

Microphysical and dynamical controls on the precipitation efficiency of Arctic clouds

Adriana Bailey Sarah Woods NCAR



May 9, 2023





This material is based upon work supported by the National Center for Atmospheric Research, which is a major facility sponsored by the National Science Foundation under Cooperative Agreement No. 1852977

Dynamical controls during CAOs

enhanced local surface moisture flux \rightarrow more (efficient) precipitation? \rightarrow greater local moisture export?

enhanced free tropospheric entrainment?

High Arctic evaporation efficiency (rate) Aemisegger and Papritz 2018



Isotopes as a process-oriented tool

- 1. Isotopes distinguish surface & free tropospheric air
- 2. Isotopes quantify the integrated moisture flux
- 3. Isotopes quantify precipitation efficiency

Microphysical controls

Aerosol effect on precipitation efficiency? (BL v. FT source?)

Role of riming? (Role of SIP?)



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Mixed-phase cloud observations at Storm Peak, Colorado

