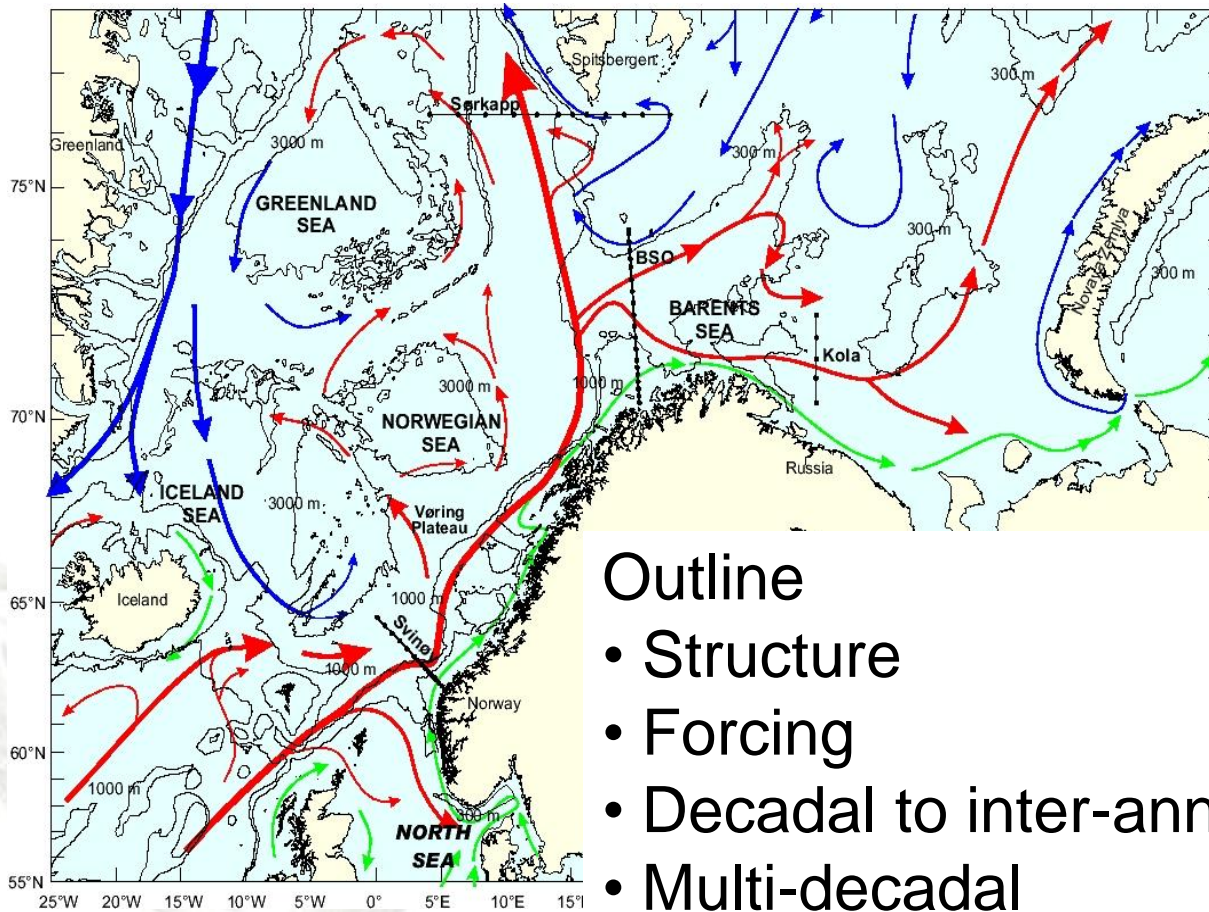


Transports and propagation of anomalies in the Norwegian and Barents Seas

Øystein Skagseth, Randi
Ingvaldsen, Harald Loeng,
Tore Furevik, Kjell Arne Mork,
Kjell A Orvik, Vladimir Ozhigin



