Welcome!

Please join us for the next ATOC Colloquium on **Friday, Nov. 1** from **11:00 AM–12:00 PM,** which will be held in **SEEC S228 and simulcast over Zoom**. This week's colloquium features three ATOC graduate students, **Jonah Shaw, Brianna Undzis, and Annelies Sticker.**

Jonah Shaw ▸ Exploring climate science outside of academia: A summer internship at the Electric Power Research Institute

Climate and weather data is increasingly used by a variety of industries in the private sector. As a result, performing science with these data is no longer restricted to formal academic settings like universities and national labs. I spent the 2024 Summer working as a research intern at the Electric Power Research Institute (EPRI), a large non-profit serving the electric power sector. This talk describes my experience at EPRI, focusing on the process of finding a position, the reality of the internship itself, and my reflections after the summer ended. I will also describe my research project, but this is not the focus of my presentation.

Brianna Undzis ▸ The roles of terrestrial delivery & local resuspension on turbidity: Numerical model results from the Alaskan Beaufort Sea shelf

In the Arctic, continental shelf suspended sediment concentrations and transport impact light attenuation and primary productivity, as well as geomorphology and incorporation of particles into new sea ice. As Arctic permafrost thaws, increasing riverine delivery and shoreline erosion, it is particularly important to understand how these sources of material influence suspended sediment concentrations and transport. To investigate these topics, this study analyzes results from a coupled hydrodynamic - sediment transport numerical model, namely the Regional Ocean Modeling System (ROMS) - Community Sediment Transport Modeling System (CSTMS). The model was implemented for the Alaskan Beaufort Sea Shelf for the 2019 open water (nearly ice-free) season, and accounts for processes such as riverine delivery, winds, larger-scale currents, and sediment erosion, transport and deposition. Building on previous work, we categorized riverine and seabed sediments into 26 distinct classes that allow us to distinguish the origin of different particles and grain properties. Analysis is focusing on the spatial distribution of riverine and nearshore sediments over the course of an open water season, as well as the how the different sediment classes contribute to high turbidity events. Preliminary results suggest that sediment delivered by rivers during an open water season stays within water depths of 0 – 10 m for at least a month and a half. Additionally, high turbidity events mainly occur due to local resuspension, as opposed to riverine plumes. Ongoing and future work include analysis of uncertainty due, for example, to sediment settling velocity and other properties. Overall, these findings suggest that high turbidity events are driven by sediment delivered to the continental shelf during previous open water seasons or winters, as opposed to new inputs.

Annelies Sticker ▸ Rapid Arctic sea ice loss events in CMIP6 simulations

The summer Arctic sea ice is projected to disappear completely by the middle of the century in response to anthropogenic greenhouse gas emissions, according to simulations conducted with the latest global climate models. The decrease in summer Arctic sea ice extent is marked by periods of rapid ice loss, known as rapid ice loss events (RILEs), which are expected to become more frequent in the coming decades. However, the causes of RILEs are not well understood and it is difficult to predict their occurrence a season to several years ahead. It is essential to improve our understanding of these events and their potential impacts on ecosystems and societies, as the rate of sea ice decline can affect the ability to adapt to rapid change. To gain a better understanding of RILEs, we conducted an analysis using climate simulations from the Coupling Model Intercomparison Project phase 6 (CMIP6).

Zoom: https://cuboulder.zoom.us/j/96503809060 **Passcode:** 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. Jianghanyang (Ben) Li (Jianghanyang.li@colorado.edu). Please visit www.colorado.edu/atoc/colloquium for further details.