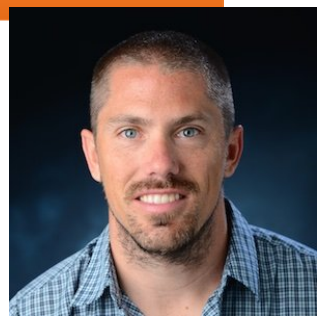
EARTH & PLANETARY SCIENCES at HARVARD UNIVERSITY

Department Colloquium Series
Spring 2022

Join us In-person

Monday, May 23 @ 12pm (noon time) & Zoom*
Geo Mus 102 (Haller Hall) – A boxed lunch will be served



Kristopher B. Karnauskas

Associate Professor, Department of Atmospheric & Oceanic Sciences, University of Colorado Boulder
Fellow, Cooperative Institute for Research in Environmental Sciences
Section Editor, PLOS Climate
currently HUCE Visiting Climate Scientist

"Upwelling in the Equatorial Pacific Ocean"

Abstract: Vertical velocities in the ocean are prohibitively slow to measure directly, so physical oceanographers have been attempting to estimate them by other means for several decades. There is strong motivation to do so; upwelling fuels marine life by bringing nutrient-rich water into the sunlit surface layer. Upwelling also affects the atmosphere by cooling the surface, which affects wind and clouds. The surprising abundance and diversity of life—from corals to fish to seabirds—around equatorial islands, has been hypothesized to be caused by a distinct form of equatorial upwelling. First, measurements by underwater gliders and profiling floats are used to reveal the scales and provenance of this unique form of upwelling. Next, changes in upwelling in the eastern equatorial Pacific over recent decades are diagnosed using a new high-resolution ocean state estimate. Finally, the implications of evolving geologic constraints on the structure of upwelling in the eastern equatorial Pacific for the interpretation of paleoclimate record characterizing the state of the broader tropical Pacific over the past few million years are explored using proxies and numerical model experiments.

Short Bio: Kris Karnauskas is a Fellow of the Cooperative Institute for Research in Environmental Sciences (CIRES) and an Associate Professor in the Department of Atmospheric and Oceanic Sciences (ATOC) at the University of Colorado Boulder, with secondary faculty appointments in the CU School of Medicine and the Colorado School of Public Health. Prior to joining the CU Boulder faculty, Kris spent six years on the faculty of the Woods Hole Oceanographic Institution (WHOI) and the MIT-WHOI Joint Program in Oceanography (also teaching at Boston College) followed by sabbatical at the Institut Pierre Simon Laplace (IPSL) in Paris, France through a Research Fellowship from the Alfred P. Sloan Foundation. Kris completed his B.S. at the University of Wisconsin-Madison and Ph.D. at the University of Maryland-College Park, both in Atmospheric and Oceanic Sciences, followed by a postdoctoral fellowship in Ocean and Climate Physics at the Lamont-Doherty Earth Observatory of Columbia University. Kris currently serves as Section Editor for PLOS Climate, and recently served as Editor of the *Journal of Geophysical Research-Oceans* and on the Scientific Steering Committee (SSC) of the U.S. Climate Variability and Predictability Program (US CLIVAR). Kris was the recipient of the 2017 Ocean Sciences Early Career Award from the American Geophysical Union (AGU) "for important contributions to better understanding the tropical oceans and atmosphere."

*Zoom link:https://harvard.zoom.us/j/98884783575?pwd=ais5ek9MaGRQYy9ScEh3Zm5YdTRwQT09