

Drivers of Sea Ice Loss

AOS 801 - Lecture 11

Till Wagner, Oct 12 2022

Recap

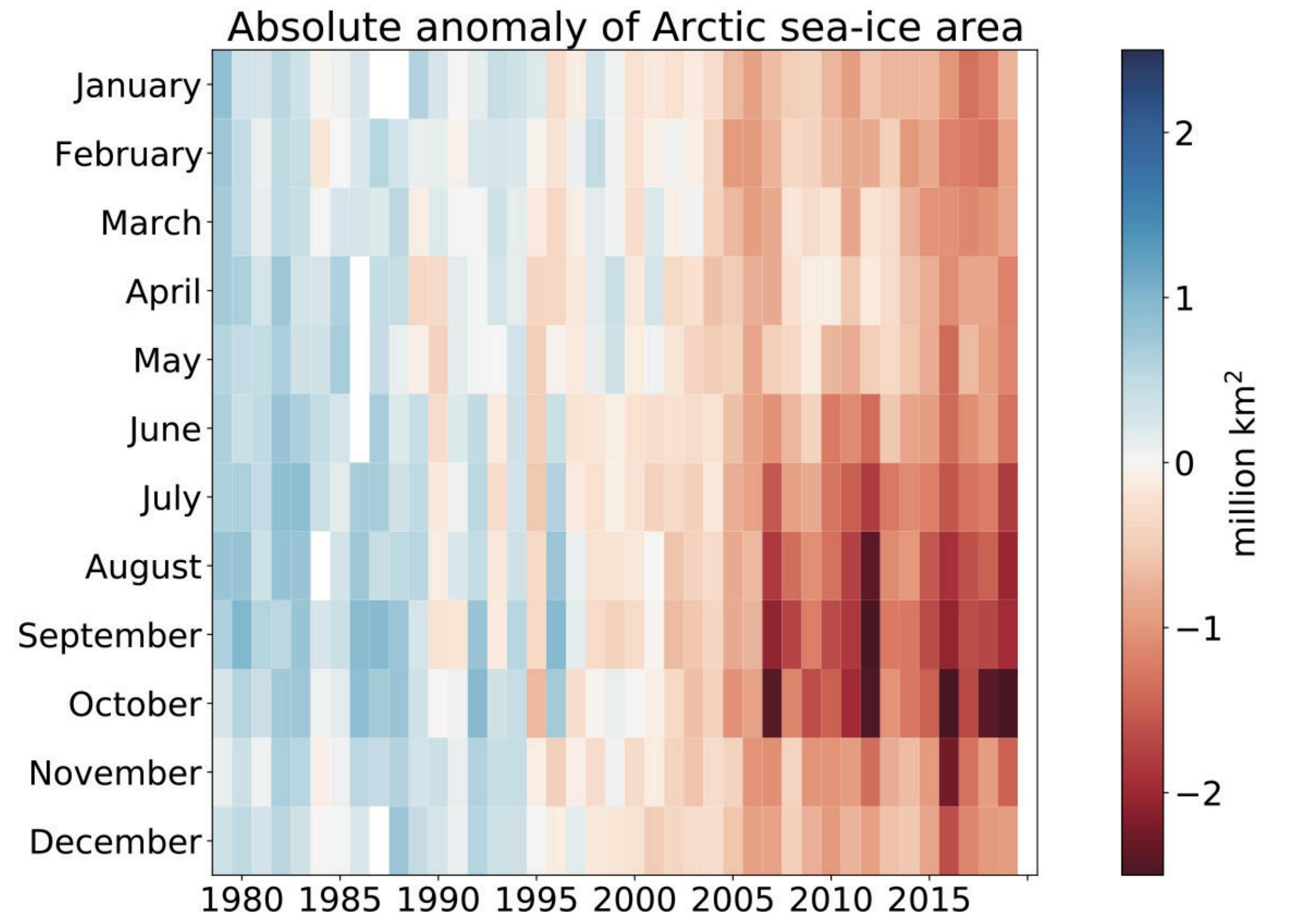
Sea Ice so far

