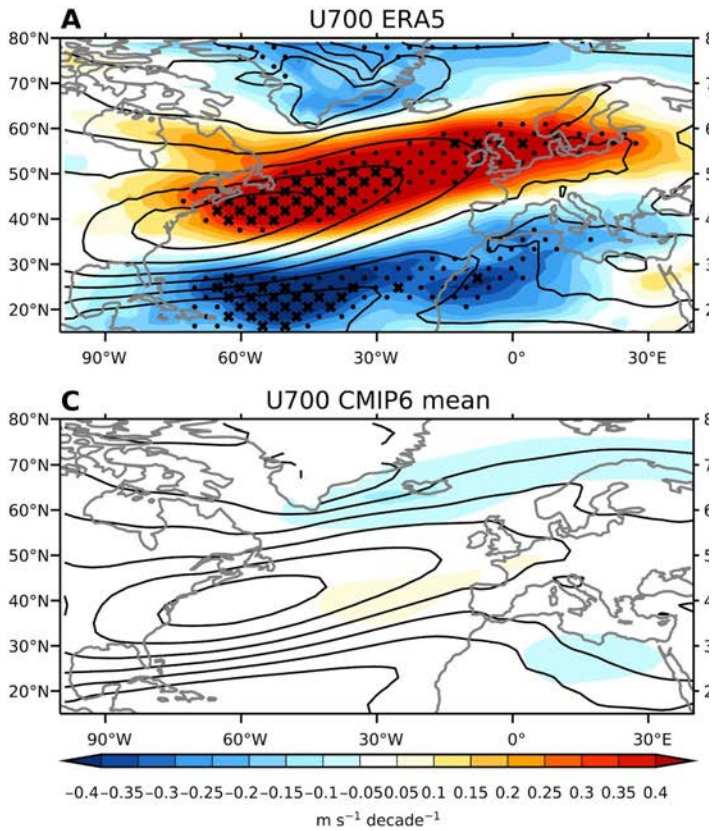
Session C-2
North Atlantic atmosphere and ocean circulation

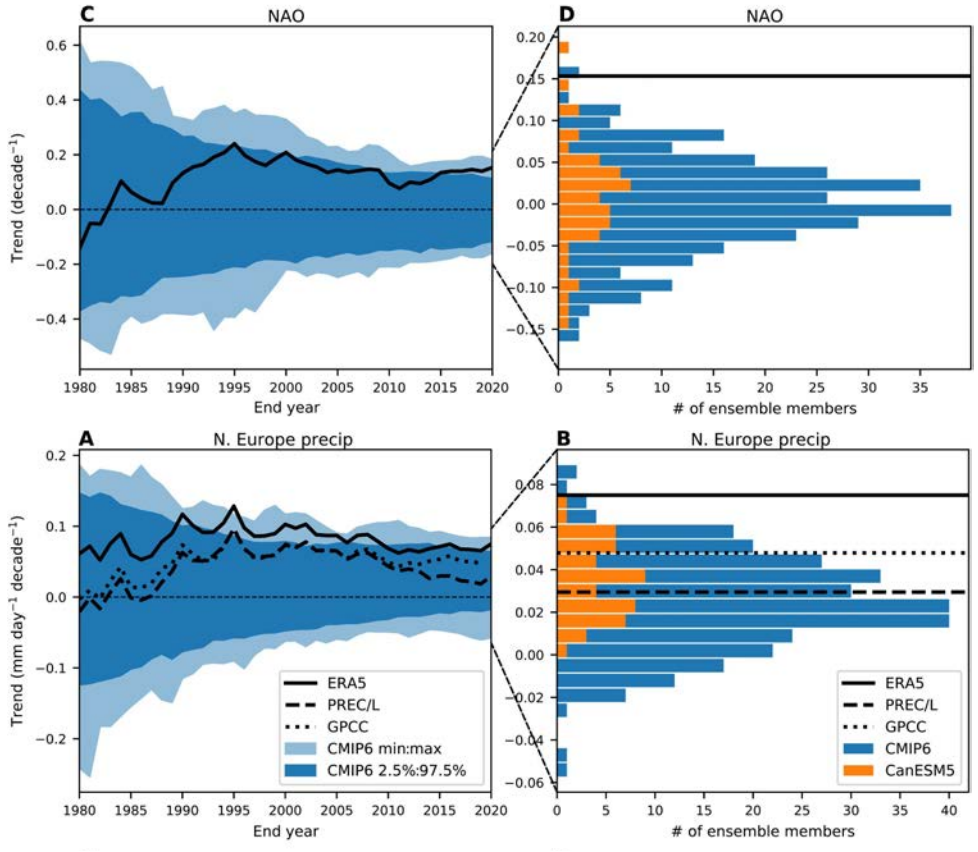
Challenges associated with understanding changes and projections in the North Atlantic

- The response of North Atlantic atmospheric circulation to increases in greenhouse gas concentrations is still highly uncertain.
- A large discrepancy has been reported between observed and modelled changes in the atmospheric circulation in the North Atlantic area.
- In order to gain confidence in their projections, it is essential to evaluate climate models relative to observations.
- It can be difficult to compare circulation trends in models and observations because internal variability plays a large role on multidecadal timescales -> Large ensembles could help.

