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Climatology of clouds containing supercooled liquid in the Western Arctic

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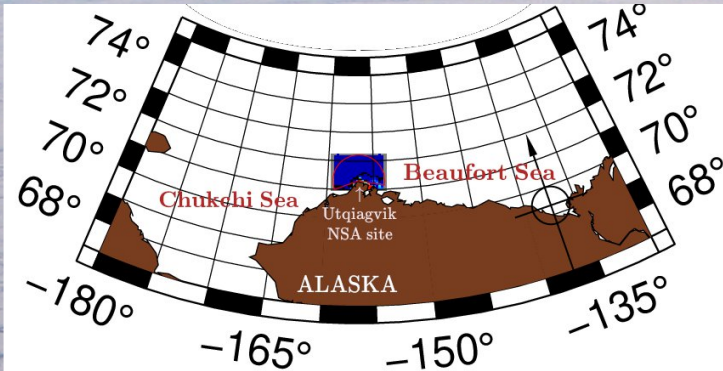
Leipzig Institute for Meteorology
University of Leipzig
16th December 2021

AGU FALL
MEETING

New Orleans, LA & Online Everywhere
13–17 December 2021

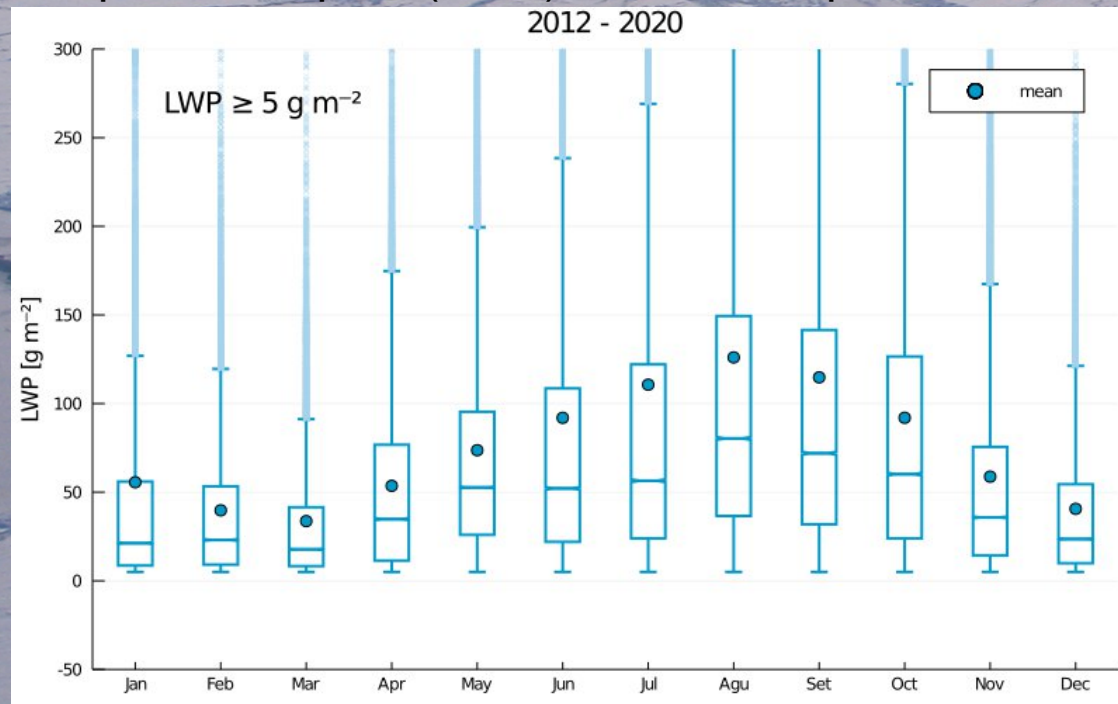
Session: A42F: Microphysical and Macrophysical Properties and Processes of Ice and Mixed-Phase Clouds: Linking in Situ, Remote-Sensing Observations and Multiscale Models