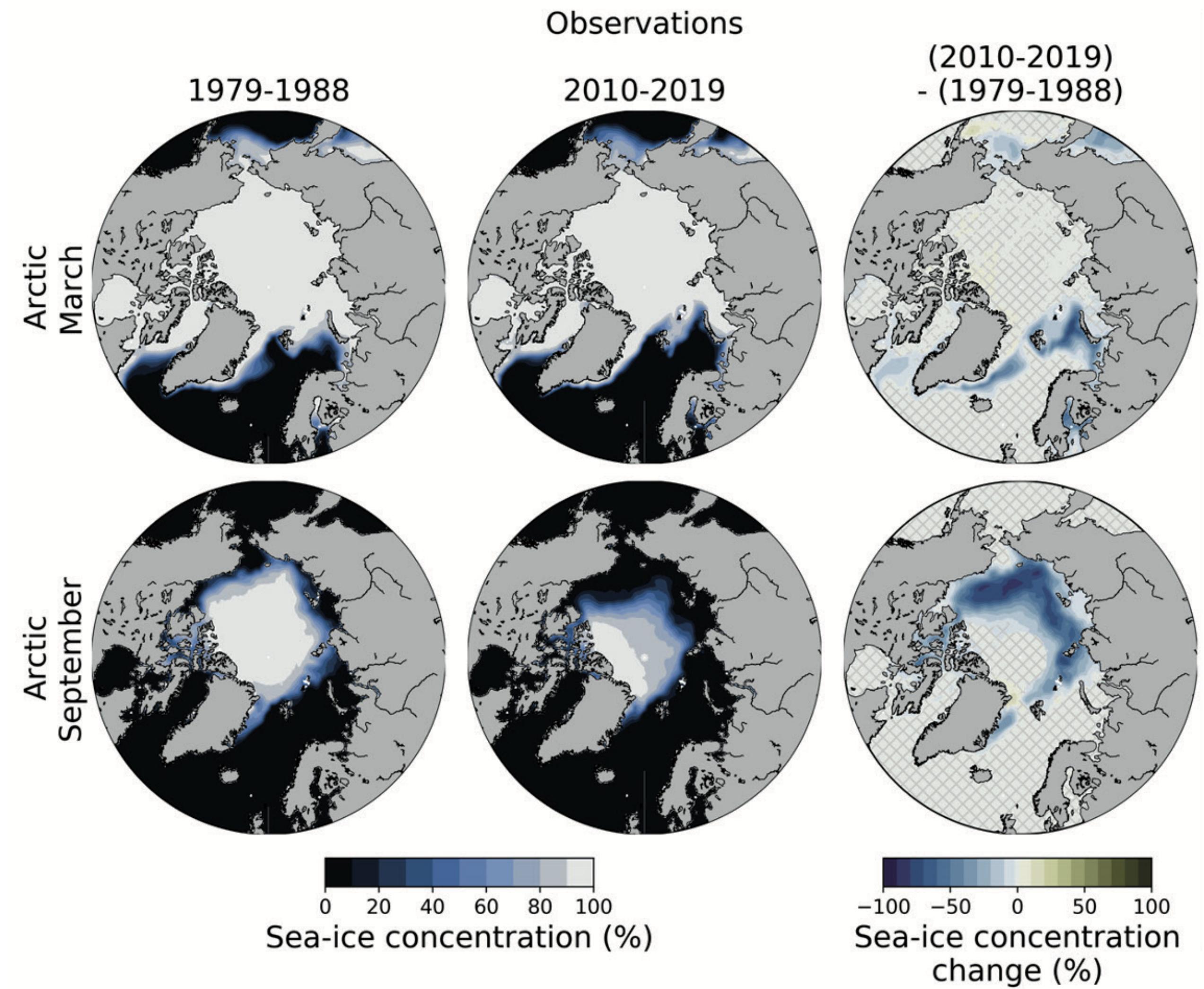
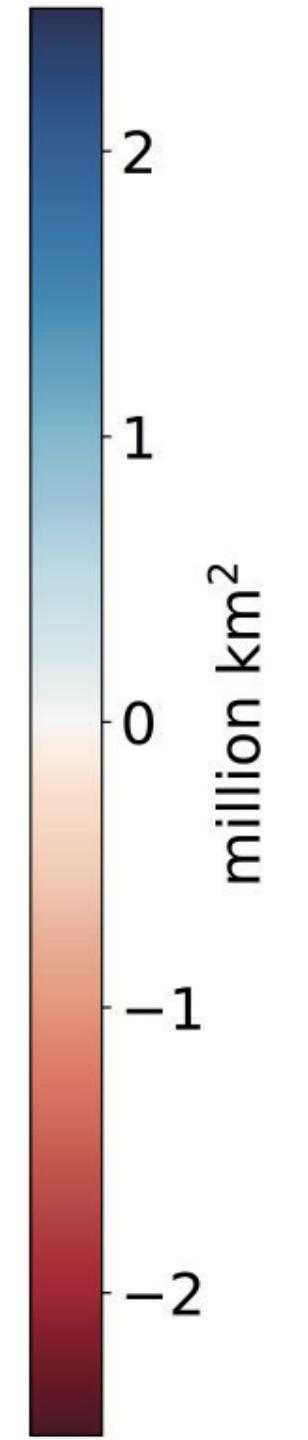
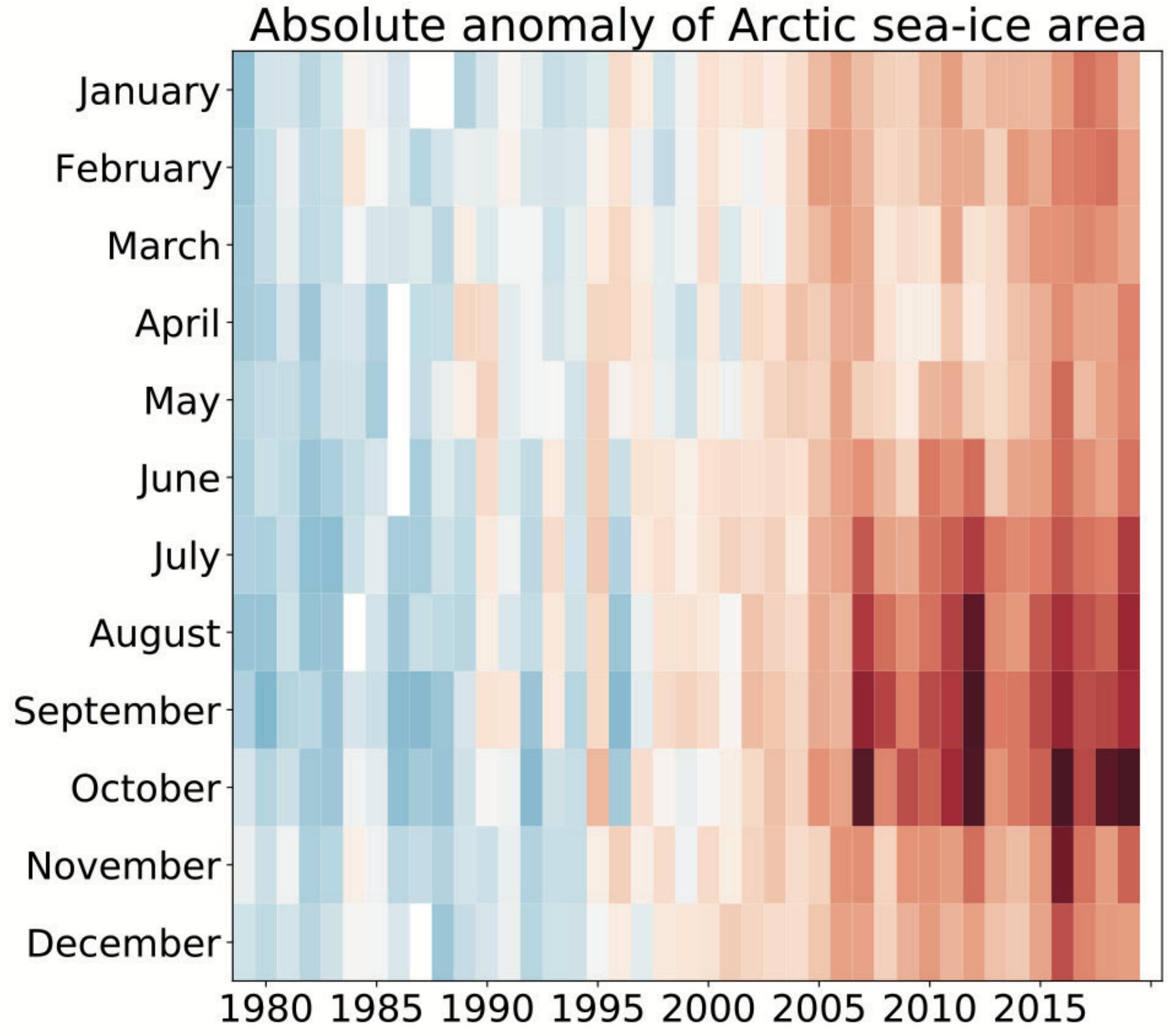
- Sea ice thermodynamics and dynamics
- How to represent sea ice in idealized and comprehensive models
- Large scale climate-sea ice interactions (EBMs, Sea Ice “Tipping Points”)