Model-observation discrepancy

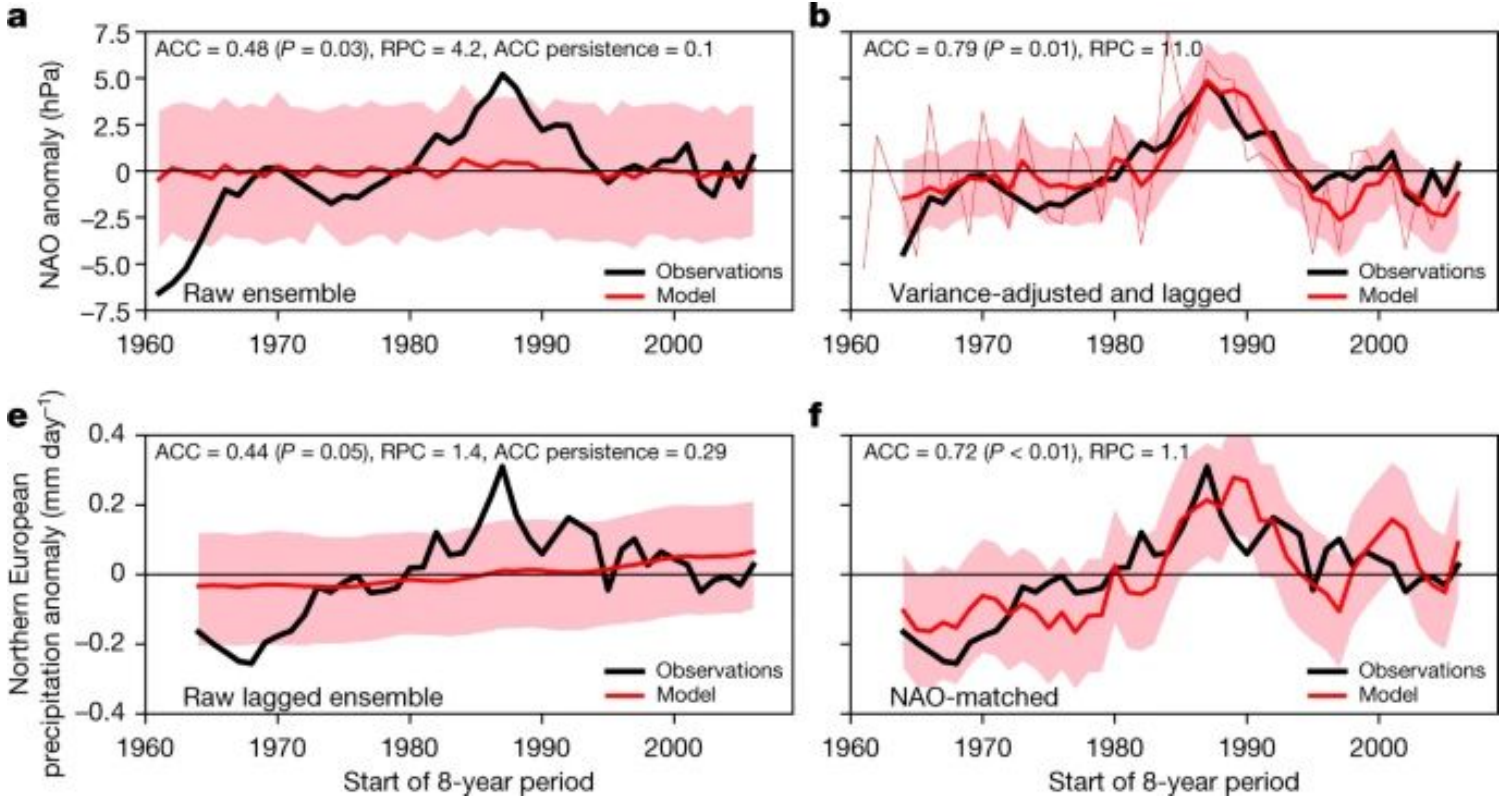


1951-2020 winter trends



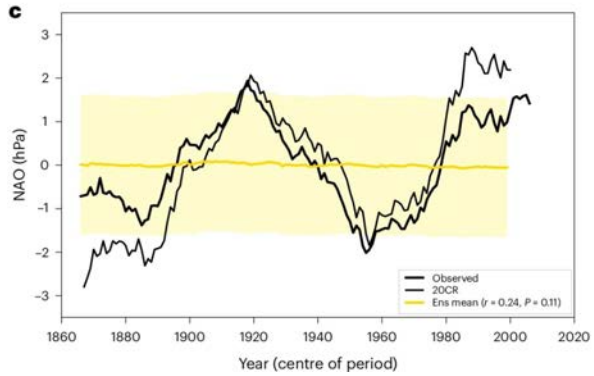
Blackport and Fyfe (2022)

