

Framework 5 to framework 6

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- MPI hindcast status
- Coupled model biases
- Ensemble member initialisation and simulation of errors
- Potential NAO predictability

Hindcast status

- 1969-2001 period completed
- Ocean and Atmospheric data archived
- Preparing a manuscript on the MPI analysis scheme and hindcast results

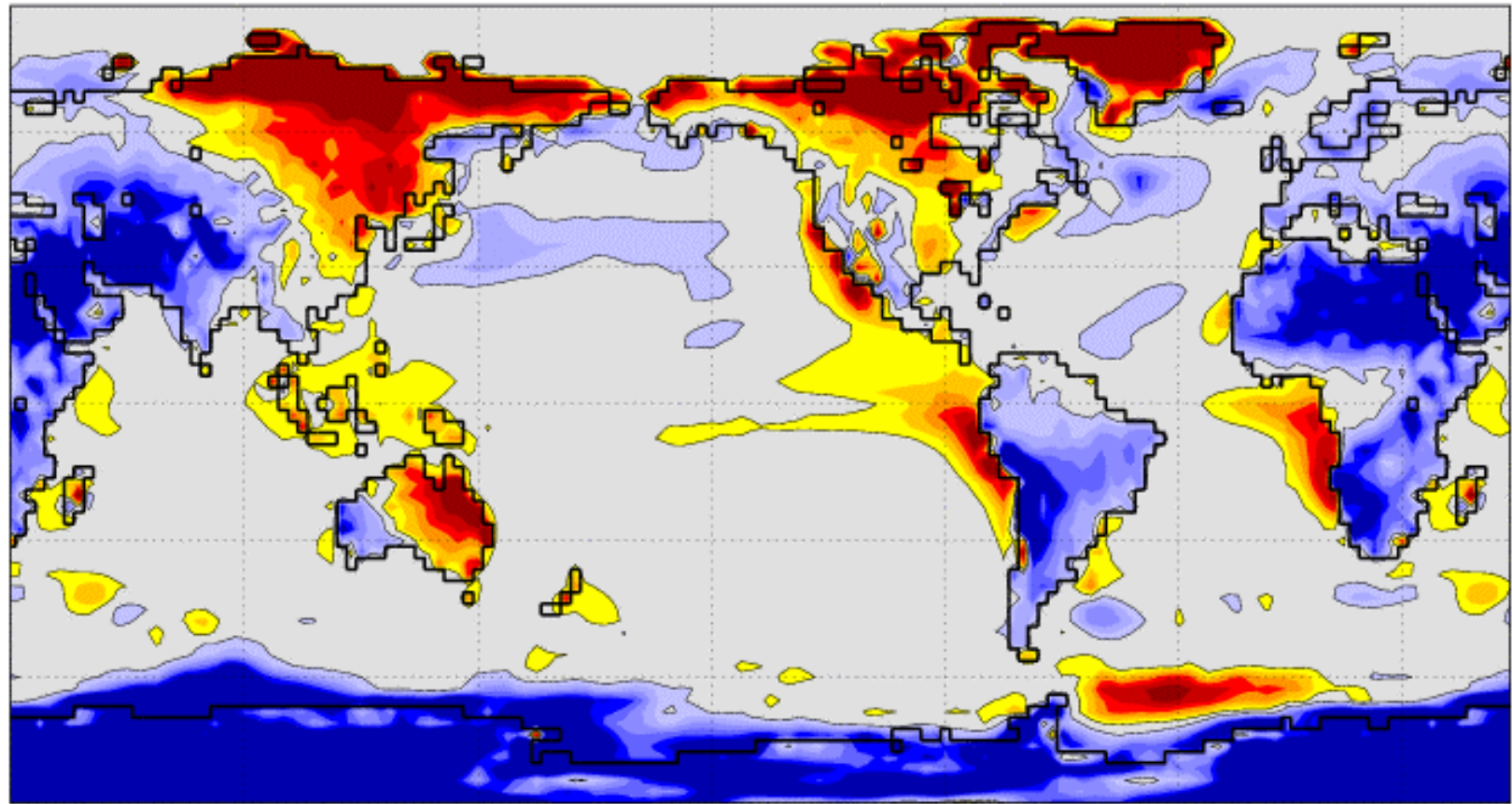
Coupled model biases

Surface Temperature [°C]