Map of the area



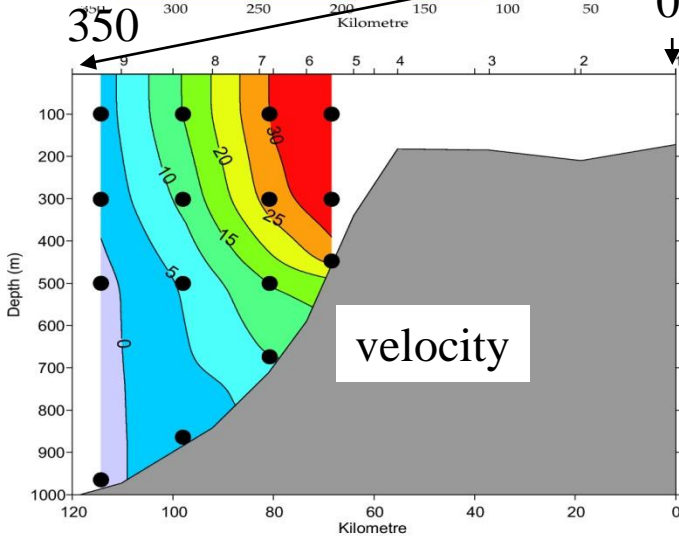
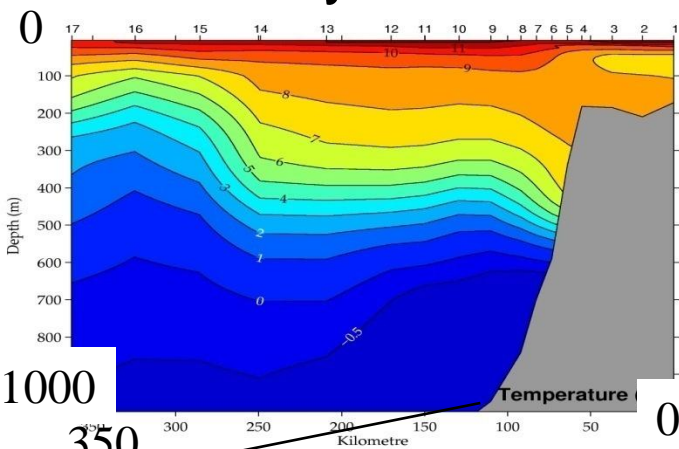
Outline

- Structure
- Forcing
- Decadal to inter-annual
- Multi-decadal
- Conclusion



Structure of Atlantic water

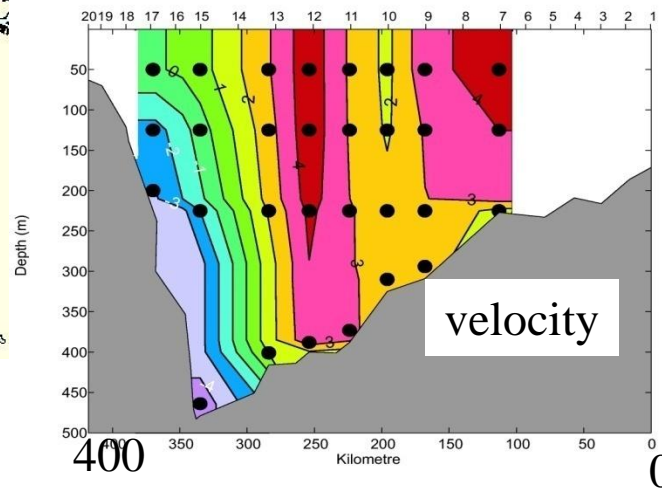
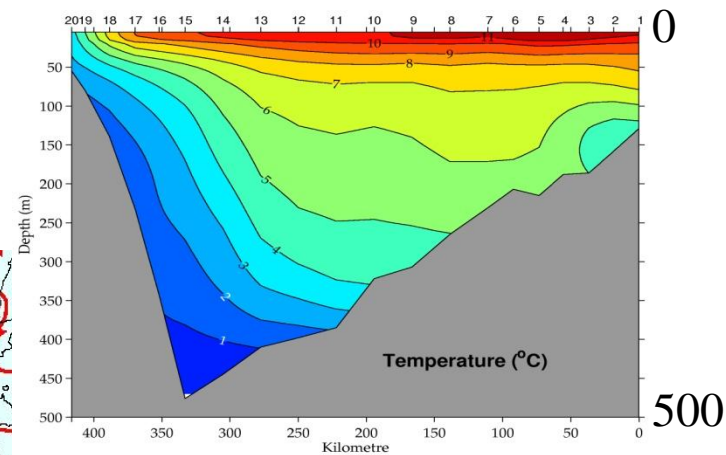
Svinøy section