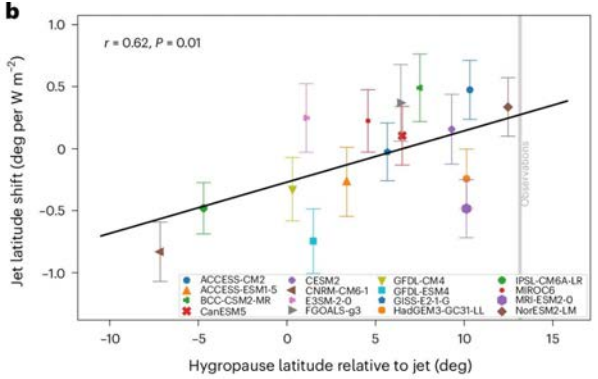
Small Signal-to-noise in North Atlantic region

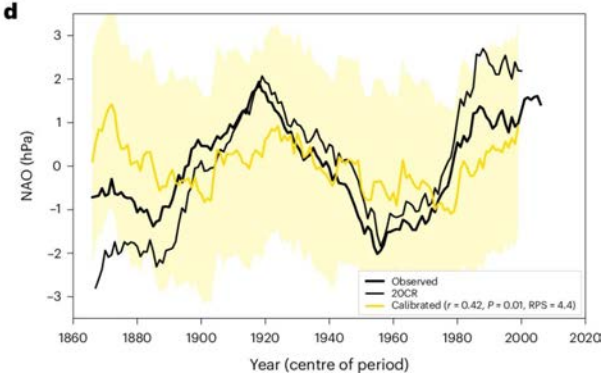


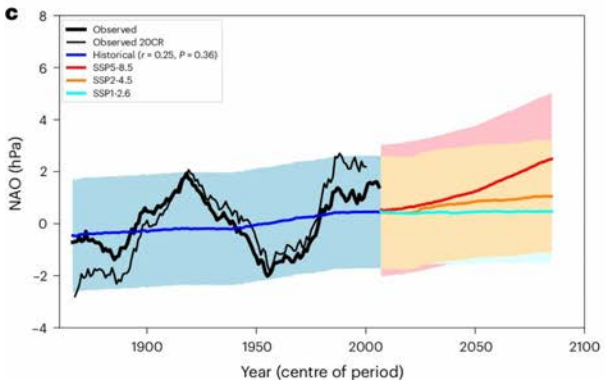
Smith et al (2020)

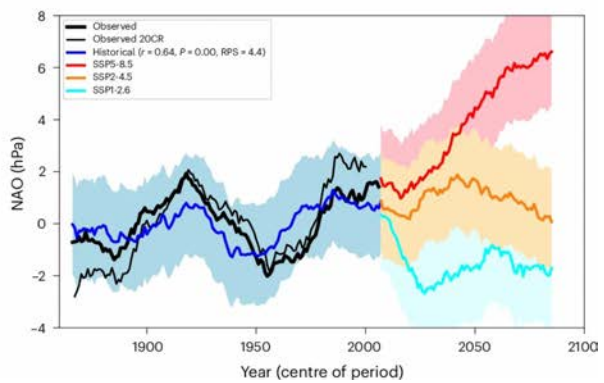
Exploiting model differences to improve projections











Smith et al (2025)

Session C-2: North Atlantic atmosphere and ocean circulation

Part I

11:35 | Chaim Garfinkel: The response of the North Atlantic atmospheric and oceanic circulation to external forcings: understanding intermodel spread (community paper)

11.50 | Shoshiro Minobe: Spatiotemporal structures of forced response revealed by a novel analysis approach designed for LESFMIP

12.05 | Sara Bennie: Do externally forced atmospheric trends resemble modes of internal variability?

12.20 | David Avisar: Revisiting the historical Drying of the Mediterranean in the LESFMIP Simulations

Part II

14:00 | Rachel Wu: Stratosphere-troposphere coupling in LESFMIP (community paper)

14:15 | Ales Kuchar: Understanding historical changes in the Northern Hemisphere stratospheric polar vortex: insights from the Large Ensemble Single Forcing Model Intercomparison Project

14:30 | Rei Chemke (virtual): Targeted large-ensemble simulations for elucidating model-reanalysis discrepancies in storm track trends

14:45 | Discussion