Bias: EXP(UKMO) regarding ERA-40 reanalysis

Forecast start month and years: February / 1959-2001

FC period: months 4-6 (MJJ), ens: 0-8



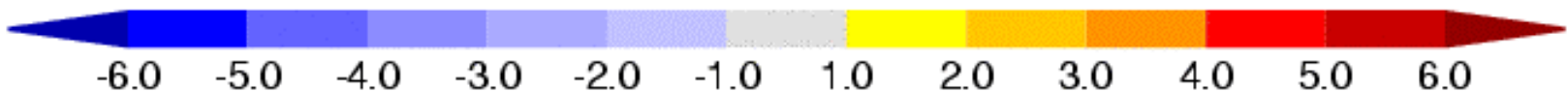
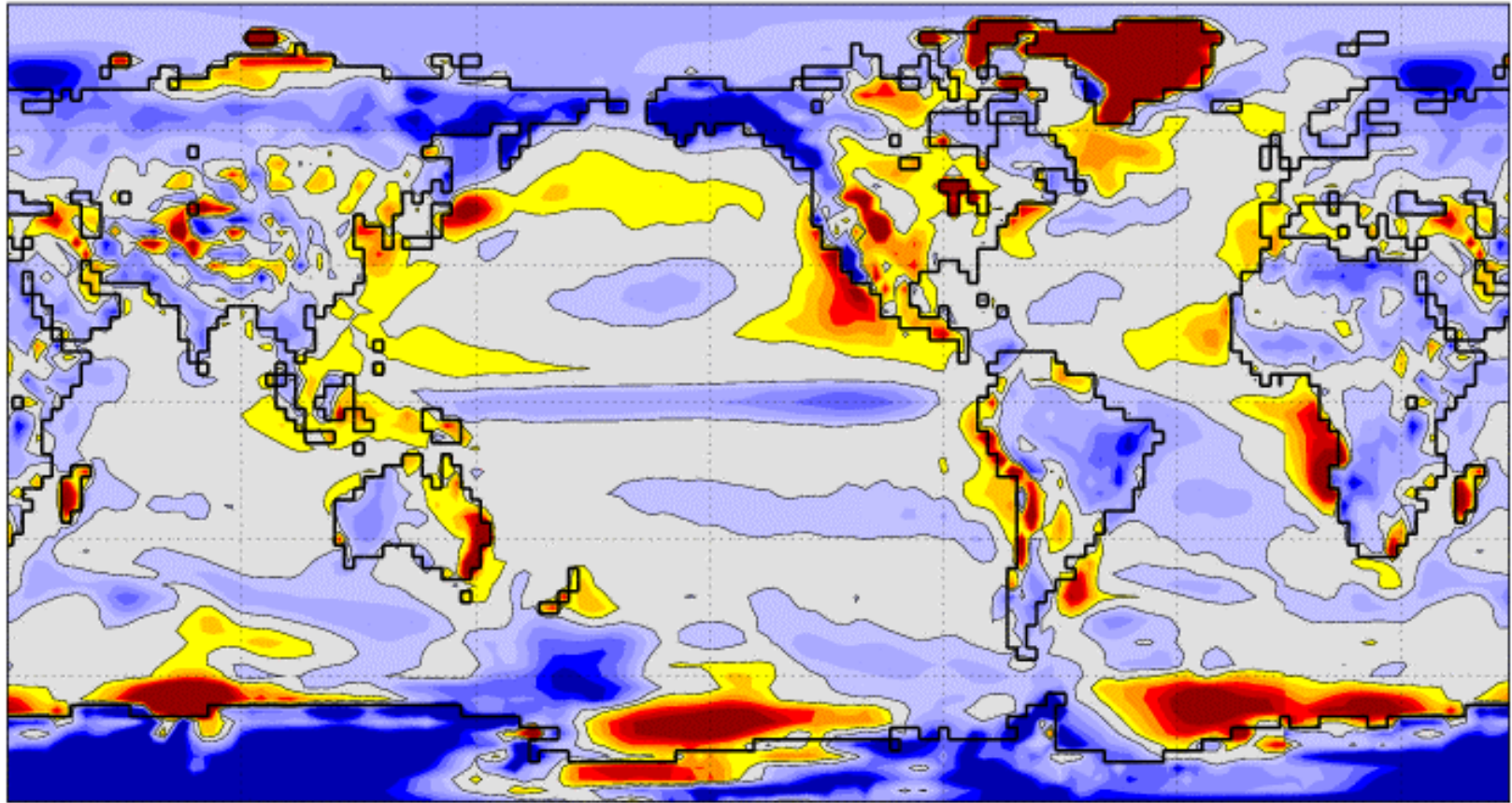
Coupled model biases

Surface Temperature [°C]