Width~40km

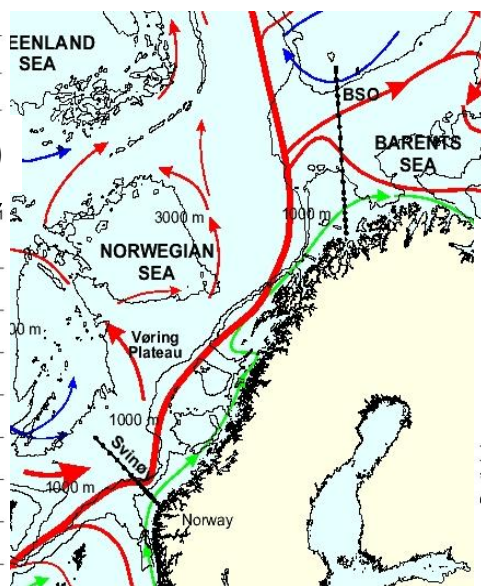
Velocity~30cm/s

Barents Sea Opening



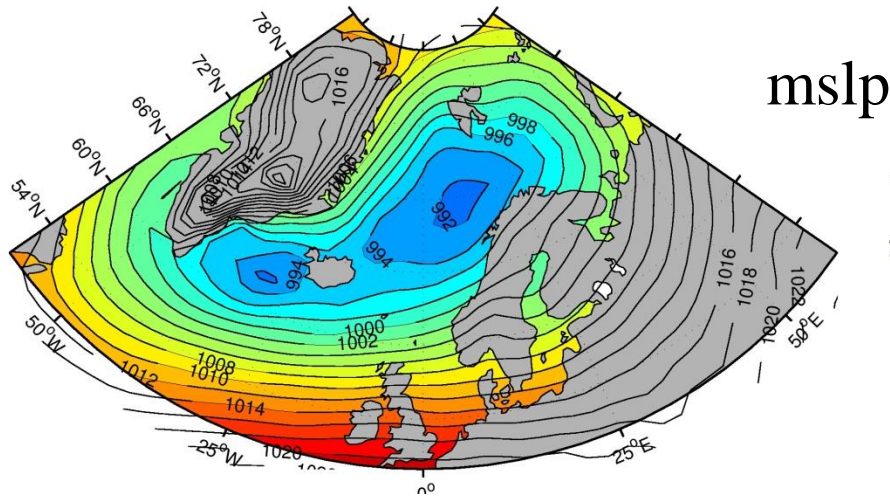
Width~200km

Velocity~5cm/s

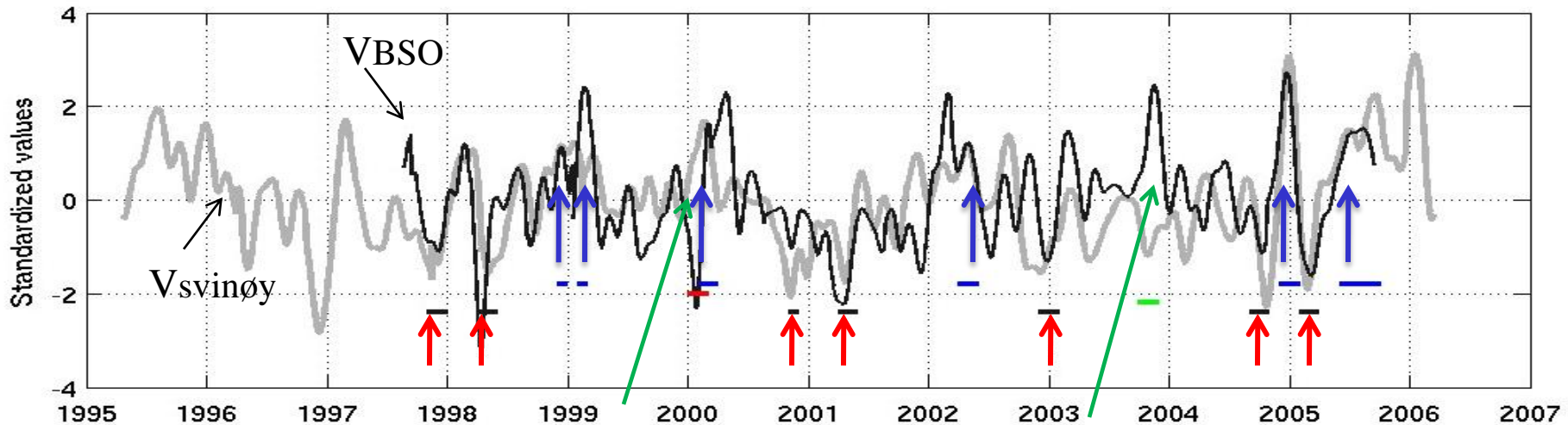
