Assessing the impacts of ocean alkalinity enhancement across scales

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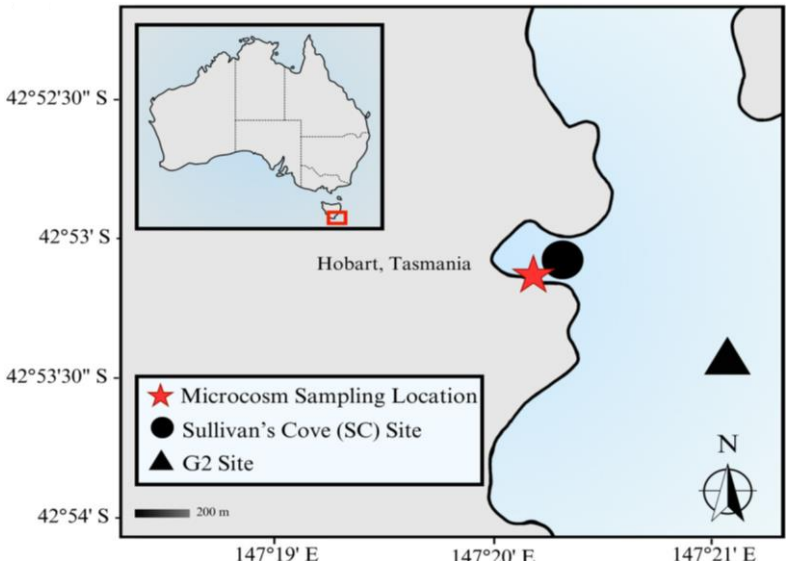
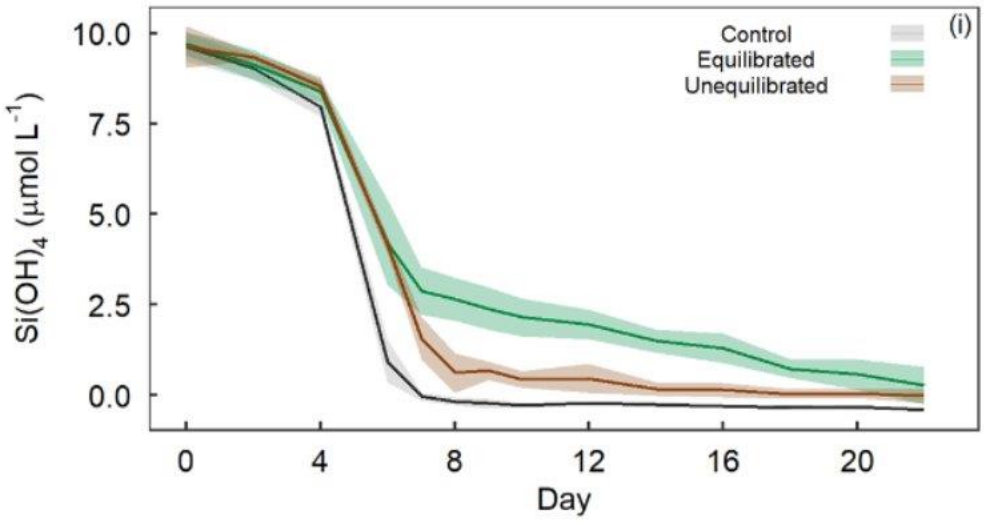
Early microcosm based experiments

- First experiment in August 2021
- Large perturbation of the marine carbonate system
- Maximise initial understanding of OAE impacts
- Value of small-scale experiments in highlighting key points of interest





