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Department of Marine Sciences
Presents a Seminar by

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**Iron supply from deep-sea hydrothermal plumes:
New insights from the Southern East Pacific Rise case study**

Dissolved iron is a critical micronutrient for phytoplankton in the ocean. While dissolved iron has historically been thought to enter the ocean from dust or sediment inputs, hydrothermal vents have also been proposed as an important source of iron, especially in remote ocean basins such as the Southern Ocean, where primary production is known to be limited by the low concentrations of dissolved iron. Hydrothermal vent fluids can have iron concentrations more than a million times that of deep seawater, yet much of this iron is lost when vent fluid iron meets deep, oxygenated seawater, forming particles that settle to the seafloor around the vents. In this talk, I will show that persistent hydrothermally-sourced dissolved iron has been observed in all ocean basins. I will examine a case study of the Southern East Pacific Rise hydrothermal plume, from the U.S. GEOTRACES GP16 East Pacific Zonal Transect, where it has been shown that hydrothermally-derived dissolved iron persists >4000 km from the vent source across the Pacific Ocean. I will use new dissolved iron isotope data to address the outstanding question of what chemical form this dissolved iron is in that allows it to escape precipitation to the particulate phase. I will also use water mass age data from this hydrothermal plume to calculate scavenging rates for the different dissolved iron species in the plume, with implications for how long hydrothermal iron can persist in seawater and thus which hydrothermal plumes in the ocean can actually upwell to the surface in sufficiently short time to provide iron to phytoplankton communities.

Host: Robert Mason

Time & Date: 11:00 am, Friday, April 23, 2021

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