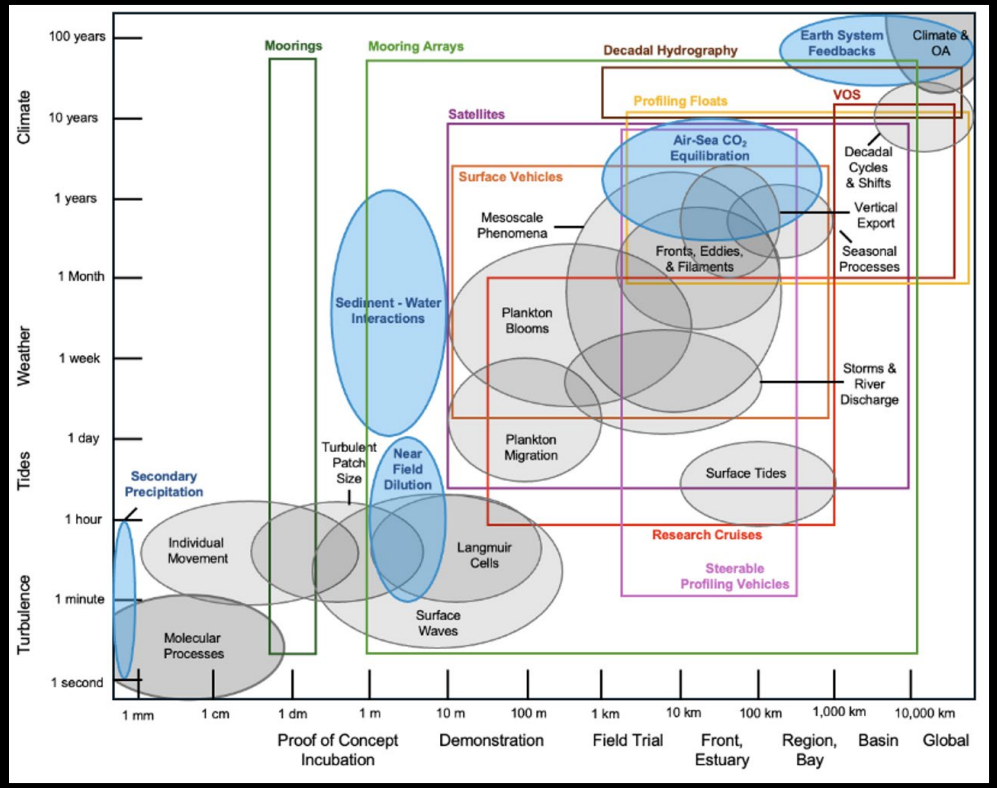


Glacier Bay: A natural OAE analogue?