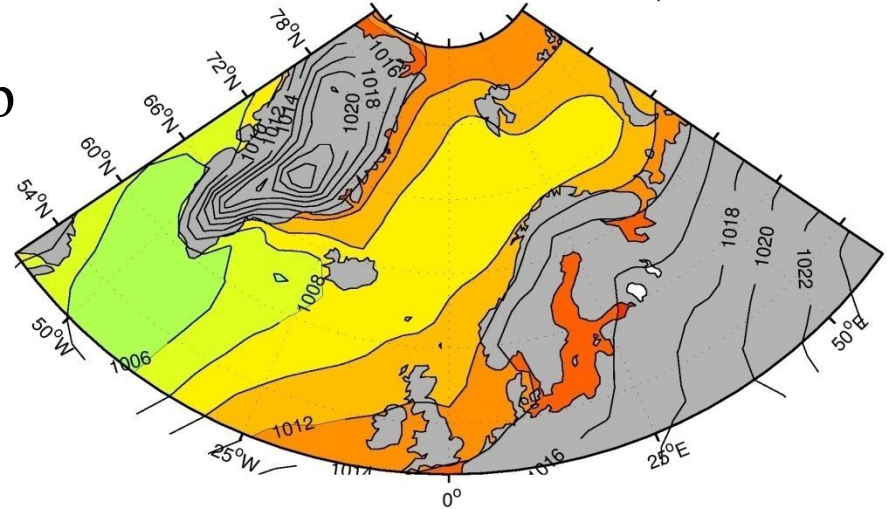


Atmospheric forcing and currents

Simul. strong currents; $> 1\text{std}$



Simul. weak currents; $< 1\text{std}$

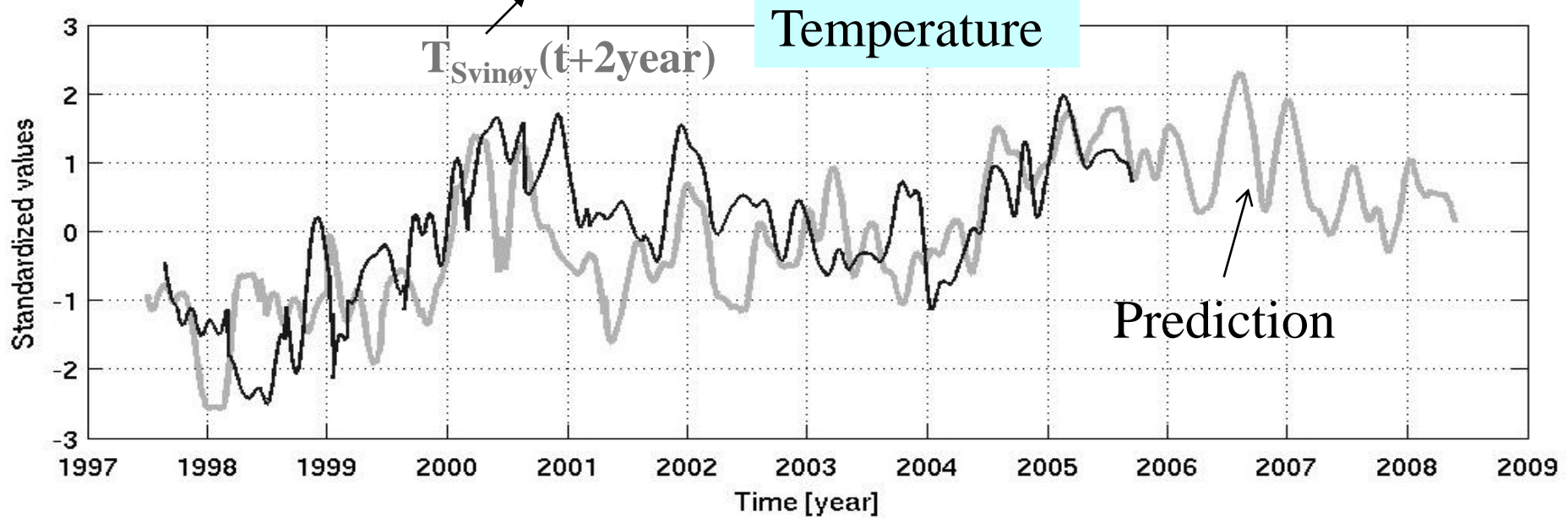
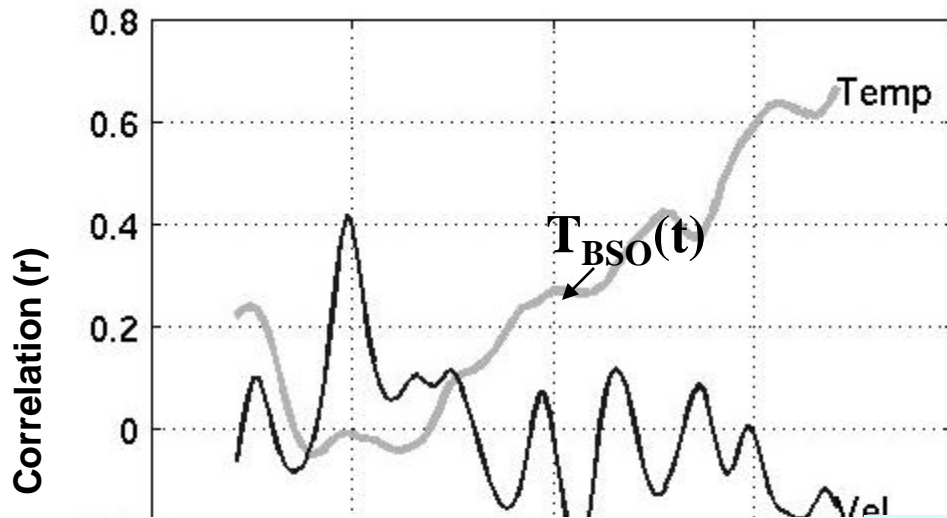


