

# BEYOND CARBON, FROM ARCTIC FOREST MIGRATION TO CLIMATE MITIGATION: CAN BIOGEOCHEMICAL EFFECTS CHALLENGE ALBEDO-DRIVEN WARMING?

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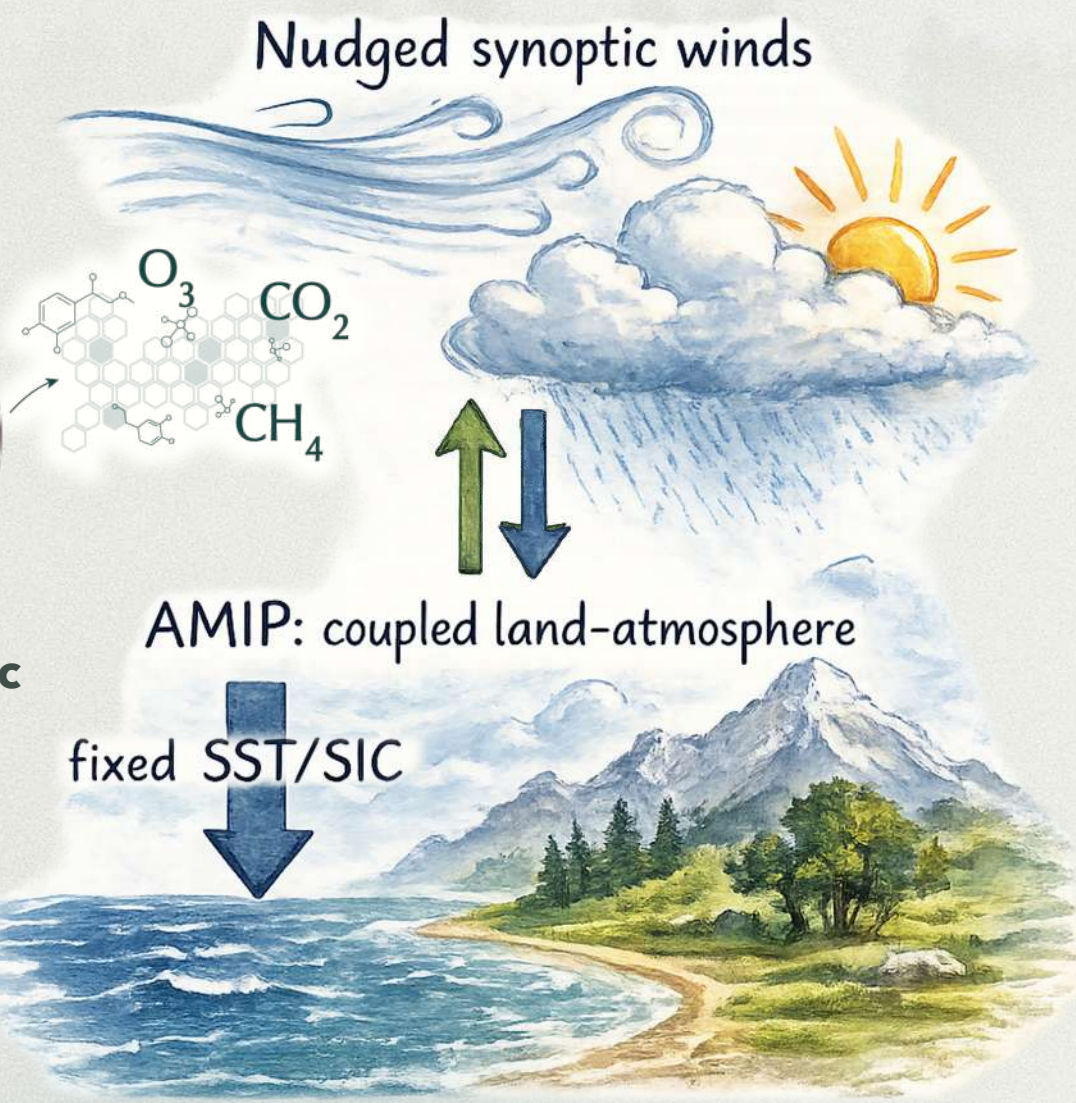
## Simulation setup

- PD ("present day") → 2000
- FUT → 2100 in SSP5-8.5 scenario
- PD climate
- NO LCC ("land cover change")

LCC	CTRL	RADIATIVE FORCING
LCC	LCC_fbVOC	BVOC-RELATED RADIATIVE FORCING

- FUT land cover change, with:
  - PD climate;
  - FUT climate
- like LCC, but with prescribed BVOC emissions to PD conditions