Build Fit-For-Purpose Tools



- Signal to Noise
- Multi-scale
- Targeted

CHEMICAL REVIEWS

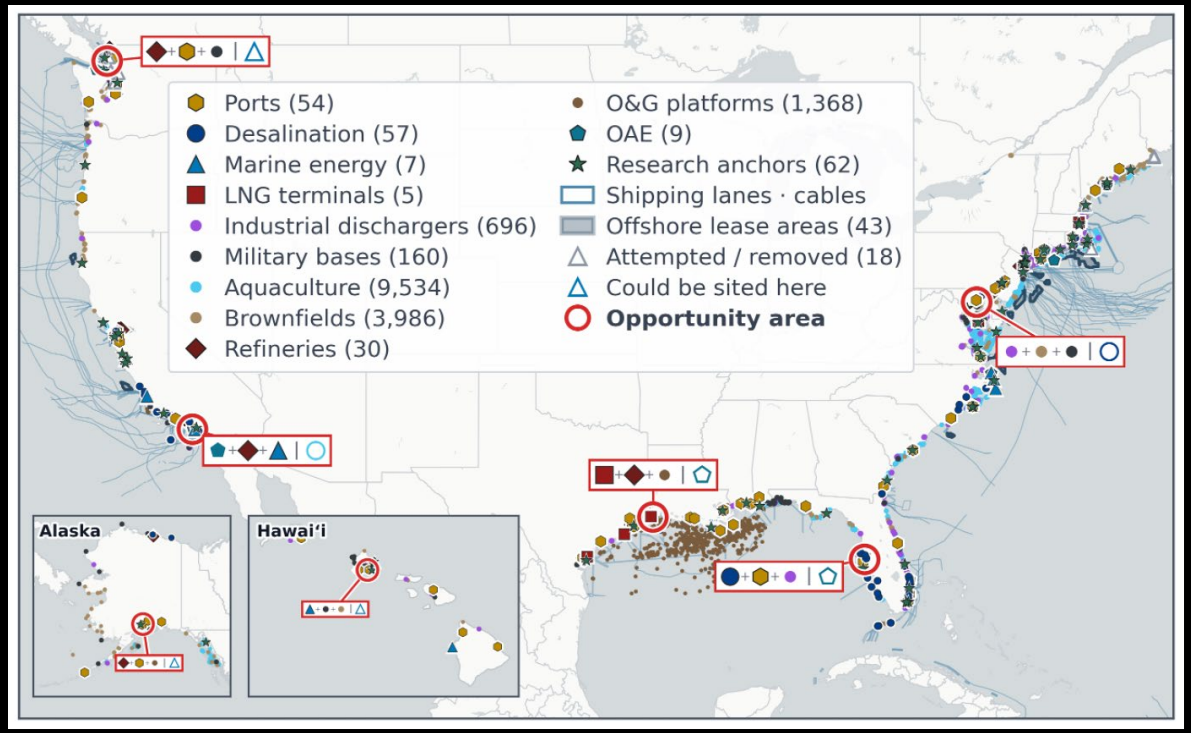
Catalyze Coalition Leadership

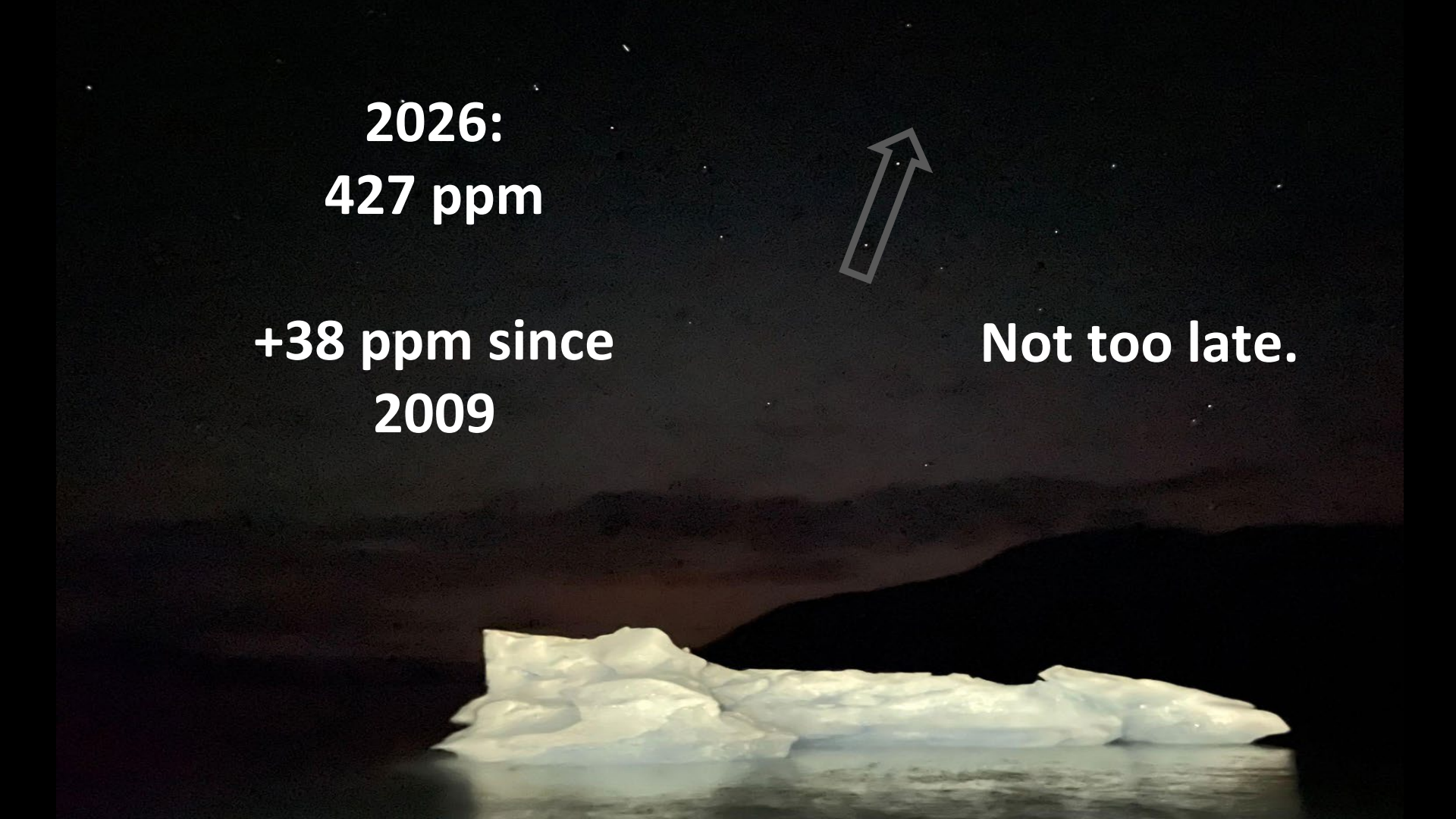
Alaska Ocean Acidification Network



Identify Opportunity Areas

- Exclusion
- Suitability
- Synergy




2026:
427 ppm
+38 ppm since
2009
Not too late.

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