Note! Case when the currents are in opposite phase

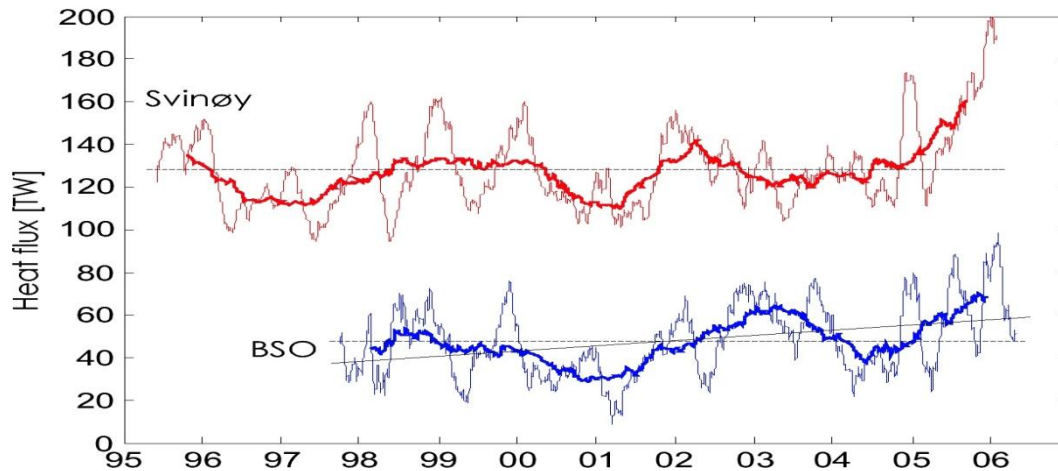
Relations: Svinøy and Barents Sea Opening

Velocity: Max corr. at zero lag suggest similar atm. systems affect both sites, **but** moderate r due to diff. regional effect of this forcing?