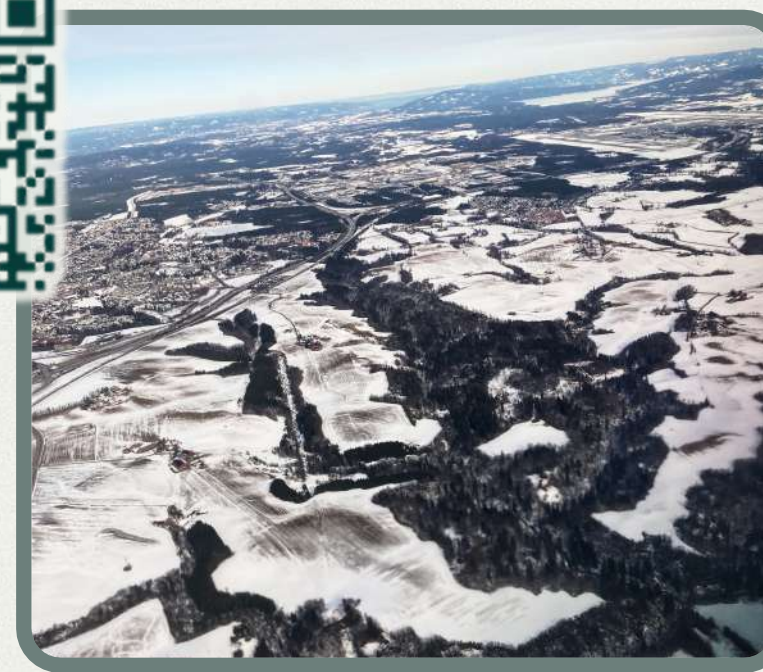
**NorESM**  
 NorESM2.3, including a comprehensive tropospheric and stratospheric chemistry scheme



Why?

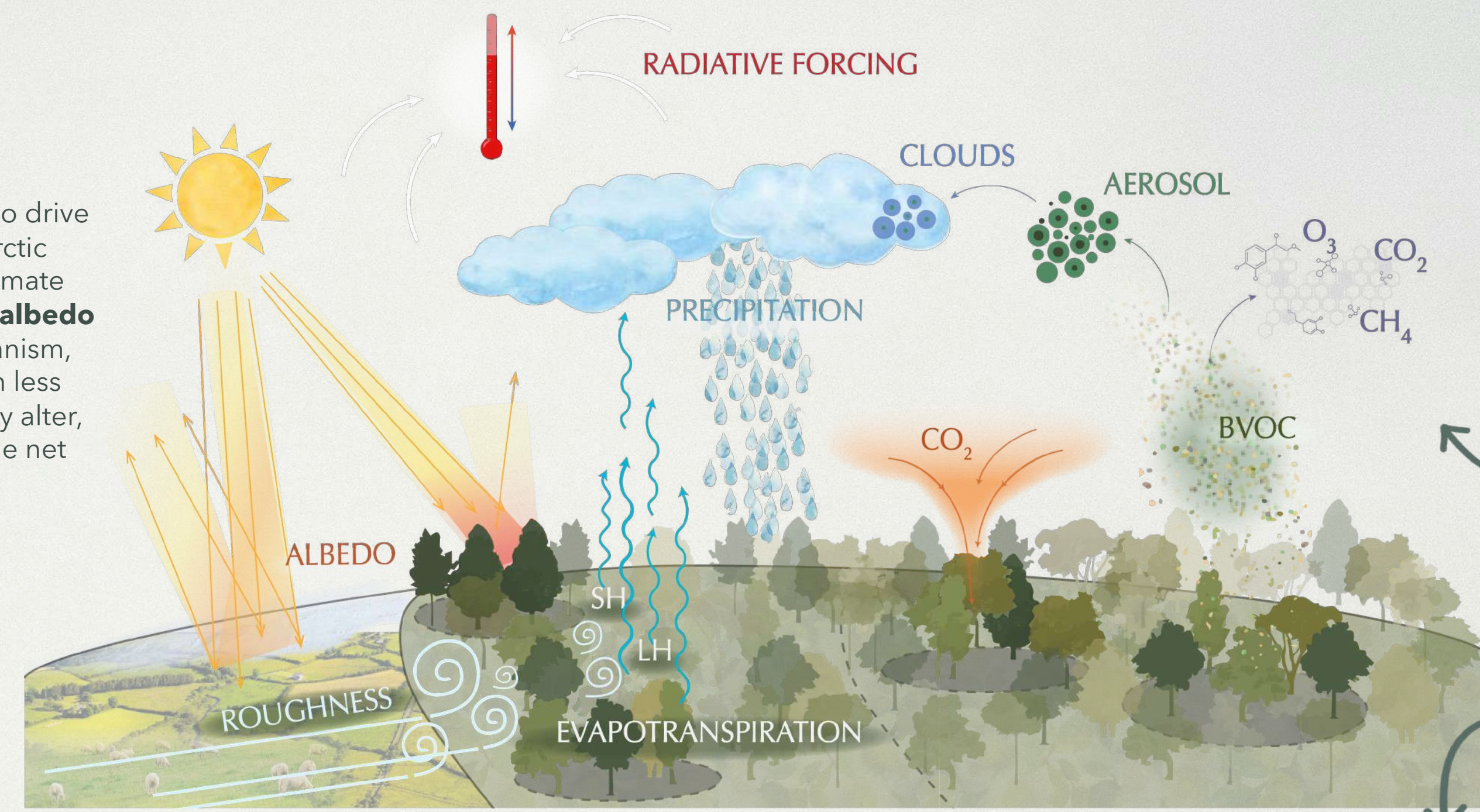
Rising temperatures are expected to drive boreal forests northward into Arctic regions, triggering competing climate feedbacks. While **reduced surface albedo** is a **well-known warming** mechanism, **BVOC-related processes** remain less understood and could substantially alter, **partly offset, or even amplify** the net climate response.