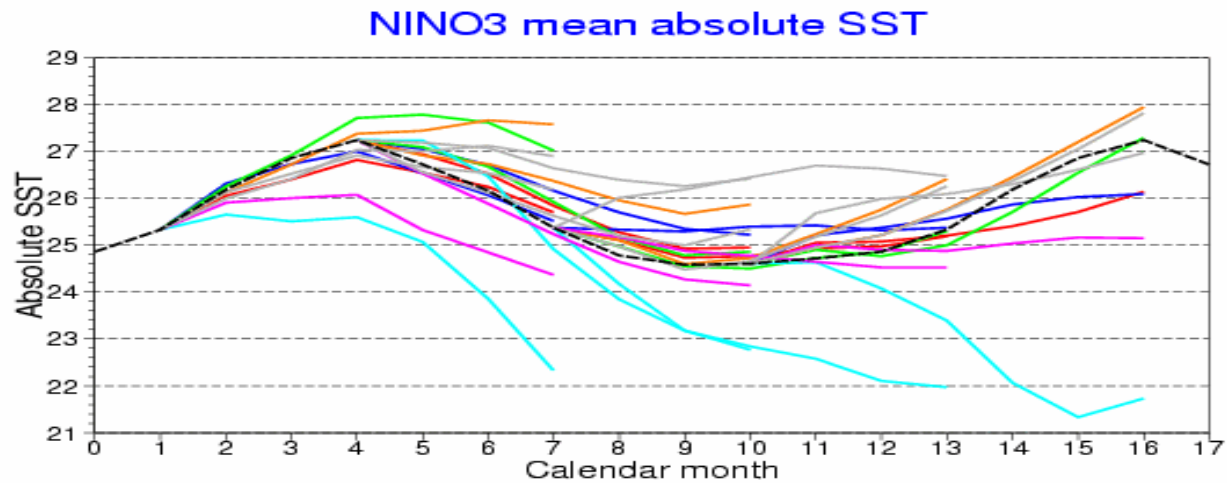
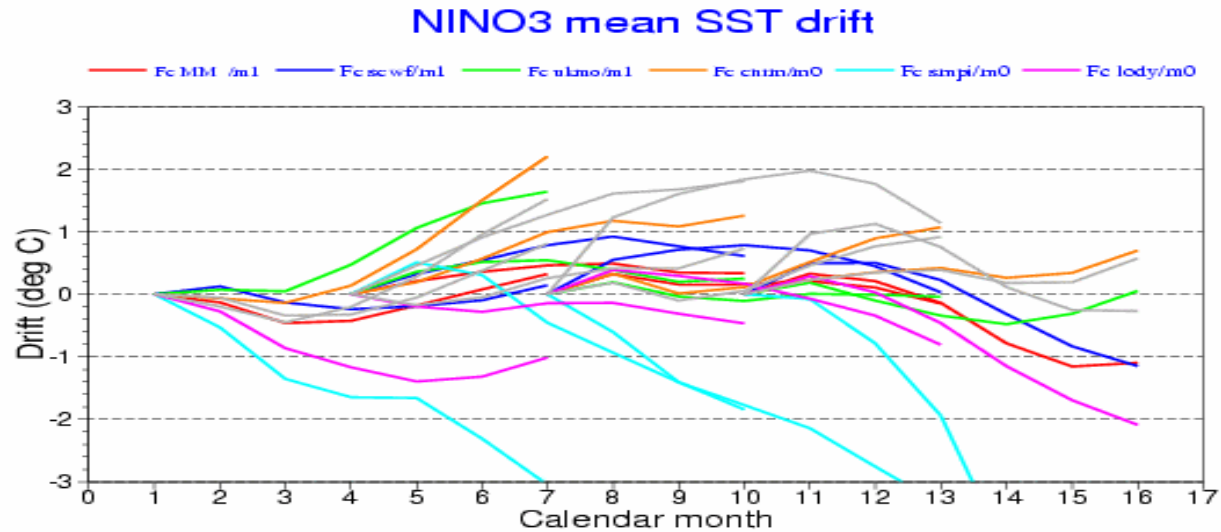
Bias: EXP(MPI) regarding ERA-40 reanalysis