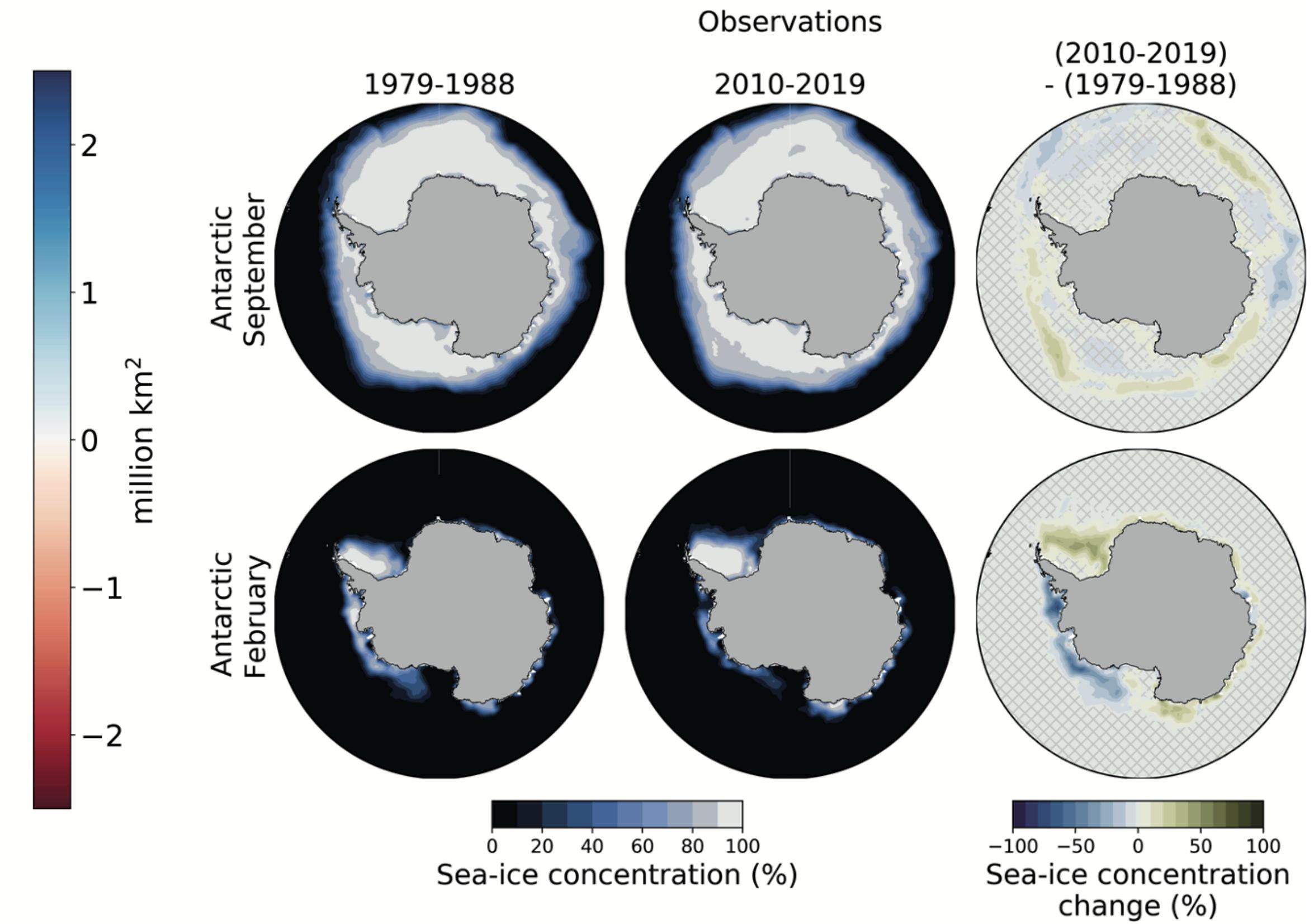
