



ATOC COLLOQUIUM

Welcome!

Please join us for the next ATOC Colloquium on **Friday, November 12** from **11:00 AM–12:00 PM**, which will be held in **SEEC S228 and simulcast over Zoom**. This week's colloquium features **Dr. Sara Sanchez, a Chancellor's Postdoctoral Fellow in ATOC**. Please join us for coffee/conversation beginning at 10:45 AM and stay for lunch from Illegal Pete's afterwards. **In CU buildings, please wear a mask if not actively eating/drinking.**

Pacific–Paleo Climate Variability

Scientific understanding of low-frequency ENSO variability, especially responses to perturbations in radiative forcing, remains uncertain. To best contextualize future change, it is necessary to have a good grasp of “normal”. Here, I investigate tropical Pacific climate variability prior to the satellite era using instrumental observations, Past1000/ Last Millennium climate model simulations, and coral geochemical archives ($\delta^{18}\text{O}$, Sr/Ca) . First, I will examine the diversity in the persistence of El Niño events over the last millennium. Although scarce over the satellite era, multi-year El Niño events are relatively common over the course of the last millennium, with persistent impacts on surface temperatures and precipitation around the globe. Next, I will switch methodologies and combine coral archives with the dynamics, spatial teleconnections, and intervariable relationships of the Past1000 experiments using the Last Millennium Reanalysis (LMR; Hakim et al. 2016) offline data assimilation framework. I show that this analysis generates skillful reconstructions of the tropical Pacific temperatures over the observational era and allows for a novel investigation of tropical climate variability over the 19th and early 20th century. I first revisit how the tropical Pacific responded to the early 19th century Mystery and Tambora eruptions. Following major volcanic eruptions, corals within the southwest Pacific record local variability not well simulated by Past1000/Last Millennium climate models. Finally, I will explore one of the less developed aspects of paleoclimate data assimilation, proxy system models. I will examine the potential for reconstructing historical precipitation variability in the tropical Pacific by testing realistic proxy system models for coral $\delta^{18}\text{O}$. I will highlight both the challenges and significant opportunities ahead in coral-based paleoclimate data assimilation.



Location: SEEC S228 and Zoom

Zoom:

<https://cuboulder.zoom.us/j/98826679902>

Password: ATOC

About the ATOC Colloquium

The Department of Atmospheric and Oceanic Sciences (ATOC) Colloquium is typically held **every other Friday** from **11:00 AM–Noon**. Colloquia alternate between the following formats: (A) Full-length talk by a faculty member or invited speaker, (B) Three conference-length talks by graduate students. If you would like to nominate a speaker (including self), please email the ATOC Colloquium Committee Chair, Prof. Jan Lenaerts (jan.lenaerts@colorado.edu). Please visit www.colorado.edu/atoc/colloquium for further details.