Forecast start month and years: February / 1969-2001

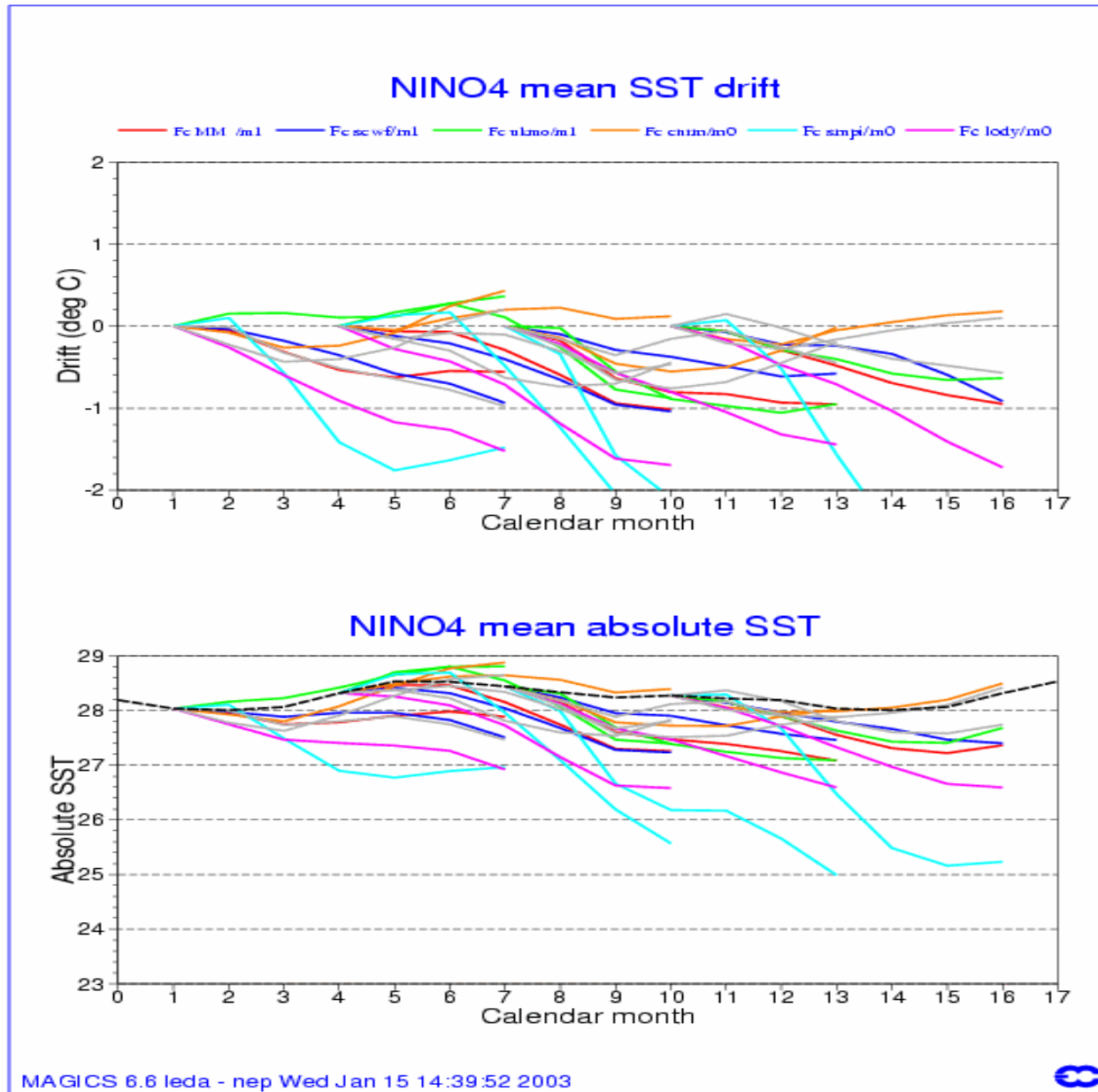
FC period: months 4-6 (MJJ), ens: 0-8



Coupled model biases



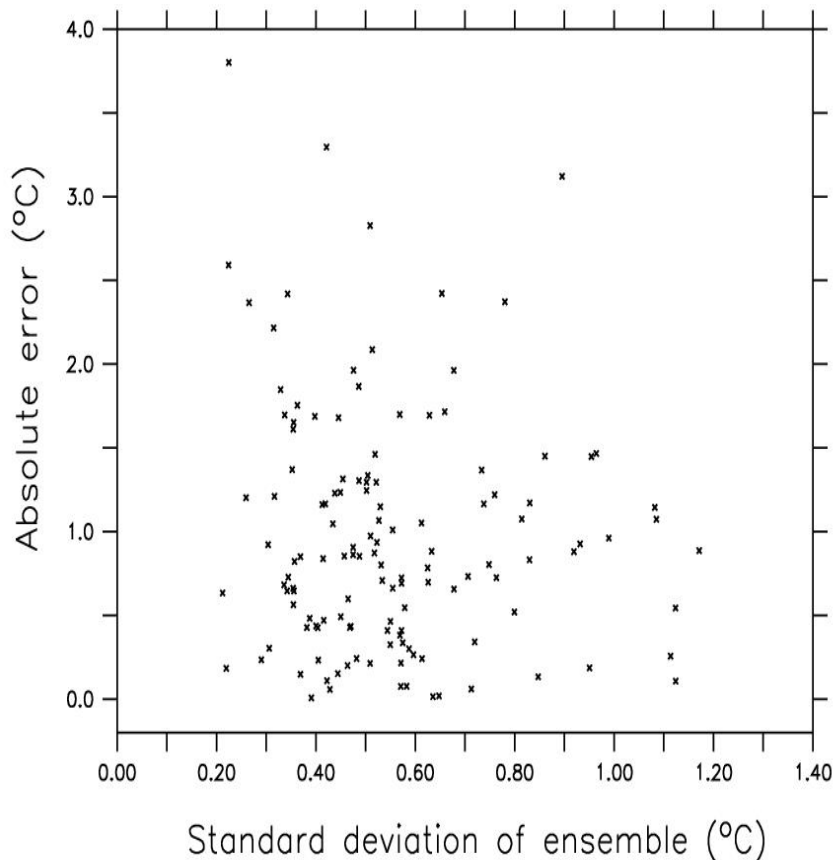
Coupled model biases



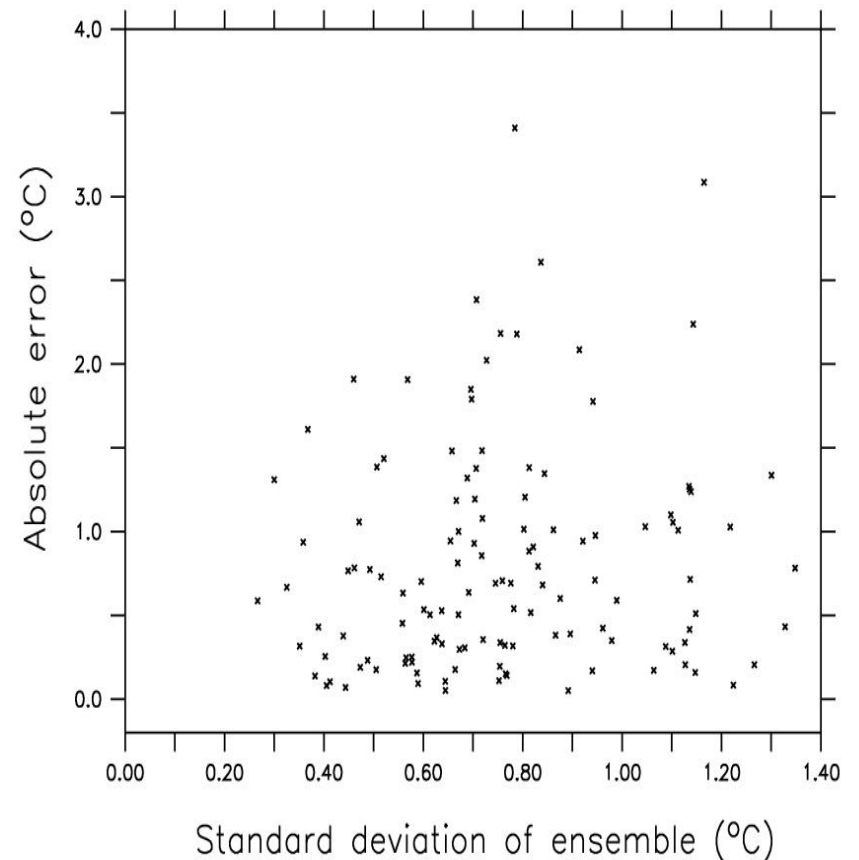
Ensemble member initialisation and simulation of errors