Arctic Cloud Climatology

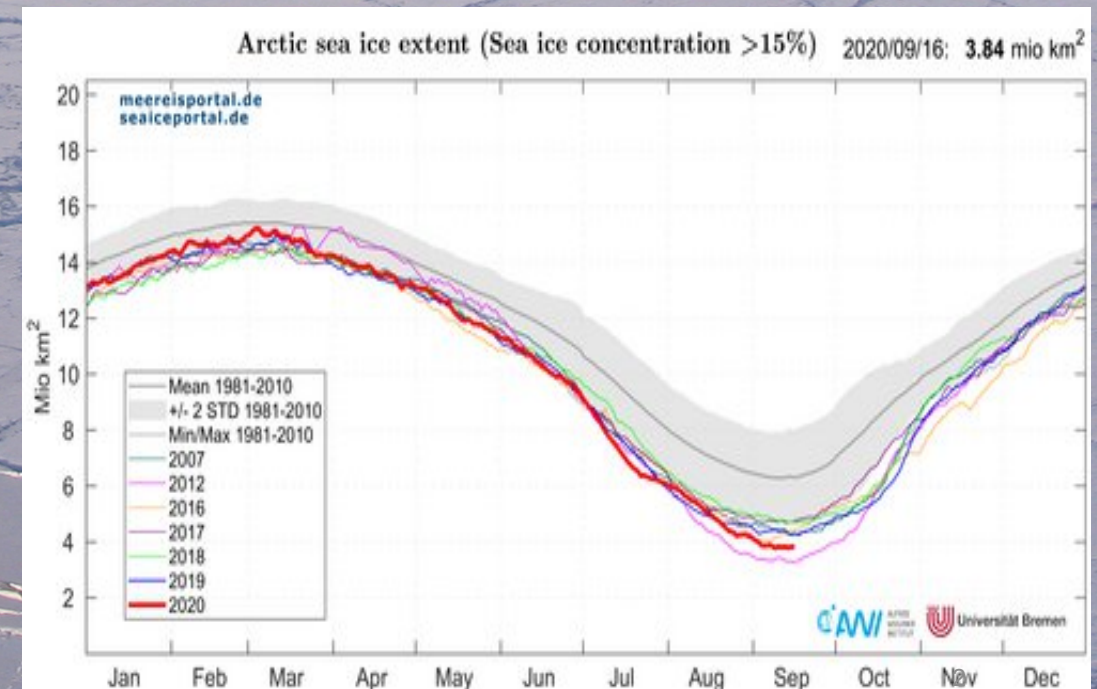


Yearly cycle of liquid-containing clouds in the Western Arctic resembles the annual Arctic Sea Ice Extent. Locally the relation between Sea Ice and Arctic clouds, particularly mixed-phase, is less understood.