Ferderer et al., 2022 Biogeosciences

Microcosm based experiments

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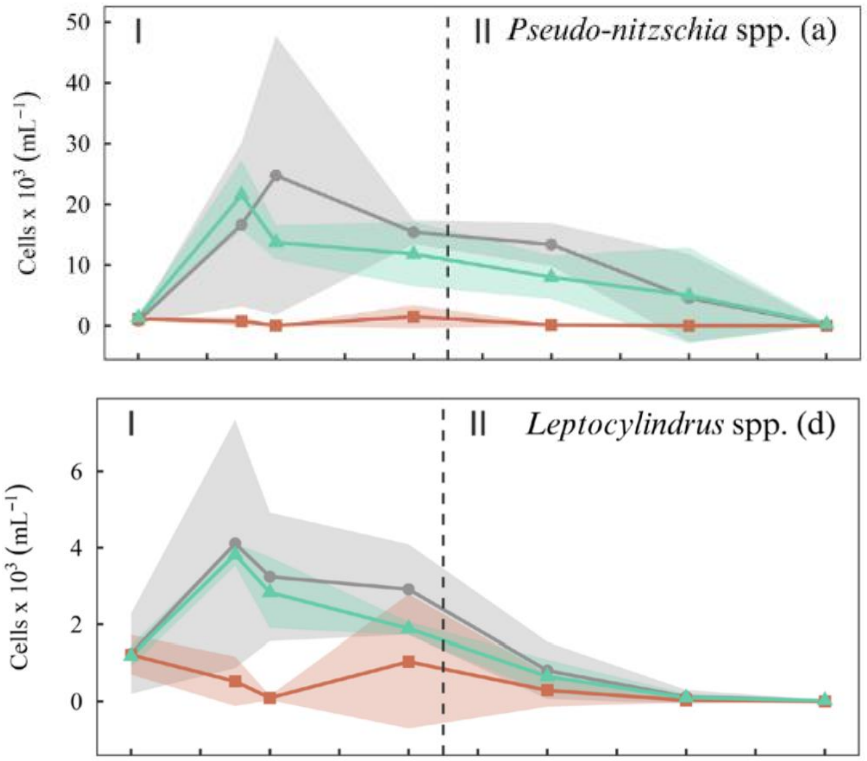
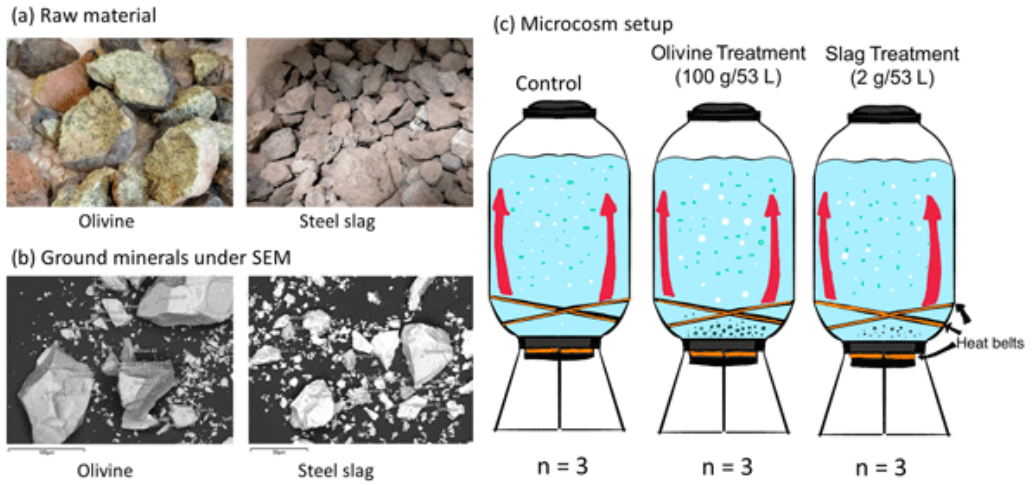
Influence of ocean alkalinity enhancement with olivine or steel slag on a coastal plankton community in Tasmania

Jiaying A. Guo ✉, Robert F. Strzepek, Kerrie M. Swadling, Ashley T. Townsend, and Lennart T. Bach