- Is our current method working well?
- Other methods?

Nino3 Ensemble spread Vs Error, lead 3, 1969–2001



Nino3 Ensemble spread Vs Error, lead 6, 1969–2001



Potential NAO predictability

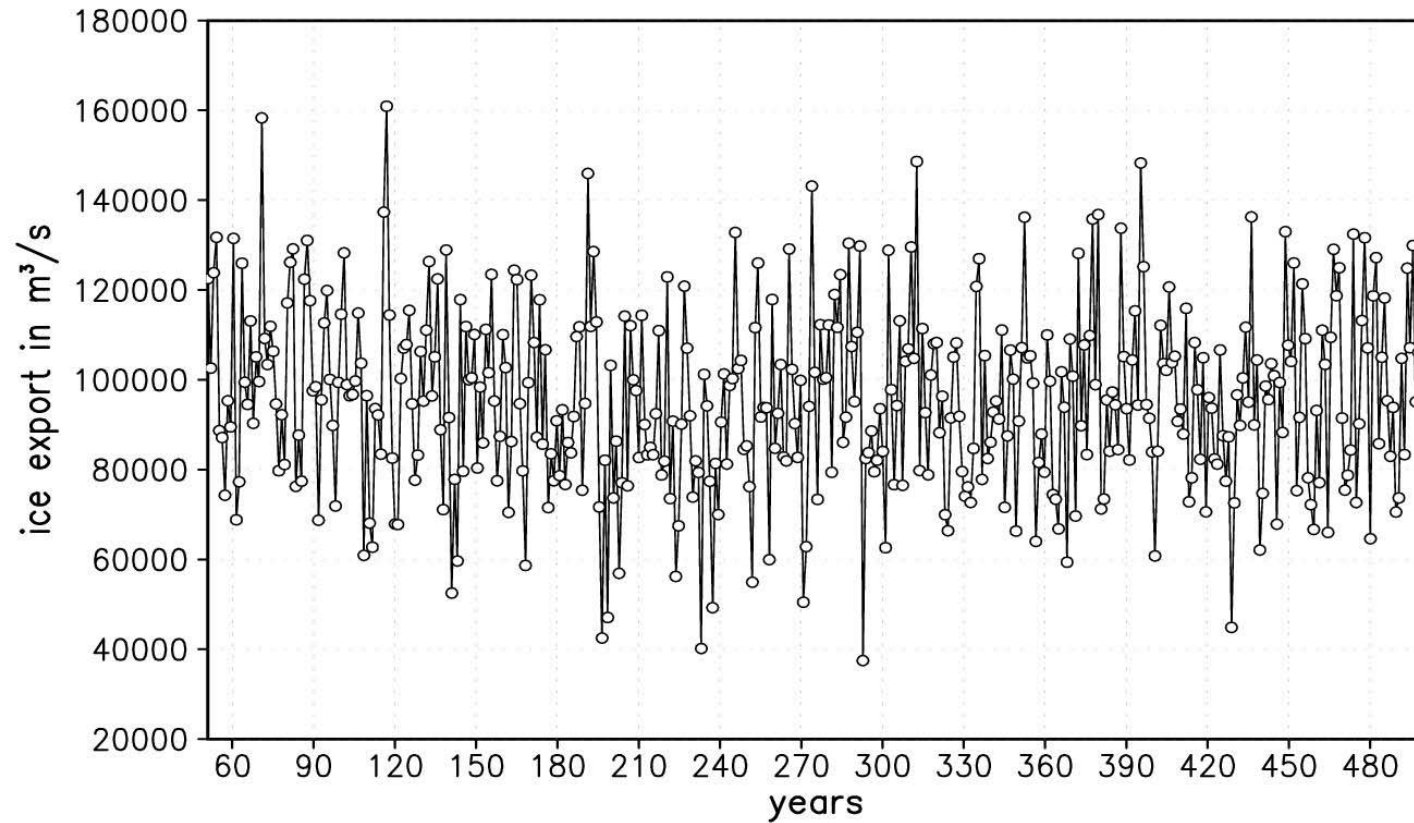
Torben Kahl, Uwe Mikolajewicz, & Johann Jungclaus