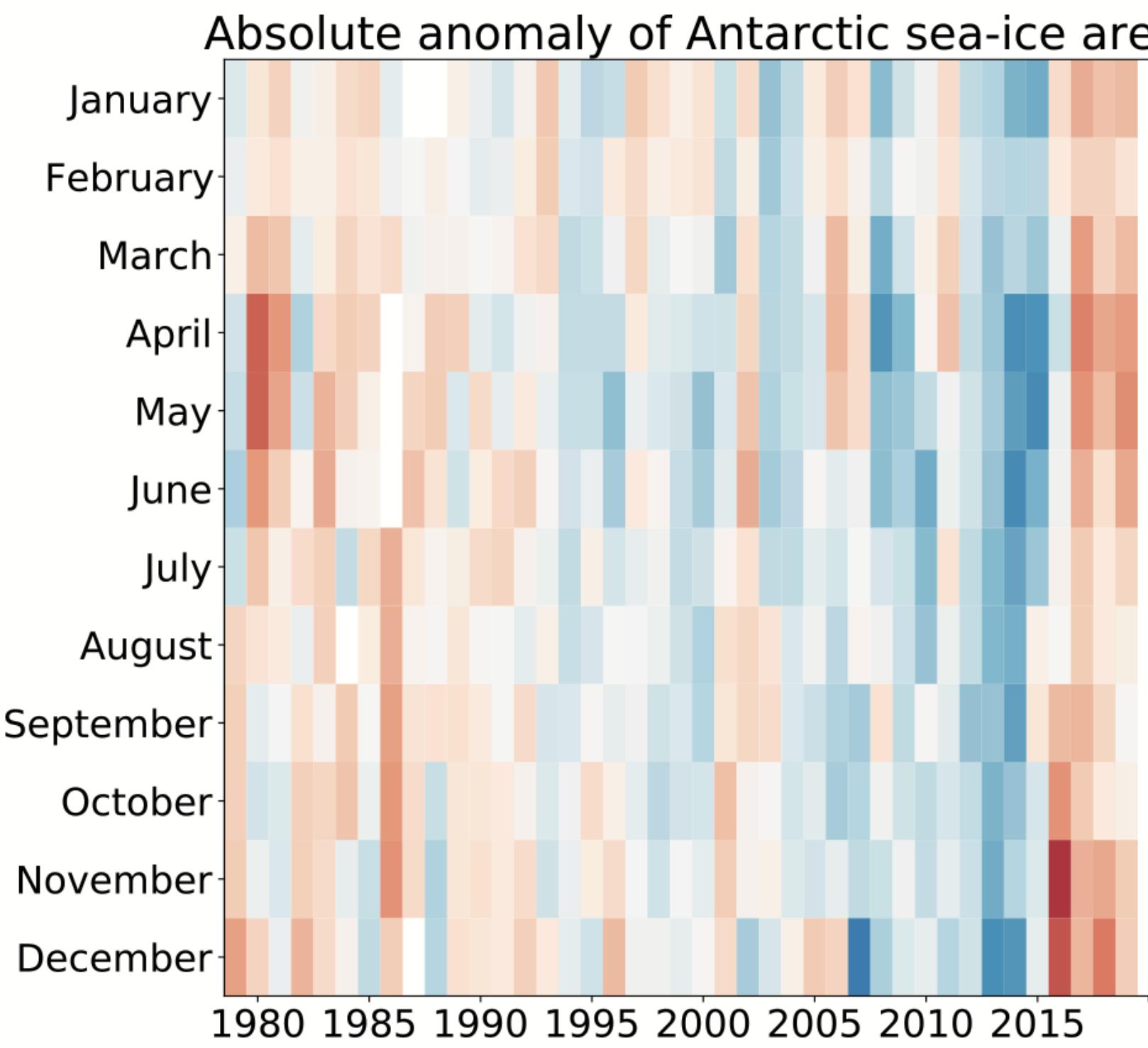
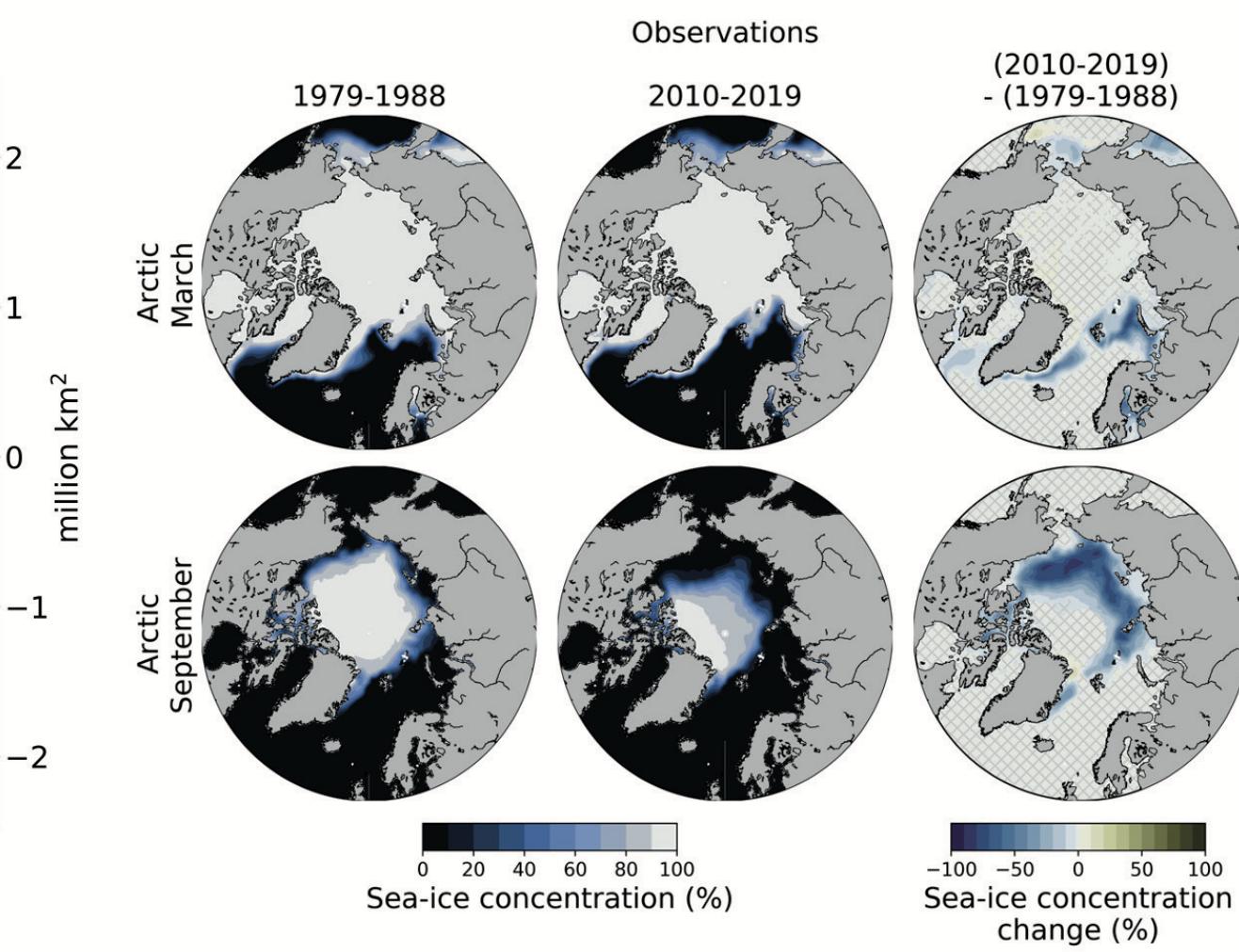