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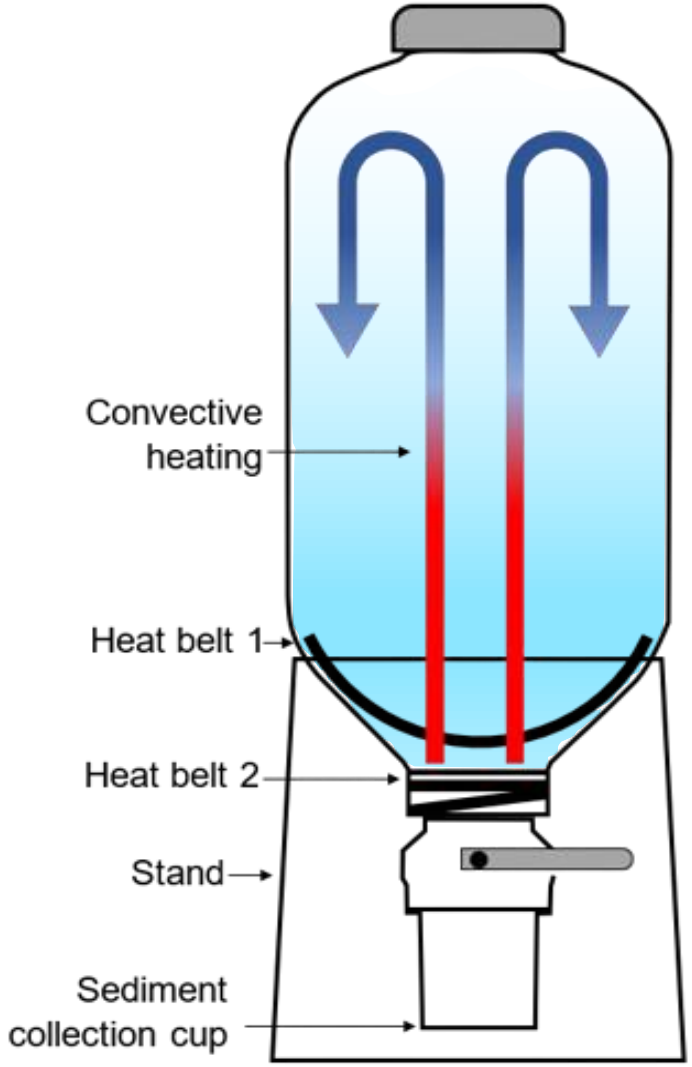
Winners and losers under hydroxide-based ocean alkalinity enhancement in a Tasmanian plankton community

Kiyas Kousoulas ✉, Aaron Ferderer, Ruth Eriksen, Lennart T. Bach

Technical note: Ocean Alkalinity Enhancement Pelagic Impact Intercomparison Project (OAEPIIP)