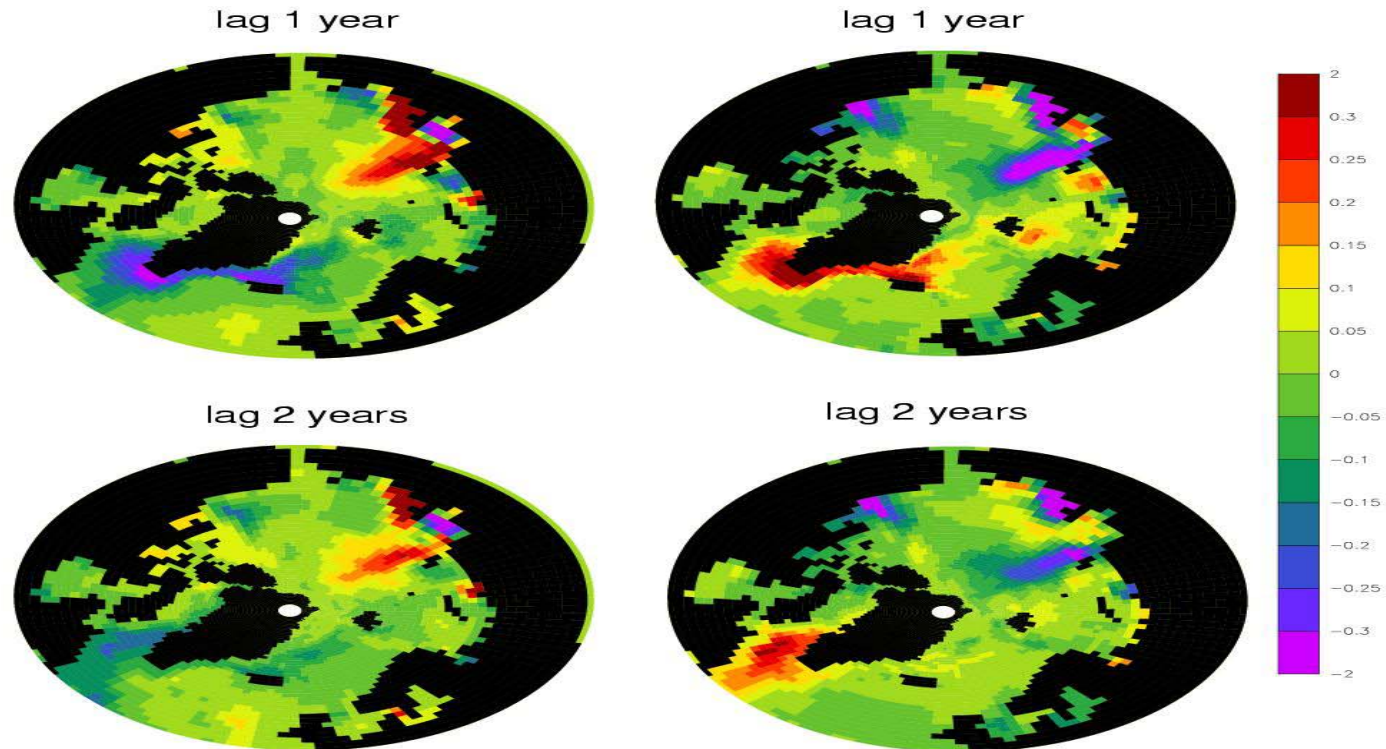
Results based on analysis of

- 500 year control run of the MPI-climate model
- NCEP reanalysis data
- Coupled predictability experiments

