Welcome!

Please join us for the next ATOC Colloquium on **Friday, February 7** from **11:00am–Noon** in **SEEC S228**. This week's colloquium features ATOC postdocs, **T. Connor Nelson** and **Nander Wever,** as well as NCAR Project Scientist, **Cenlin He**. Come early for coffee starting at 10:45am, and lunch will be served after!

T. Connor Nelson ▸ Observations of environments supporting moist convective initiation during RELAMPAGO-CACTI

This study characterizes the environments most representative of convective initiation (CI) in time and space during the 2018–2019 joint Remote Sensing of Electrification, Lightning, and Mesoscale/Microscale Processes with Adaptive Ground Observations (RELAMPAGO) and Cloud, Aerosol, and Complex Terrain Interactions (CACTI) projects. The observed convection was classified into three main categories: 1) convection initiated ("CI"); 2) convection failed to initiate ("Fail"); and, 3) precipitating convection did not occur, despite being predicted by convective allowing models ("Null"), and then compared using paired Student's t-tests. Most notably, the Null events were statistically more supportive of convection based upon typical parcel theory assumptions, but additional analysis suggested that trapped lee waves, leeside subsidence, and wind shear, likely inhibited CI. Additionally, spatiotemporal autocorrelation analysis is used to quantify the mesoscale heterogeneity of the near-CI environment in complex terrain.

Nander Wever ▸ Snow modelling in polar regions

The earth's surface in polar regions is often, if not permanently, covered by snow. Snow is a complex material, and it's properties can vary widely depending on snow microstructure. Dedicated, physics-based snow models can help assess the role of the snow cover in the surface energy and mass balance in polar regions. In this talk, I show some field work to measure snow properties and show how these measurements improve and validate the modelling approaches for snow in polar regions.

Cenlin He ▸ Enhanced snow absorption and albedo reduction by dust-snow internal mixing: modeling and parameterization

Mineral dust is one of the most common and abundant aerosols by mass, playing a key role in the Earth/climate system. Dust can significantly reduce snow albedo and accelerate snow/glacier melting after deposition. Current models have mainly assumed dust externally mixed with spherical snow grains, whereas in reality dust can also be internally mixed with nonspherical snow grains. Thus, this study uses an advanced snow optics-albedo model to quantify the effects of dust-snow mixing type (internal vs. external) and snow grain shape (spherical vs. nonspherical) on snow light absorption and albedo.

About the ATOC Colloquium

The Department of Atmospheric and Oceanic Sciences Colloquium is held **every other Friday** from **11:00 AM-Noon** in **SEEC S228** . 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). Please visit www.colorado.edu/atoc/colloquium for further details and the upcoming schedule.