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The Boring Millions? Vegetation, Atmospheric CO₂ , and Climate Revolutions of the Late Miocene

Pratigya Polissar
Columbia University

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MONTCLAIR STATE
UNIVERSITY

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

The Boring Millions? Vegetation, Atmospheric CO₂, and Climate Revolutions of the Late Miocene

WHEN: March 5, 4:00 pm WHERE: CELS 120 lecture hall

Pratigya Polisar
Columbia University



Pratigya Polisar earned a B.A. in Environmental Science from Hampshire College (1995) and an M.Sc. and Ph.D. in Geosciences from the University of Massachusetts (1999, 2005). He joined the Lamont-Doherty Earth Observatory in 2010. His research uses the chemistry of molecular fossils to understand past climates. He currently focuses on reconstructing how Earth's atmospheric CO₂ levels have changed in the geologic past and how those changes shaped our present world, in particular tropical ecosystems and rainfall patterns.

During the late Miocene (11-5 Ma), global ice volume and deep ocean temperatures appear to be relatively unchanging. These “boring millions” suggest stasis of the climate system with the expectation of only moderate global changes in climate, CO₂ and vegetation. However, during this time tropical ecosystems underwent profound changes and surface ocean temperatures declined dramatically. When did these changes occur, what drove them, and what role if any did atmospheric carbon dioxide levels play? I will address these questions through new observations of the onset, pace and geographic extent of vegetation transformations and hydrologic changes reconstructed from molecular biomarkers. I will then examine the role that atmospheric CO₂ levels and other factors may have played in these transformations.