Liquid water path (LWP) at North Slope of Alaska

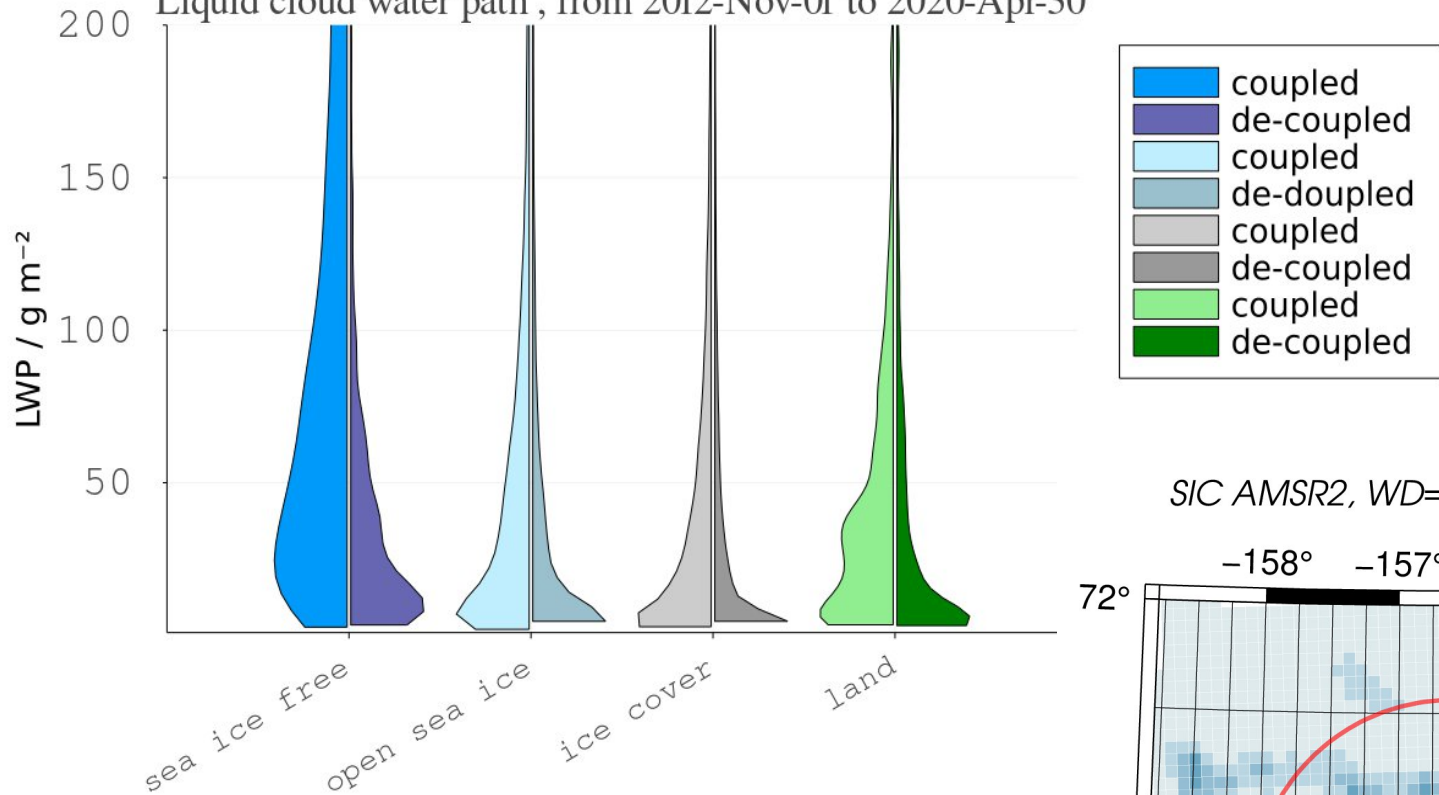


Arctic Sea Ice Extent (www.meericeportal.de)



