Nov 12th, 4:00 PM - 5:00 PM

Quantifying ocean acidification in the geologic record using the B/Ca ratio of planktic foraminifera shells

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MONTCLAIR STATE UNIVERSITY

The Doctoral Program in Environmental Management and MSU Sustainability Seminar Series Present:

Quantifying ocean acidification in the geologic record using the B/Ca ratio of planktic foraminifera shells

WHEN: November 12, 4:00 pm WHERE: CELS 120 lecture hall

Dr. Laura Haynes

Rutgers Institute for Earth, Ocean, and Atmospheric Sciences

Laura Haynes received a B.A. in Geology from Pomona College and went on to earn her Ph.D. from the Lamont-Doherty Earth Observatory of Columbia University. In her research, she measures the chemistry of small marine fossils called foraminifera in order to reconstruct past climate, ocean conditions, and changes to the Earth's carbon cycle. She is now a postdoctoral fellow at Rutgers' University, where she is working to understand how foraminifera biomineralization works at a cellular level so that we may better understand our paleo-proxies. Dr. Haynes is also involved in scientific ocean drilling expeditions and climate science communication efforts.

56 million years ago, the Earth underwent a rapid climate change event called the "Paleocene-Eocene Thermal Maximum" (PETM). Sedimentary records show that a massive amount of carbon was released into the atmosphere, causing ocean acidification, warming, and a widespread extinction of deep-sea organisms. Reconstructing the source and amount of carbon released during the PETM has been a major focus for paleoclimatologists as we seek to understand how the Earth system will respond to modern carbon emissions and warming. To help quantify ocean acidification at the PETM, we are using the boron content (the B/Ca ratio) of the shells of fossilized foraminifera as a proxy for past ocean pH and carbon content. I will present new calibrations for the B/Ca proxy that we have created by growing living planktic foraminifera in seawater chemistry analogous to that of the Paleogene and simulating severe ocean acidification. I will discuss the best way to apply these new calibrations from modern species to now-extinct Paleogene foraminifera and will show how our calibrations shed new light on the size and source of the PETM ocean acidification event.

For more information contact Dr. Ying Cui at cuiy@montclair.edu