Temperature: Max corr. at 2year lag,



Heat flux from current meters

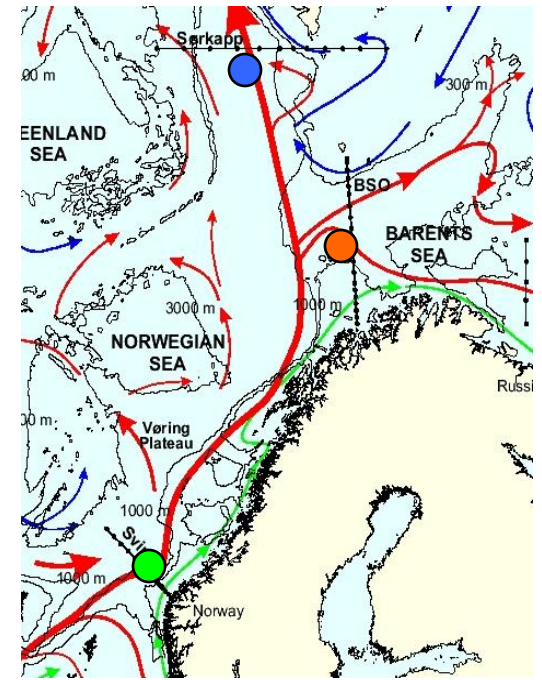
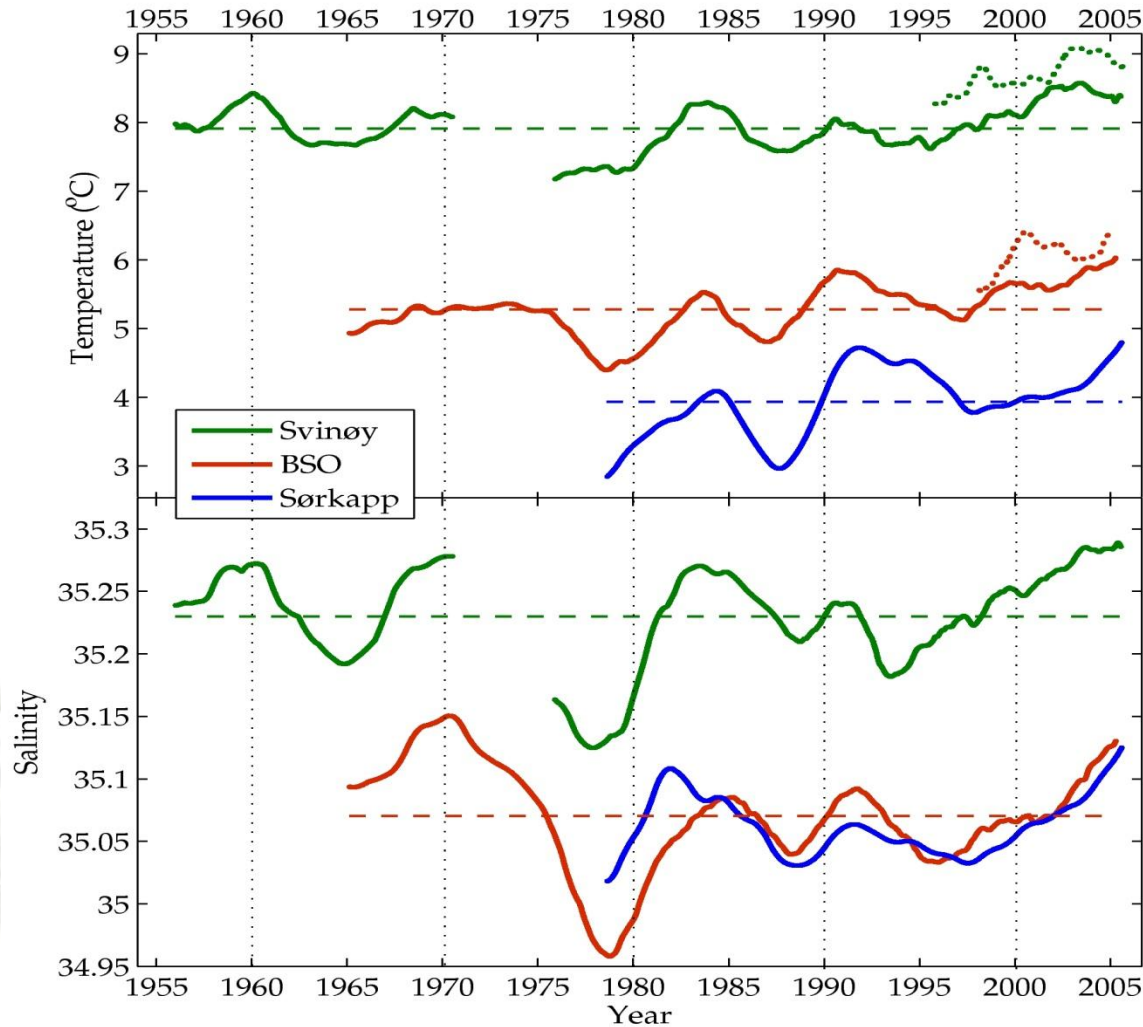