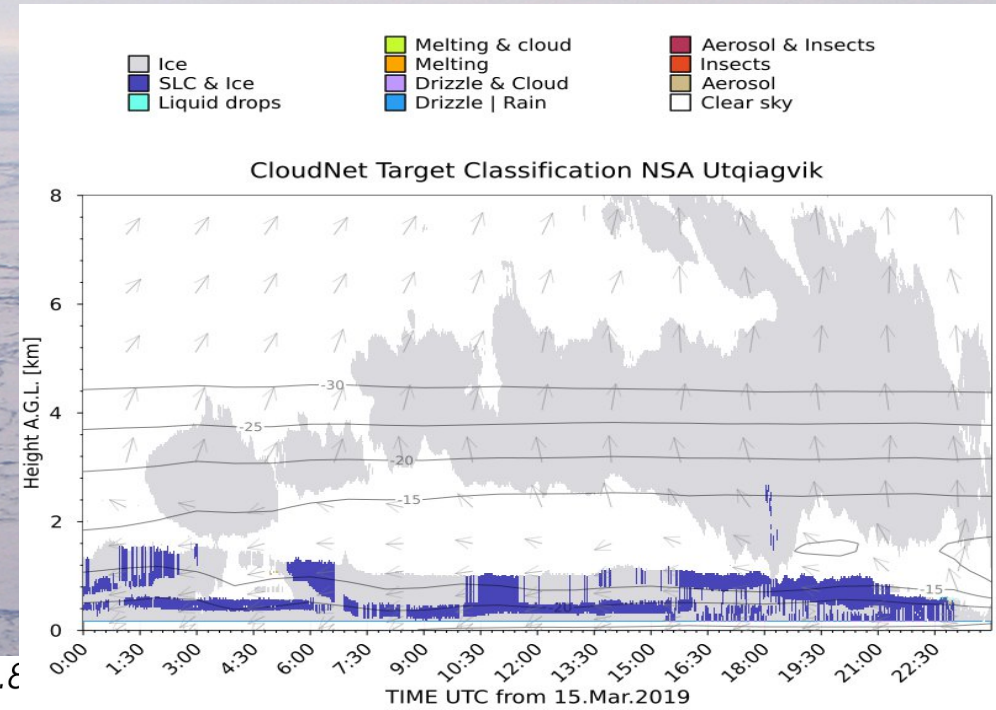
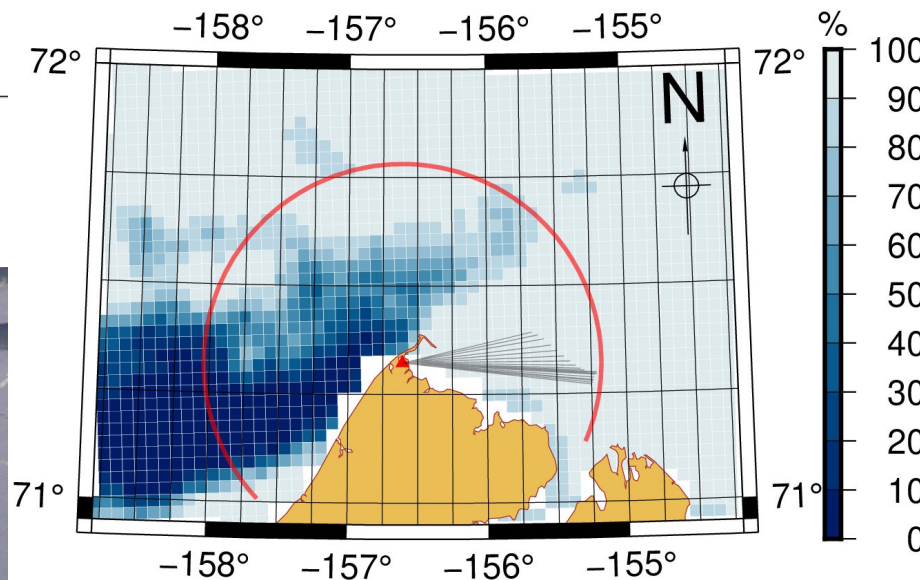
Coupled Clouds have larger Liquid Content