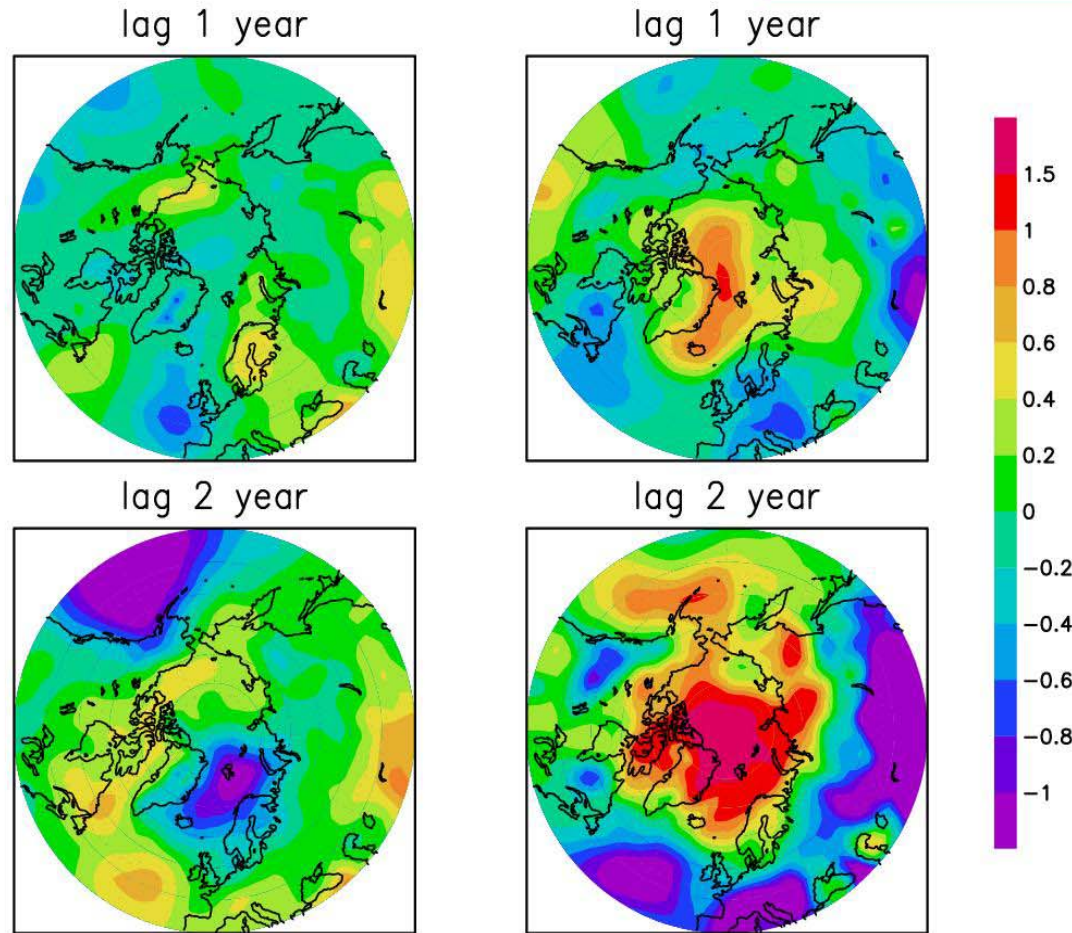


Annual mean sea ice export through Fram Strait





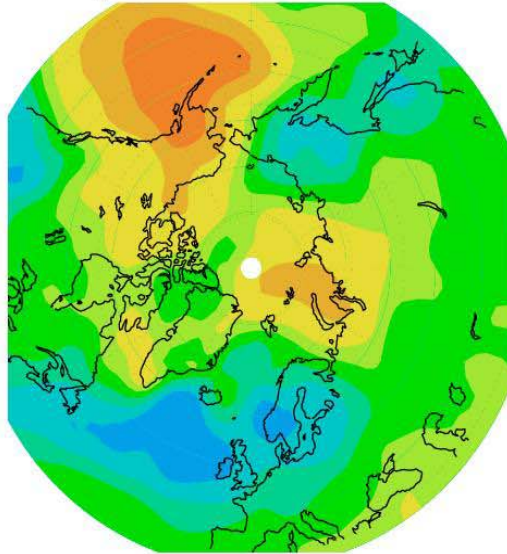
Composite analysis for large (left) and low (right) ice export through Fram Strait for annual mean 10m salinity anomalies one and two years later.



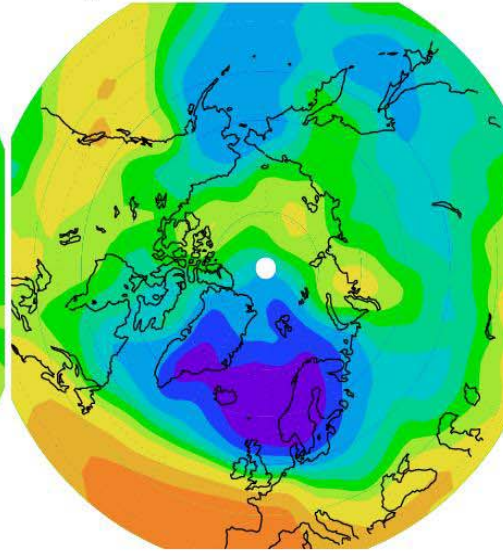
Composite analysis for NCEP sea level pressure anomaly after large (left) and low (right) ice export through Fram Strait.