Abstract



FRESH NEW RESULTS FROM YESTERDAY!

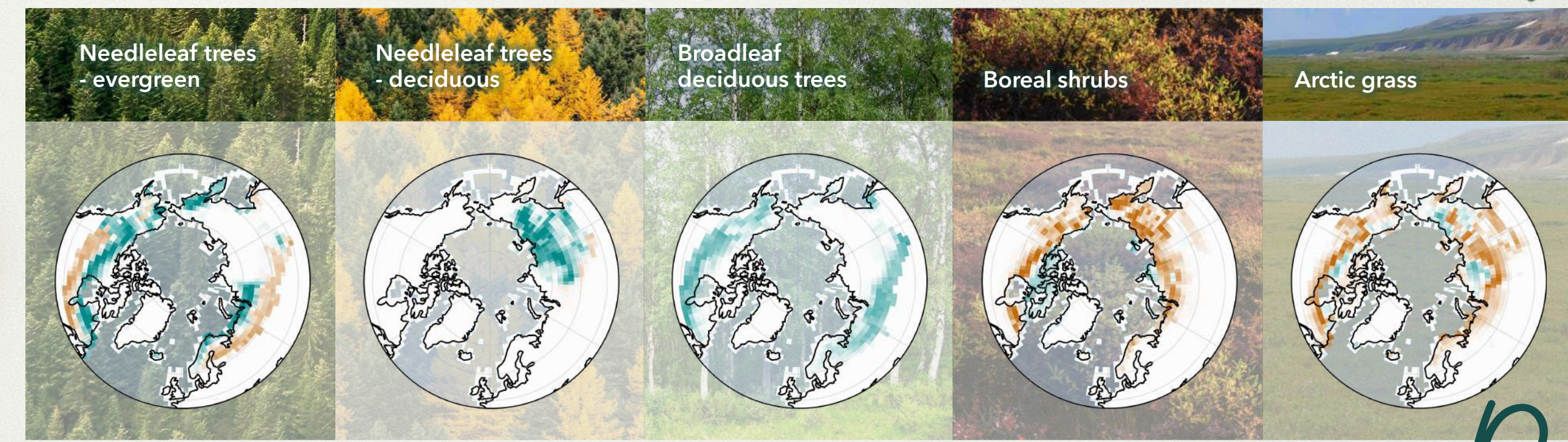
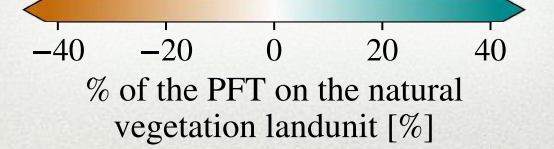
Let's discuss & keep in touch!



Climatic biogeophysical & biogeochemical impacts of boreal forest expansion

Boreal vegetation change

processed data from the dynamic vegetation model LPJ-GUESS forced with GFDL-ESM4 atmospheric forcing in the SSP5-8.5 scenario (Tang et al., 2023).



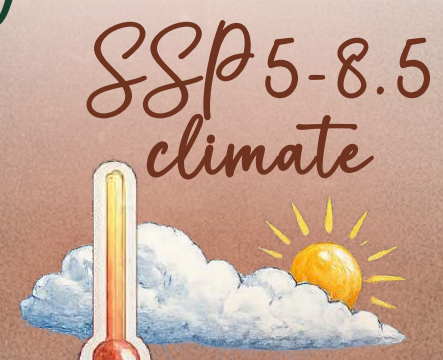
Results



°CICERO



land cover change



land cover change (LCC) + climate change

weighted gridcell values over 50°N

