

Joint EOL/MMM Seminar

An Overview of the Cold-Air Experiment over the Sub-Arctic Region (CAESAR) campaign

Speakers: Paquita Zuidema, Bart Geerts, Greg McFarquhar, Adriana Bailey, John Cassano, Jim Doyle, Andrew Dzambo, Sam Ephraim, Jeff French, Coltin Grasmick, Emma Jarvinen, Timothy Juliano, Markus Petters, Russell Perkins, Elise Rosky, Jeff Snider, Florian Tornow, Patrick Veres, Yonggang Wang, Zhien Wang, Sarah Woods, Lulin Xue, Carol Ruchti, Michael Tjernstrom, Gunilla Svensson

In the spring of 2024, the US National Science Foundation sponsored the Cold-Air outbreaks Experiment in the Sub-Arctic Region (CAESAR) aircraft campaign, with the simple goal of characterizing cold-air outbreak (CAO) clouds coming off of the Arctic sea ice as comprehensively as possible. A strength of the CAESAR strategy is a comprehensive aerosol, cloud and remote sensing instrumentation suite and early development of a close connection to modeling spanning a range of scales, in part by building on prior DOE-sponsored activity through the Cold-Air Outbreaks in the Marine Boundary Layer (COMBLE) campaign. The higher-level motivation for CAESAR is to better understand how clouds participate and feedback upon the changing Arctic. New technologies, improved data integration and modeling frameworks that are increasingly comparable to the observations hold promise that both the numerical weather prediction and global modeling of the super-cooled liquid, mixed-phase and ice clouds can be improved through the focus provided by the field campaign. During March of 2024, a dominant northerly flow extended the sea ice edge southward, with CAO conditions reachable for the aircraft on most days. We provide an overview of the NCAR C-130 aircraft campaign, and its approach to the problem of understanding CAO cloud evolution, the microphysical processes including their relationship to aerosol, and the cloud mesoscale organization. Highlights include a 'golden case' CAO sampled from near its inception over the Arctic sea ice, an aged CAO containing a closed-to-open cell transition, and a well-sampled coastal polar low.

Wednesday, 2 April 2025, 3:30PM

Refreshments 3:15PM

NCAR-Foothills Laboratory, 3450 Mitchell Lane

FL2-1022, Large Seminar

Seminar will also be live webcast

Participants may ask questions during the seminar via Slido.