



# ATOC COLLOQUIUM

## Welcome!

Please join us for the next ATOC Colloquium on **Friday, March 24** from **11:00 AM–12:00 PM**, which will be held in **SEEC S228 and simulcast over Zoom**. This week's colloquium features **Dr. Melissa Moulton (NCAR/CGD)**. Please join us for coffee beginning at 10:45 AM and stay for lunch catered by Illegal Pete's afterwards.

## From the Beach to the Sea and Back: How Pollutants, Nutrients, and Organisms Move in the Coastal Ocean

The coastal ocean is the boundary between land and the open ocean. In addition to swimmers and surfers, perilously perched homes, and fragile ecosystems, the coast is home to a host of complex physical processes that are important for public safety and economic activity. This talk will consist of two parts: First, I will describe how contaminants and nutrients moved in the coastal ocean following Hurricane Florence, a historic precipitation event that hit the southeastern US in Sept, 2018. Open-air lagoons used to store waste from industrial hog farming were breached, causing sewage to flow into the ocean, leading to harmful algal blooms, beach closures, and other impacts. Using a coupled atmosphere-hydrology-ocean model, I show that the patterns of river plumes led to a delayed onset and long duration of contaminants affecting beaches hundreds of km down the coast, days to weeks after the storm. This information could help guide water quality sampling and swimming or shellfishing advisories. In the second part of the talk, I will zoom in to the 'nearshore region,' within a few kilometers of the beach, which is smaller than a typical grid cell in a regional or global ocean model. There, I will provide an overview of the processes that move plankton, pollutants, and other materials from the beach to deeper waters and back, and how behaviors like swimming or buoyancy affect coastal exchange (Moulton et al., Annual Review of Marine Science, 2023). A parameterization is developed that could be applied to account for unresolved coastal processes in earth system models.



**Location:** SEEC S228 & Zoom

**Zoom:**

<https://cuboulder.zoom.us/j/97845417945>

**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. Andrew Winters ([andrew.c.winters@colorado.edu](mailto:andrew.c.winters@colorado.edu)). Please visit [www.colorado.edu/atoc/colloquium](http://www.colorado.edu/atoc/colloquium) for further details.