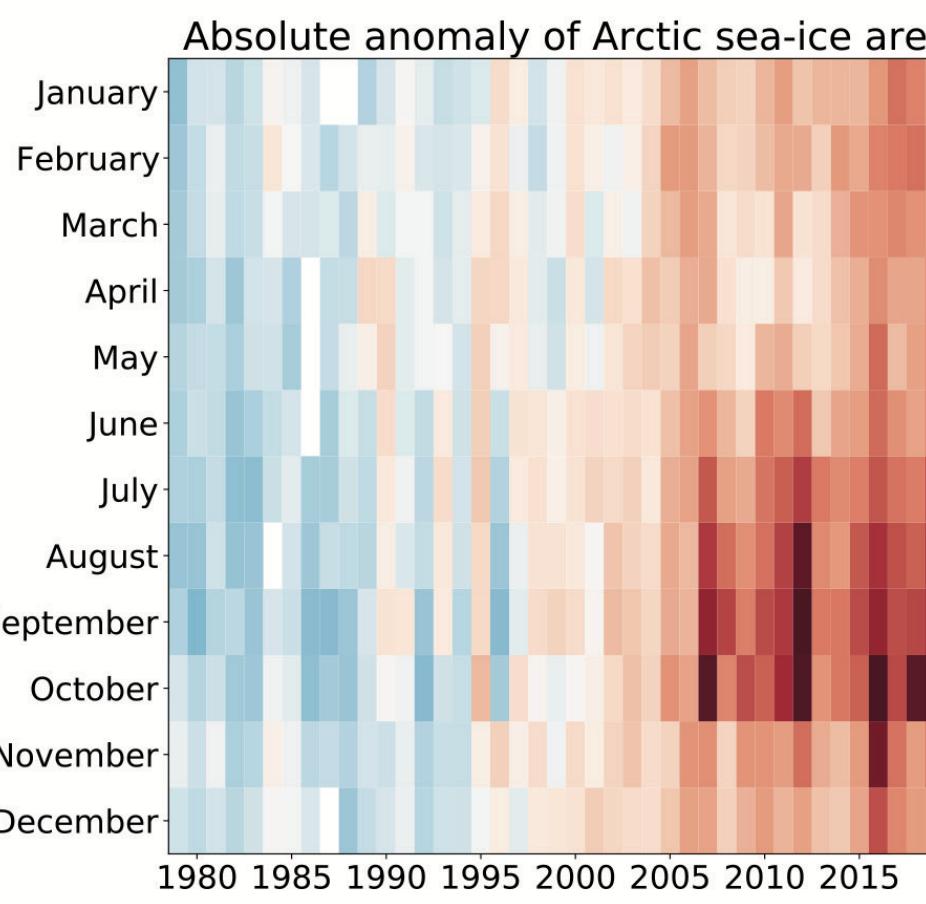
Today