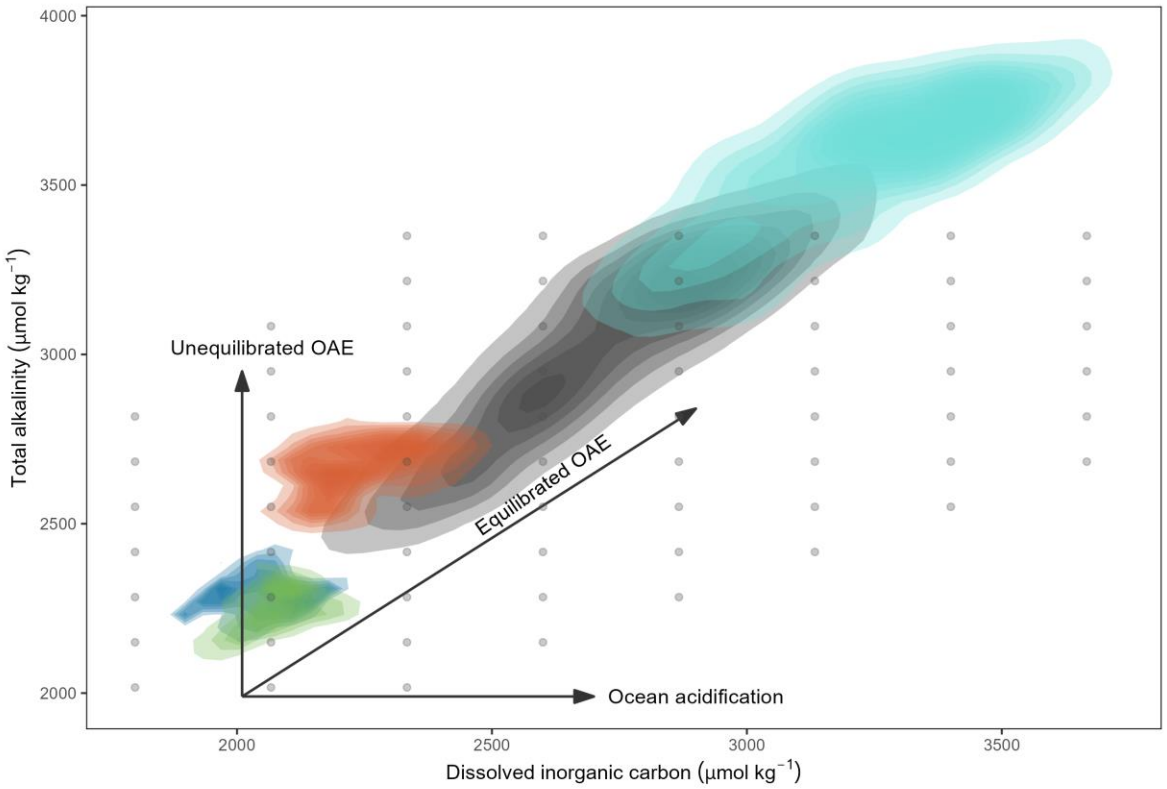
- OAE impacts across environmental and geographic gradients
- Standardised protocols increase efficiency of data synthesis
- Provides a pathway, equipment and framework for ECR's and new research groups

