



# ATOC COLLOQUIUM

## Welcome!

Please join us for the ATOC colloquium on **October 19, 2018** from **11:00am-noon** in **SEEC N125** featuring ATOC graduate students **Vineel Yettella**, **Lynn Montgomery** and **Bobby Wallace**. Come early for coffee starting at 10:45am, and lunch will be served after!

### **Vineel Yettella ▶ An ensemble covariance framework for quantifying forced climate variability and its time of emergence**

Climate variability and its response to increasing greenhouse gases are important considerations for impacts and adaptation. Modeling studies commonly assess projected changes in variability in terms of changes in the variances of climate variables. Despite the distant and impactful covariations that climate variables can exhibit, the covariance response has received much less attention. Addressing this, we develop a novel ensemble framework to facilitate a unified assessment of the response of the regional variances and covariances of a climate variable to imposed external forcings and their time of emergence from an unforced climate state.

### **Lynn Montgomery ▶ Hidden Water: Investigating a firn aquifer in Southeast Greenland**

Due to increasing temperatures in the Arctic, there has been an acceleration of subsurface meltwater storage including a firn aquifer in Southeast Greenland over the past decade. In this region, water is stored in the firn throughout the entire year without freezing. The meltwater percolating into the firn causes densification, and in turn, a decrease in surface height, which is a unique signal we may be able to retrieve from Operation IceBridge airborne remote sensing data. If this signal is attainable through studying known lateral extent of the aquifer in the past and the components of surface height change, we can then use it to predict future inland aquifer extent and the broader impacts of volume and sea level rise.

### **Bobby Wallace ▶ Deep Hail Accumulations: How can we identify storms that produce the largest threat?**

Thunderstorms that produce hail accumulations, sometimes as large as 60 cm in depth, have significantly affected the populations across the High Plains of Colorado and Wyoming by creating hazardous road conditions and endangering lives and property. A validated radar-based method to derive hail accumulation depth is used to assess the relative importance of in-cloud hail production, storm speed, and melting rates in determining the amount of hail accumulation observed on the ground. Our results show that radar-derived in-cloud hail production is the most correlated to hail accumulation. In contrast, while storm speed and melting rates alone show little to no correlation to hail accumulation, both are determined to be important when comparing storms that experience similar in-cloud hail production.

## About the ATOC Colloquium

The Department of Atmospheric and Oceanic Sciences Colloquium will be held **every other Friday** from **11:00am-noon** in **SEEC N125**. Colloquia will 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](mailto:jan.lenaerts@colorado.edu)). Please visit [www.colorado.edu/atoc/colloquium](http://www.colorado.edu/atoc/colloquium) for further details and the upcoming schedule.