- Arctic sea ice loss in observations and comprehensive models
- Past and projected
- Drivers of sea ice loss

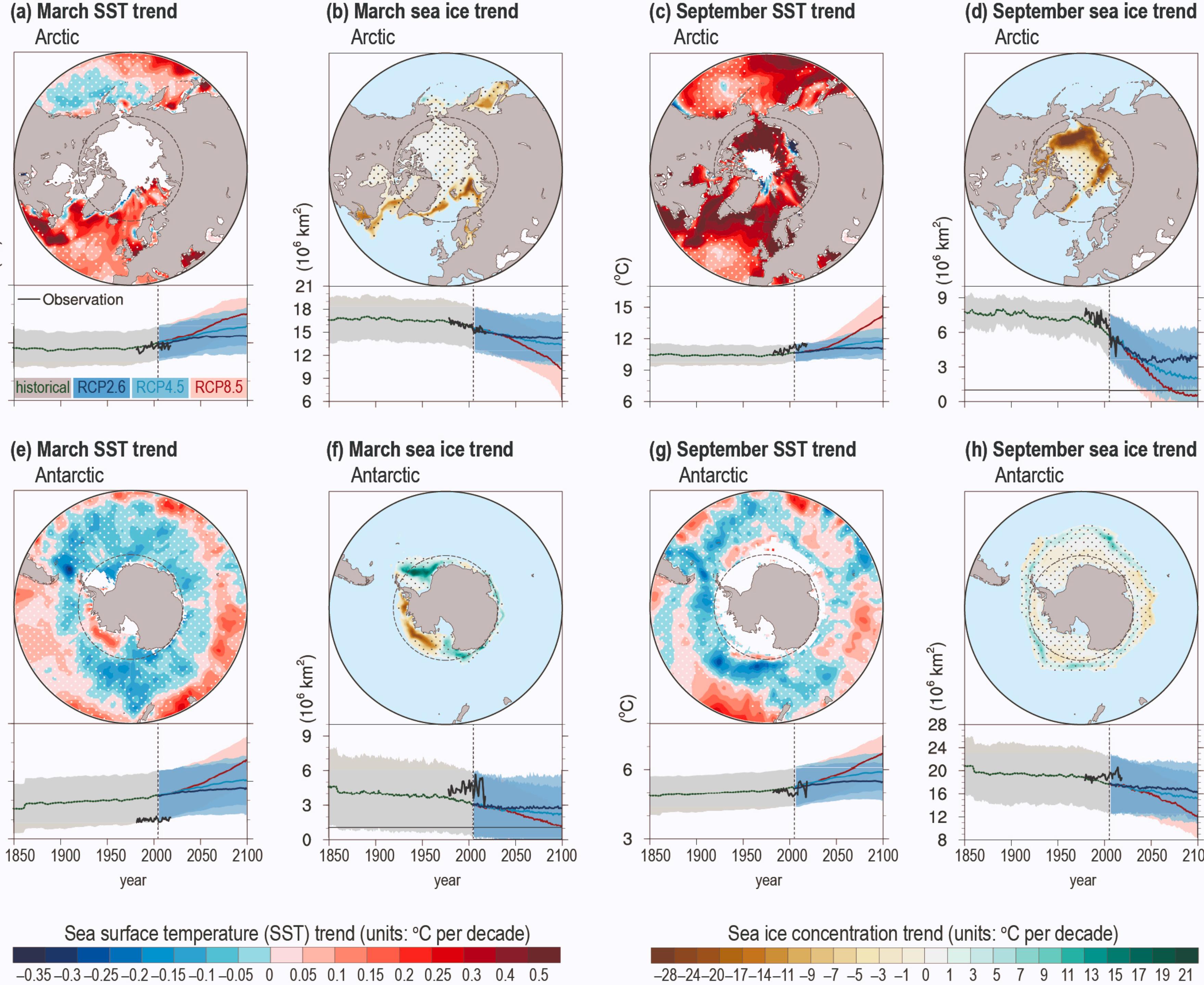
Change So Far







What is coming?



