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Department of Marine Sciences  
Presents a Seminar by

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## **The Ocean's Alkalinity Cycle and Marine Carbon Dioxide Removal**

The ocean is the largest surface reservoir of carbon, facilitated to a large degree by the even larger reservoir of dissolved alkalinity. Alkalinity levels control seawater's ability to buffer carbon dioxide, and alkalinity is actively cycled by the formation and dissolution of calcium carbonate ( $\text{CaCO}_3$ ) produced by marine organisms. In this talk, I will first discuss recent developments in our understanding of the marine calcium carbonate cycle. In short, alkalinity is consumed and produced more rapidly than previously thought, due to rapid calcification and  $\text{CaCO}_3$  dissolution rates in the upper ocean. In the second part of the talk, I will focus on the ocean's potential role in carbon dioxide removal. While emissions reductions are absolutely necessary, there is increasing interest in modifying the vast marine dissolved inorganic carbon and alkalinity reservoirs to mitigate the worst effects of climate change. I will highlight several new areas of research in my group evaluating how effective ocean alkalinity enhancement might be at removing carbon dioxide from the atmosphere and durably storing it as dissolved inorganic carbon.

**Host:** Samantha Siedlecki

**Time & Date:** 11:00 am, Friday, February 10, 2023

**Place:** Lowell Weicker Building, Seminar Room 103 (or WebEx)

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