

Earth Sciences

Colloquium Series

Dr. Molly McCanta

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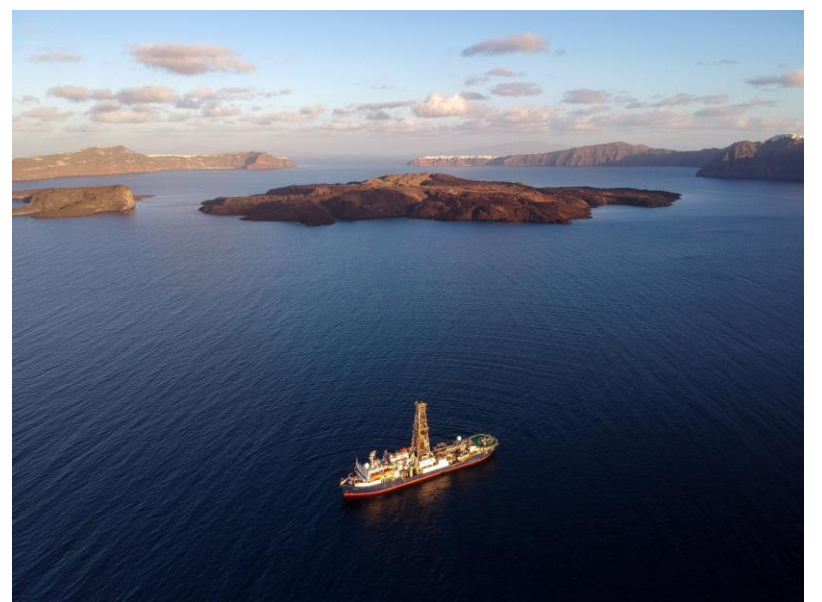
What goes down must come up: Changing oxidation conditions in the Santorini magmatic system as a tracer of subduction components through time

Date: Friday, March 28, 2025

Time: 1:30 pm

Location: BGS 0153

The redox state of volcanic arc systems is highly variable globally, although arc magmas are generally recognized to be more oxidized than those of mid-ocean ridges. The origins of these oxidation differences are complex; they may represent primary source region differences, potentially related to variations in slab-derived sediments, melts, or fluids, or they may form through secondary means, such as interactions with the overlying mantle wedge or crust during storage and ascent. In this talk I will present new data from drill cores collected during IODP Expedition 398 that has implications for the origin and evolution of the primary redox signature of Santorini magmas through arc history. Trace element geochemistry is used to determine magmatic oxidation state and provide evidence of correlation with fluid infiltration, suggesting slab-derived fluids have had a primary role in determining magmatic redox in the Santorini magmatic system throughout its evolution.



Biography

I received my BS in Geological Sciences from the University of Oregon and MS and PhD in Geological Sciences from Brown University. Following postdocs at the Lunar and Planetary Institute and Caltech, I'm currently the Gerald Sisk Professor of Mineralogy and Petrology at the University of Tennessee Knoxville. My research is centered on analytical and experimental petrology and focuses on constraining volcanic processes in terrestrial subduction zones and throughout the solar system, including the Moon, Mars, Venus, and several meteorite parent bodies.

Coffee and donuts will be served.