Mean fluxes:
Svinøy (slope)=4.3Sv/123TW

BSO=1.8Sv/48TW

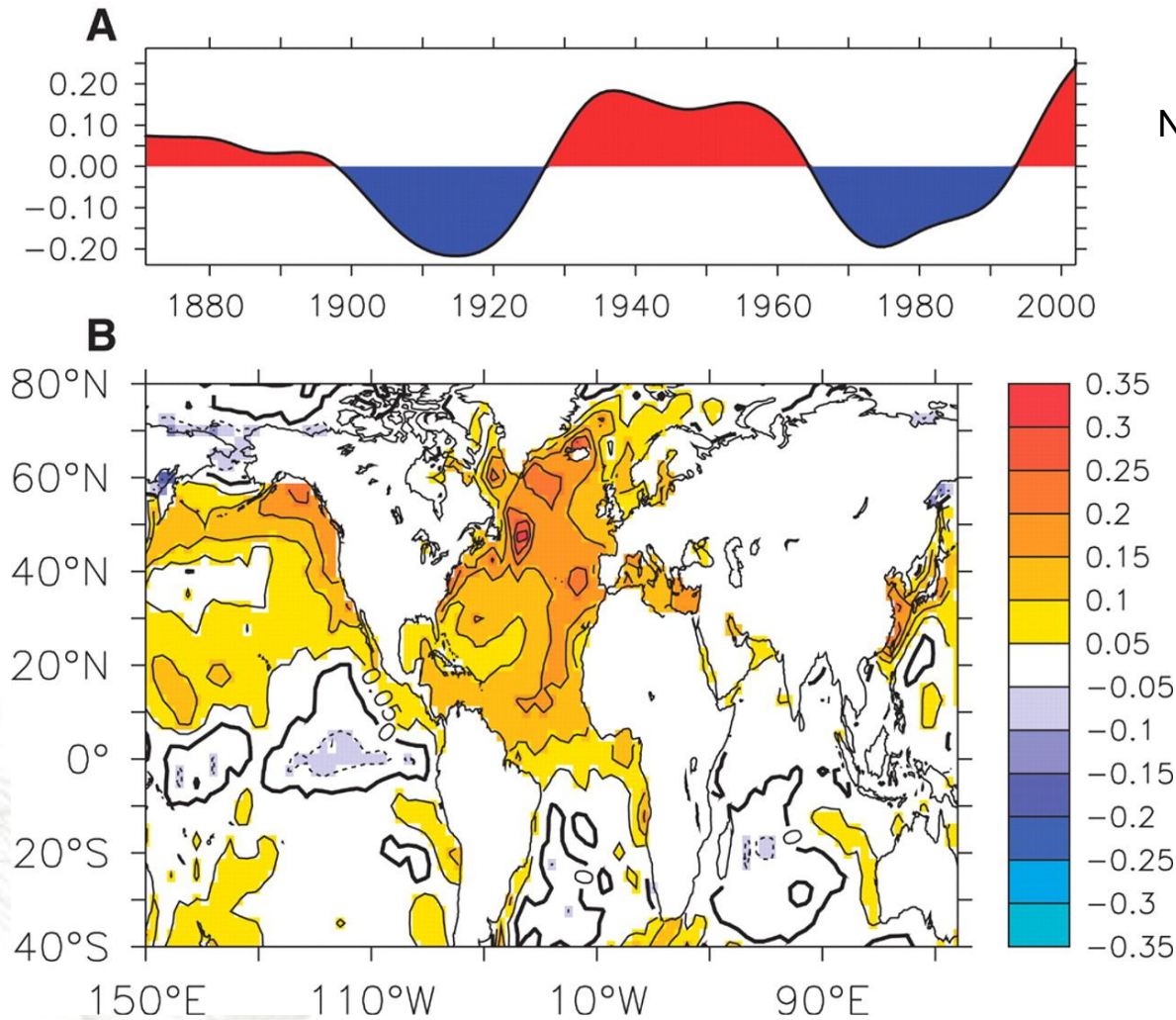


Inter-annual variations in Atlantic water



* The period of curr.met.
1995→ are in prolongation
of a warm period, i.e. flux
estimates are higher than the
long-term mean

