

# CGD SEMINAR



**DATE:** Tuesday, 26 February 2019

**TIME:** 11 am – 12 pm

**LOCATION:** NCAR, 1850 Table Mesa Drive  
Mesa Lab, Main Seminar Room

**TITLE:** Glacial lessons on tropical climate change

**SPEAKER:** Pedro DiNezio, University of Texas  
Institute for Geophysics

## ABSTRACT:

Past and future climate changes in the tropics are expected to be dominated by changes in the Pacific Ocean. Our research reveals a different picture in which coupled ocean-atmosphere interactions in the Indian Ocean (IO) can lead to dramatically altered rainfall patterns over one third of the tropics. This conclusion is supported by simulations and paleoclimate proxies of the Last Glacial Maximum (LGM) – the most recent glacial interval ca. 21,000 years ago. Our analysis revealed a coupled response involving changes in thermocline depth and upwelling in the equatorial IO that is essential to explain patterns of hydroclimate change and ocean cooling inferred from paleoclimate proxies. This response is initiated by changes in convection over exposed landmasses due to lower glacial sea level and amplified by coupled feedbacks that appear to be a fundamental feature of the IO. We also identified a novel mechanism linking a weakening of the Indian summer monsoon with cooling of the northern hemisphere. This response does not require shifts in the Inter-Tropical Convergence Zone (ITCZ) and instead is mediated by exchanges of moisture and energy over Africa and Eurasia. These results revise current Pacific- and ITCZ-centric paradigms of tropical climate change and demonstrate how paleoclimate research can reveal fundamental features of the climate system.

**Live webcast:** <http://ucarconnect.ucar.edu/live>

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