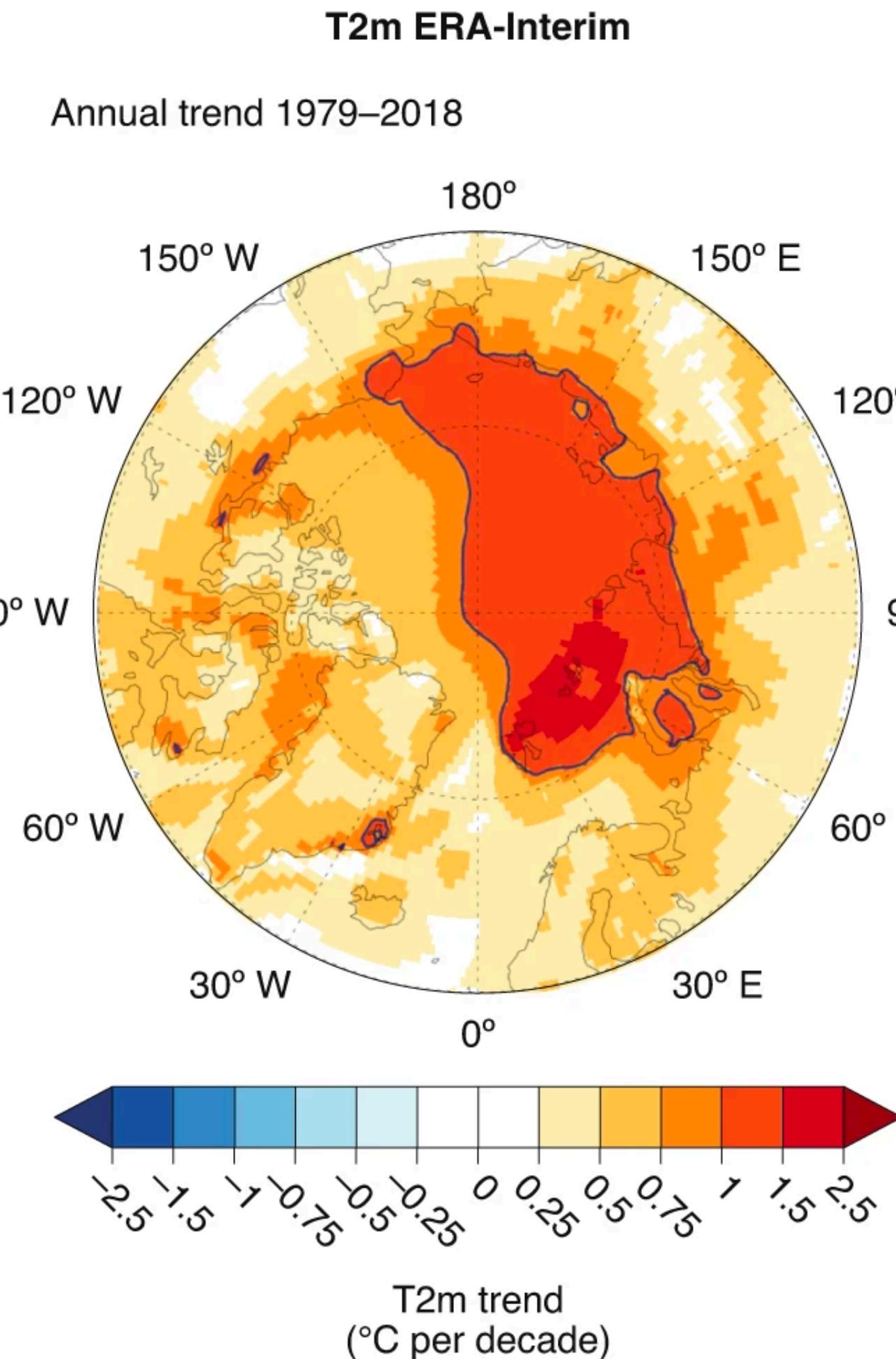
Cause and Effect

2 Questions:

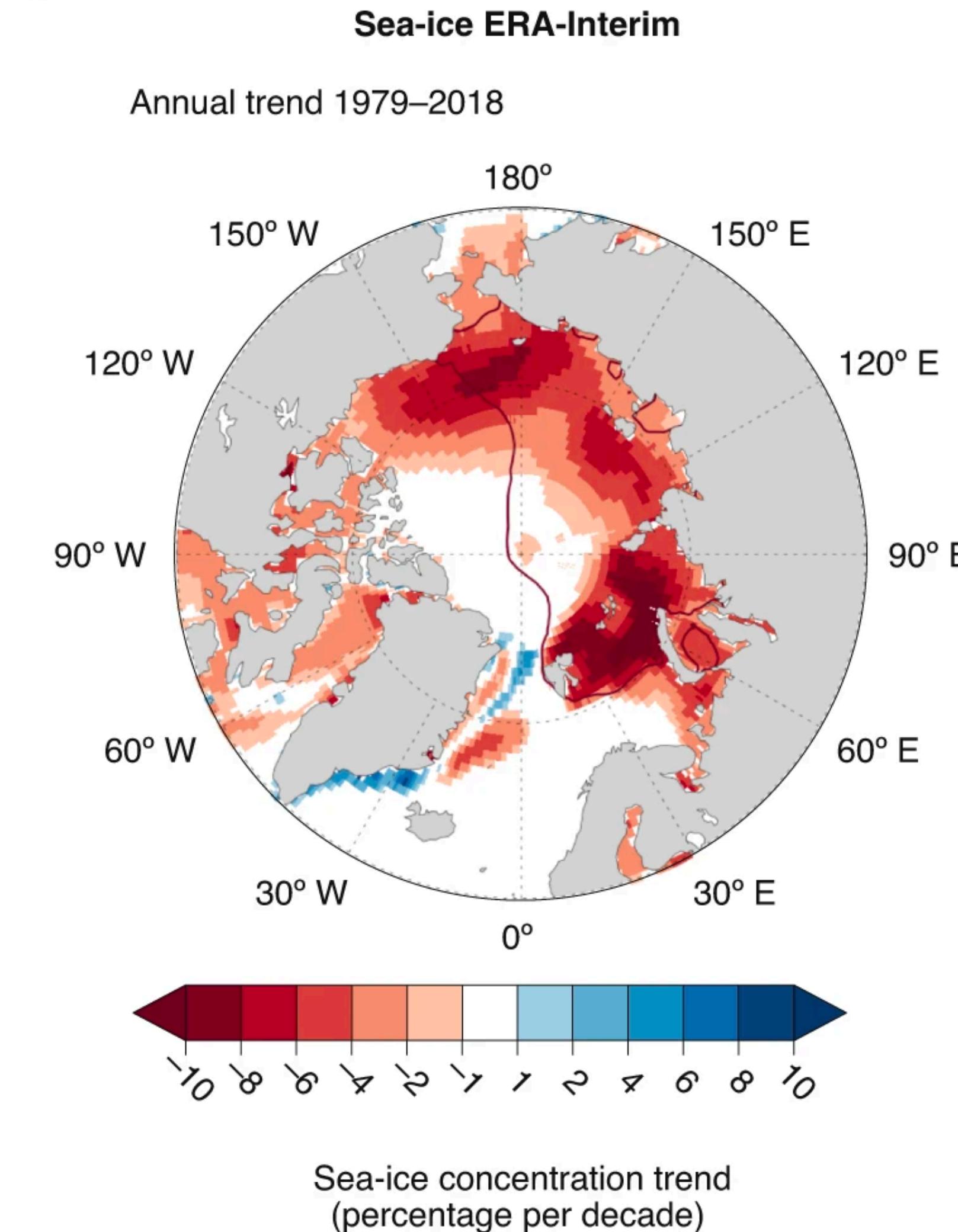
- What drives sea ice loss ? Attribution issue
- What is the impact of sea ice loss on the Arctic climate and beyond ?

The role of atmospheric warming

a



b



Atmospheric Example - impact of cyclones on sea ice

A Cyclone-Centered Perspective on the Drivers of Asymmetric Patterns in the Atmosphere and Sea Ice during Arctic Cyclones

Clancy et al, J Climate (2022)