Liquid cloud water path, from 2012-Nov-01 to 2020-Apr-30



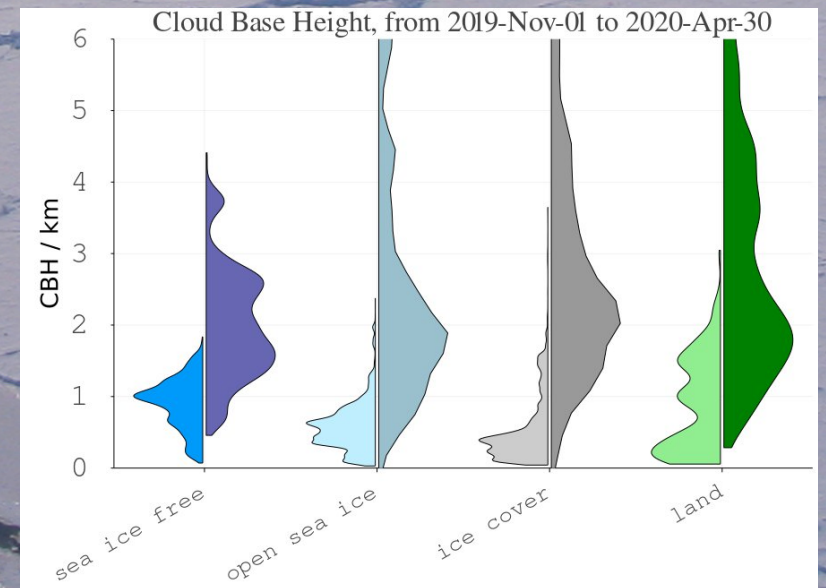
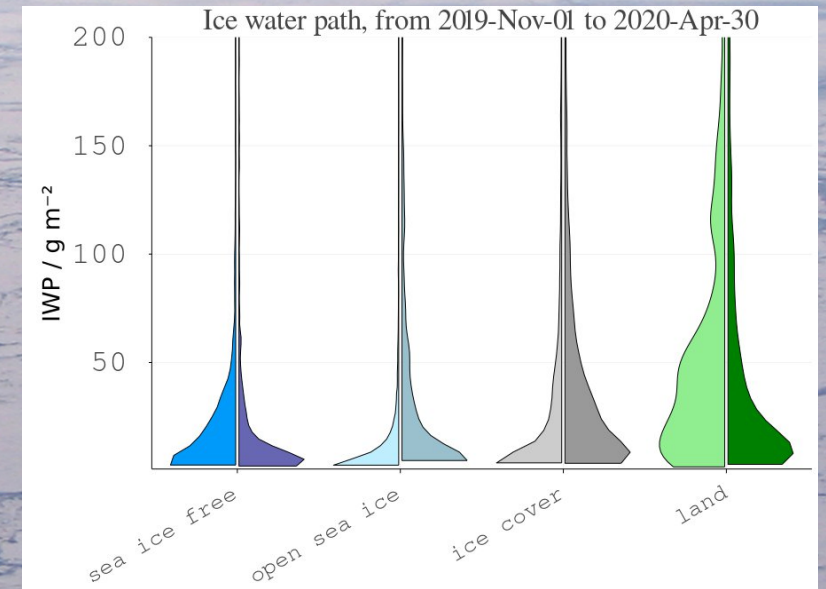
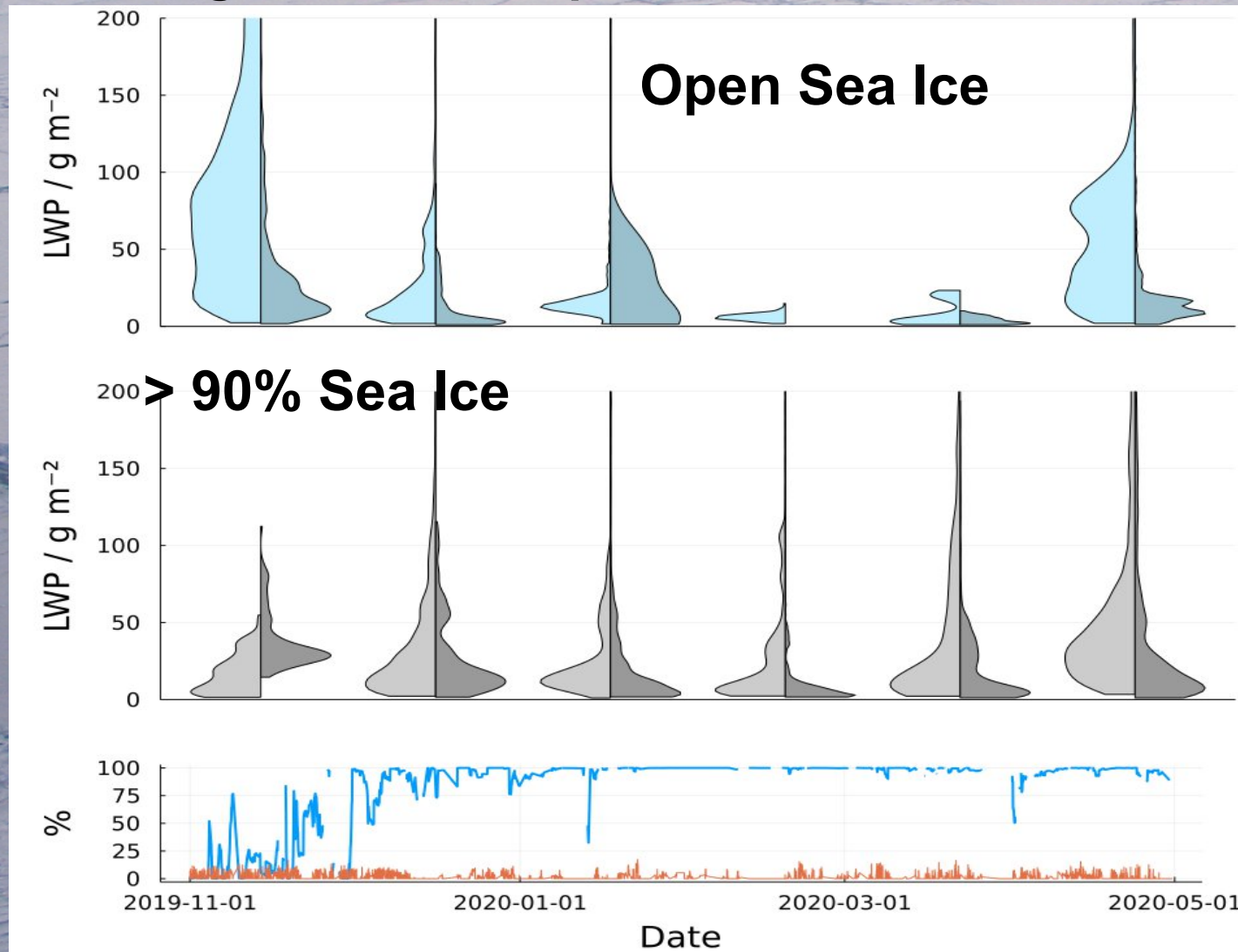
Coupled to the water vapor transport coming from a given direction