Multidecadal variations

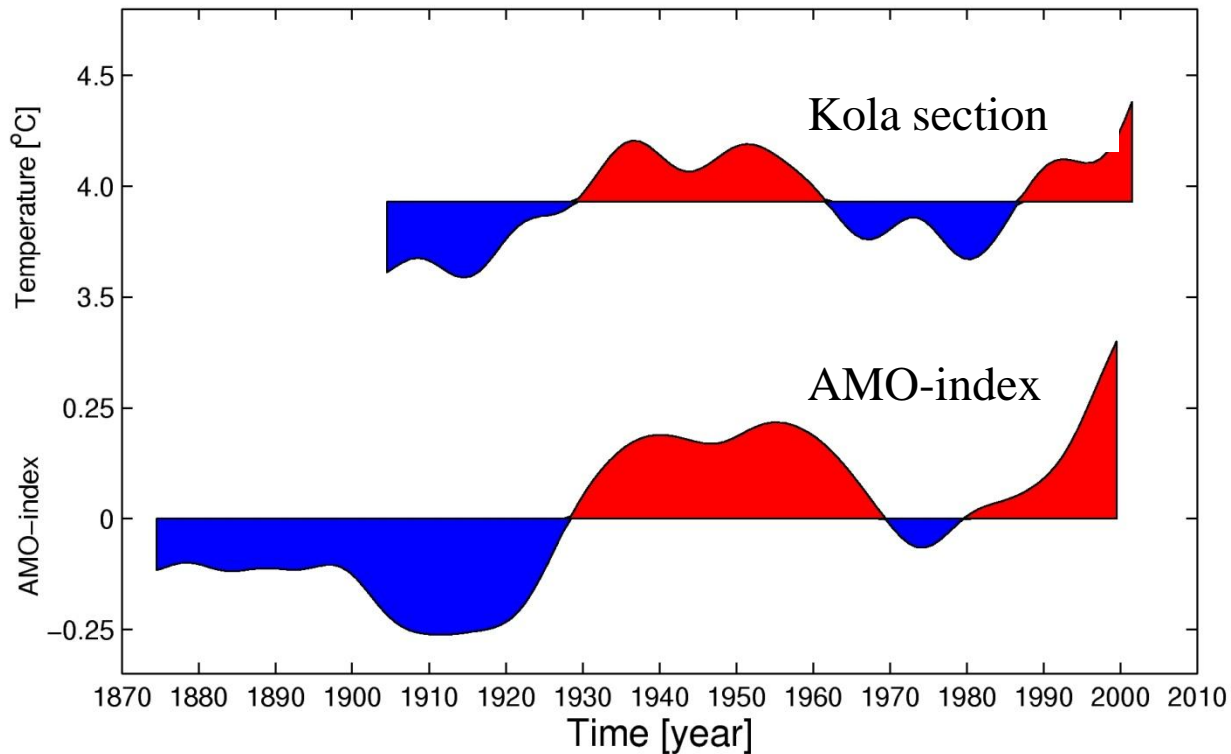


Note detrended data

Atlantic Multidecadal
Oscillation - index: T
variation over Atl. Ocean
between 0-60degN

Sutton et al., 2005

Multidecadal variations (2)



Atlantic Multidecadal Oscillation: T variation over Atl. Ocean between 0-60°N

Barents Sea T variations follow the large scale variations in the Atlantic Ocean on decadal time scale



Concluding remarks

- Lagged relations for hydrography
- A relatively weak but positive relation between fluxes in the southern Norw. – and the Barents Seas
- Long-term change in hydrography, warming since the 1970'ies, effect on the heat flux to Barents Sea.
- The multi-decadal changes in Barents follow that of the Atlantic Ocean
- For the present climate the oceanic fluxes in the Norw. Sea and the Barents Sea tend to follow, **but** this can be very sensitive to changes in the atm. Circulation (e.g. the storm tracks).