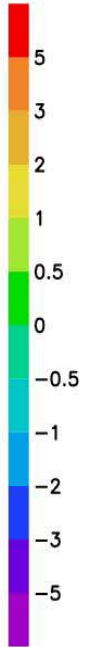
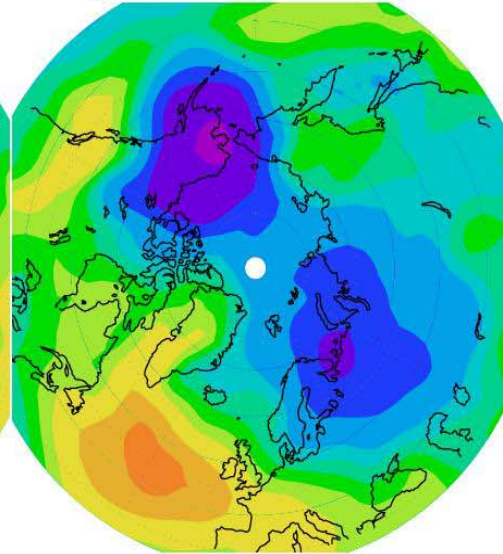
1 year after ice export



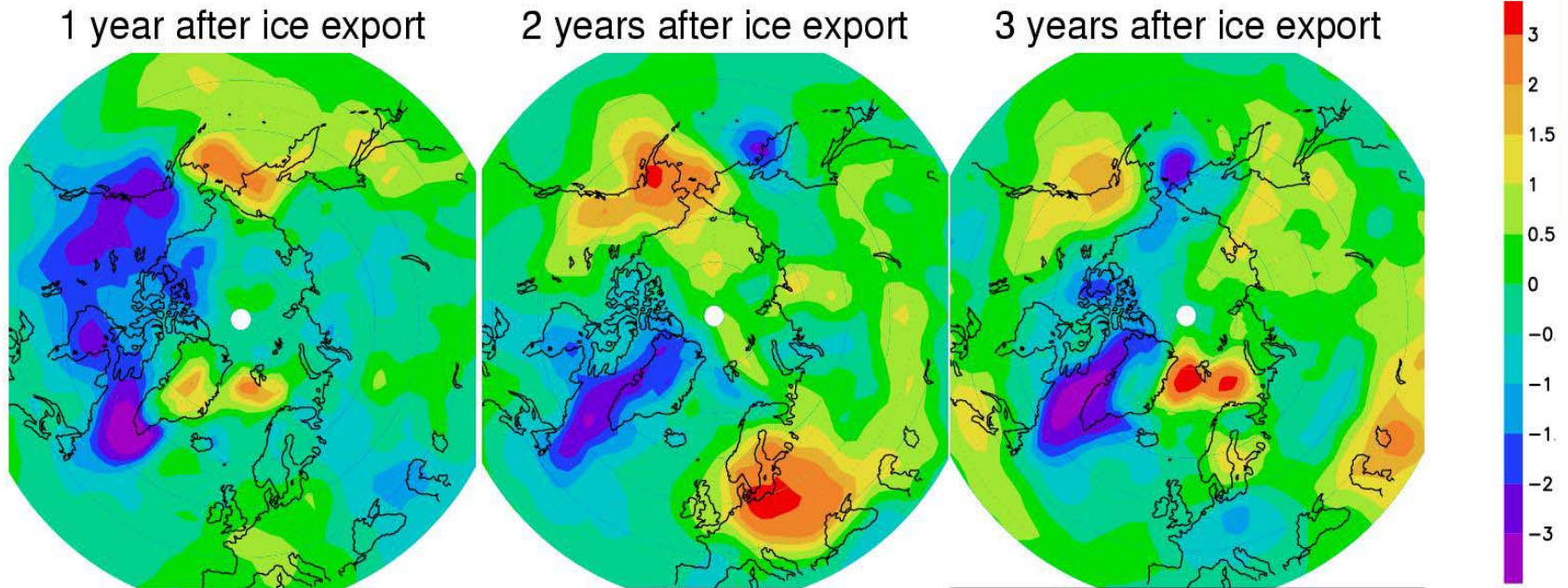
2 years after ice export



3 years after ice export



Sea level pressure (DJF) differences (in hPa) between the experimental ensemble mean and the ensemble mean its control runs.



2m air temperature (DJF) differences (in Kelvin) between the experimental ensemble mean and the ensemble mean of its control runs.

Potential NAO predictability

Torben Kahl, Uwe Mikolajewicz, & Johann Jungclaus

1. Large anomalies Fram strait ice exports cause significant salinity and temperature anomalies in the Labrador sea 2 years later (potentially predictable)
2. There are indications that the atmospheric circulation is affected: Positive (negative) NAO index two years after anomalous strong Fram strait ice export. (Palmer and Sun 85)

Summary

- Model development
 - Coupled model biases
 - Ensemble member generation
- Potential extended-range predictability
 - NAO for large Fram strait ice exports
 - Delayed dynamical response to ENSO in the tropical Atlantic and Indian oceans
 - Decadal SST variability of NA SST