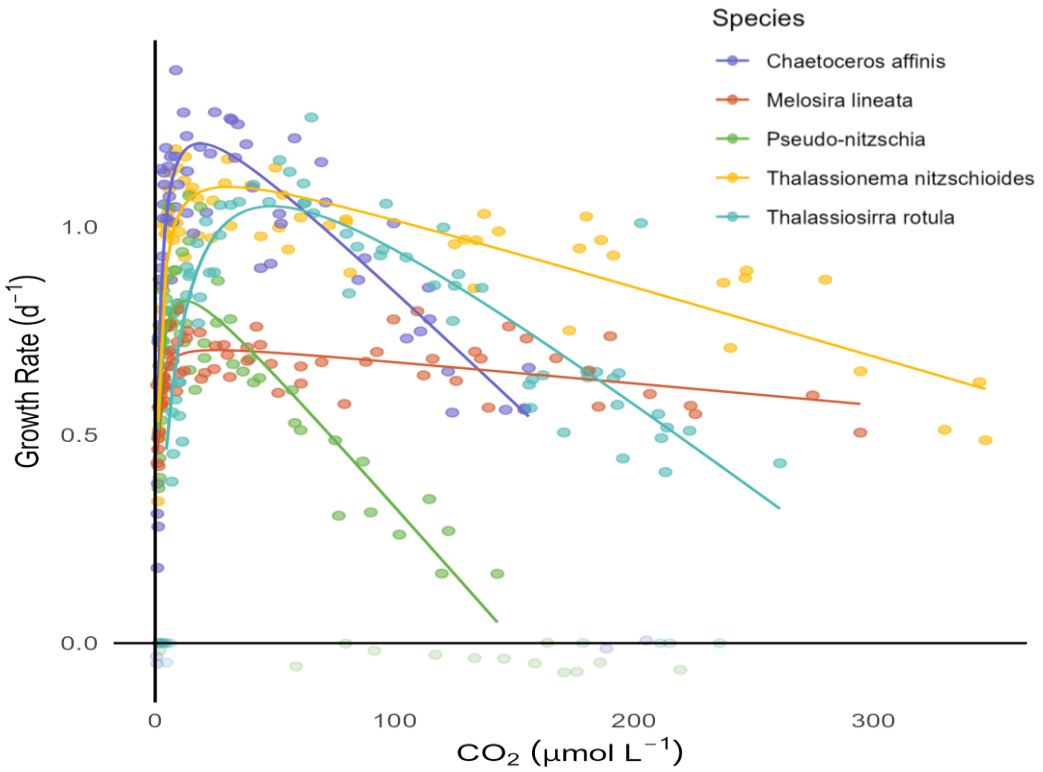


Bach et al., 2024 Biogeosciences

The role of small-scale experiments

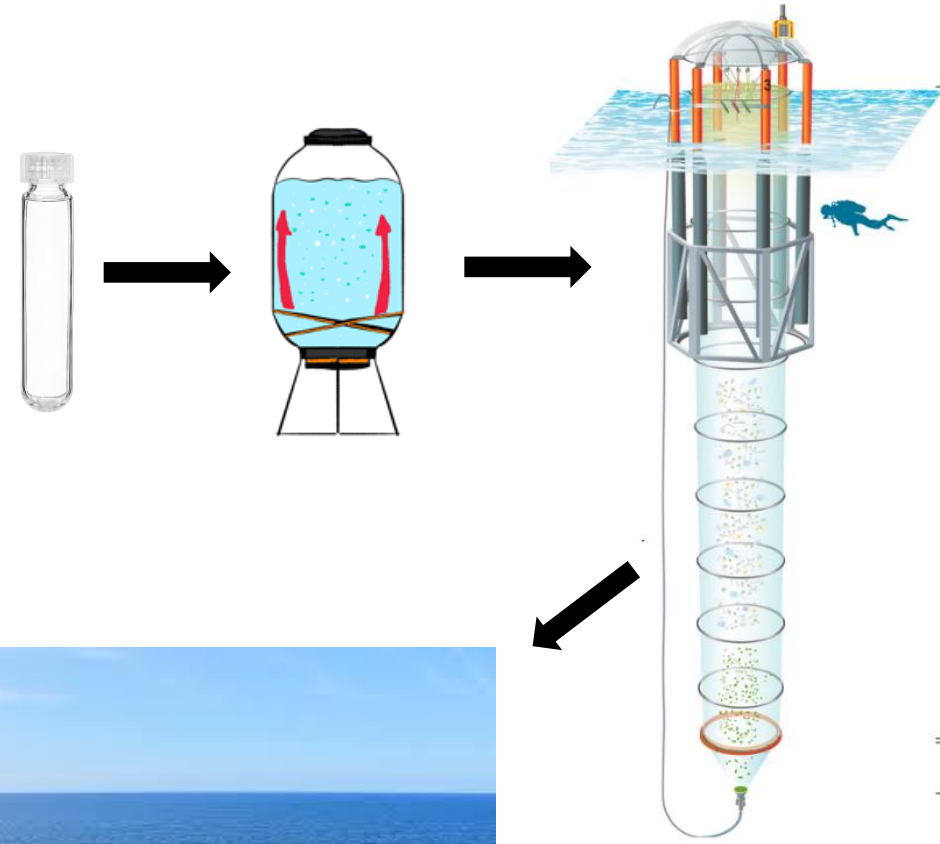
- Larger scales require greater funding, resources and time
- Small scale experiments must be designed to fill the gaps
- Efficient, low-cost experiments are still informative





Future research

- Accelerated publication of data
- The need for rapid progress requires thoughtful & targeted experiments
- Small experiments → field trials should leverage their strengths and cover weaknesses of other respective methods
- Move away from experiments that illicit an effect towards those that advance progress towards safe potential implementation



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