ADVISOR QUARTERLY REPORT

Ocean Visions | Launchpad

Q4 2025

Advisor: Ellen Briggs
Organization/Affiliation: University of California, San Diego
Areas of expertise: Chemical sensing, carbonate chemistry of seawater

Overview of engagement

- In the earlier part of the engagement, we focused primarily on what sensors are commercially available and tradeoffs between cost, maintenance, and performance. We discussed the model Vycarb has developed for computing the chemical speciation for quantification of carbon storage. Suggestions were made to investigate other models such as Marchemspec that deal with chemical speciation over larger ranges of conditions and chemical concentrations. Work is ongoing to assess error propagation within the model under different assumptions of analytical precision and estimated chemical speciation. We have discussed QC procedures for flagging data and reporting under standardized protocols. We also reviewed and discussed an ecological assessment report for the original operations.

Challenges and obstacles

- One of the greatest challenges has been assessing sensor performance and determining what alternatives would possibly be more practical. PCO2 sensing is difficult and recommendations were made on how to deal with water interfering with their sensor. Recommendations were offered to connect with other colleagues with expertise in pCO2 sensing. A new chamber design was developed and reviewed together to discuss sensor placement, possible alternatives, bubble interference, maintenance, and calibration.

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Successes and achievements

- Vycarb decided to pivot and focus primarily on CO2 storage rather than uptake from the natural environment. This in turn changes concentrations and chemical speciation for their operation. We discussed sensing requirements and chemical computation from this different operational standpoint.

Key work in the next quarter

- The next main area of focus is on the Vycarb model and error propagation analysis. Work is ongoing discussing and testing sensors that will hopefully offer required performance at realistic cost and reduced maintenance.