

Microphysical and dynamical controls on the precipitation efficiency of Arctic clouds



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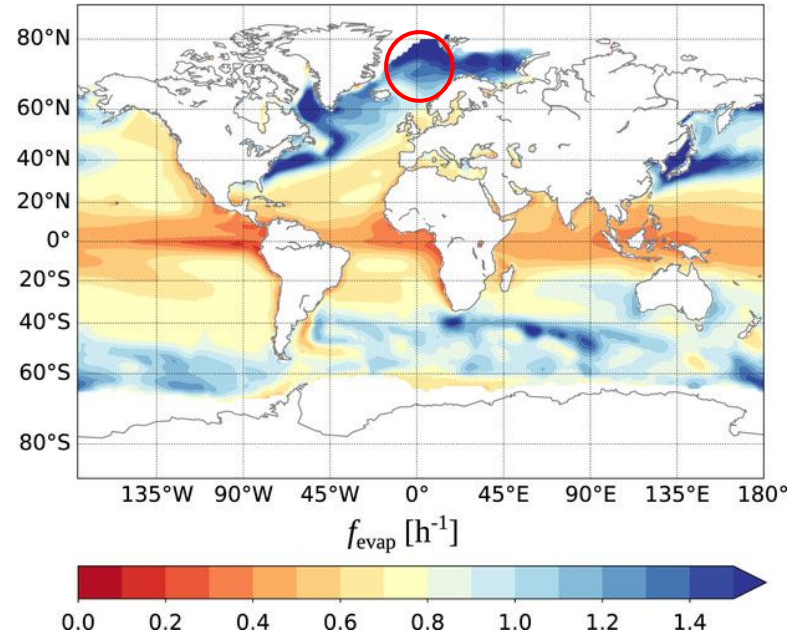
Dynamical controls during CAOs

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

enhanced free tropospheric entrainment?

High Arctic evaporation efficiency (rate)

Aemisegger and Papritz 2018



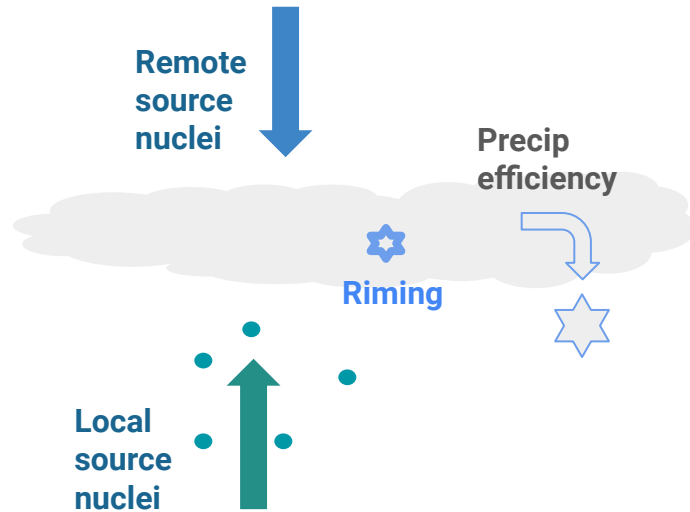
Isotopes as a process-oriented tool

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?)

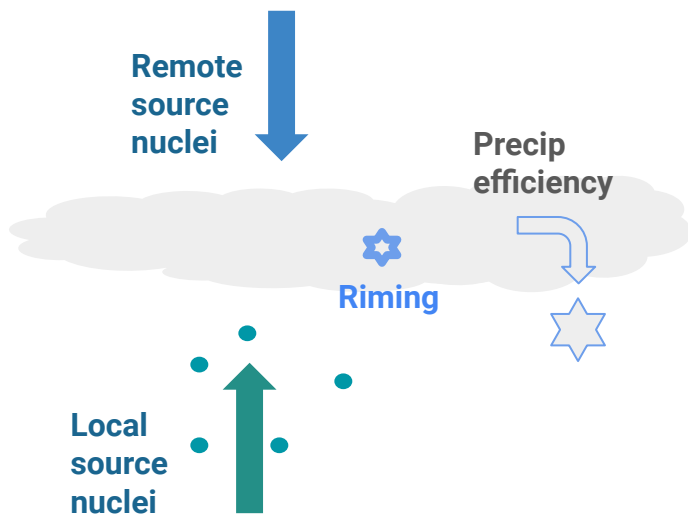
Role of riming? (Role of SIP?)



Microphysical controls

Aerosol effect on precipitation efficiency?
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Role of riming? (Role of SIP?)



Mixed-phase cloud observations at
Storm Peak, Colorado