SIC AMSR2, WD=359.8



Coupled Clouds → lower Ice Content & lower Cloud base

Monthly variability reveals an entanglement of coupled clouds with sea ice.

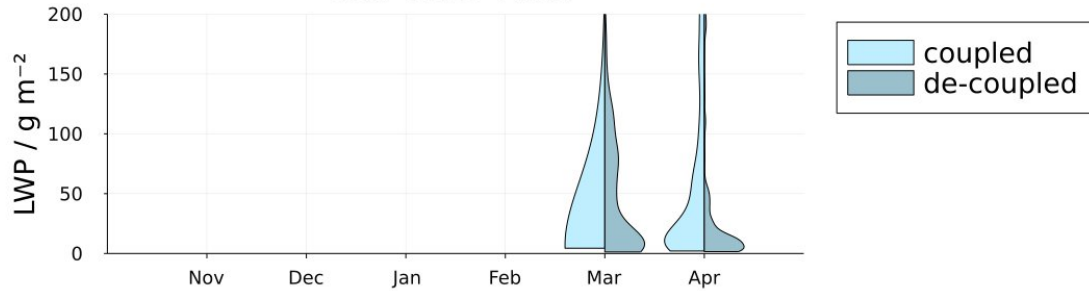




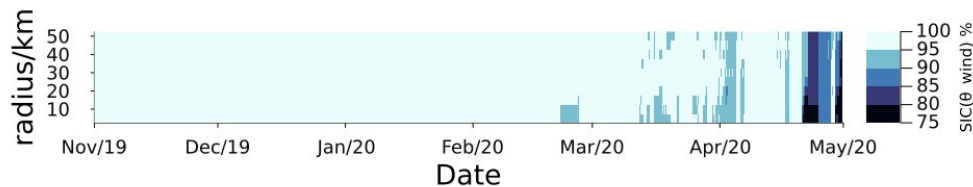
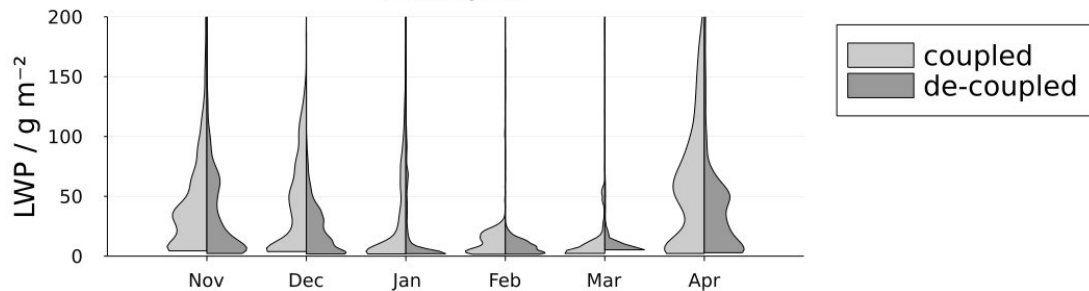
Arctic Amplification: Climate Relevant Atmospheric and Surface Processes and Feedback Mechanisms (AC)³

For the central Arctic visit eLighting
poster: **C52C-08** on Fri. 17th.

15% < SIC < 95%



SIC ≥ 95%



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