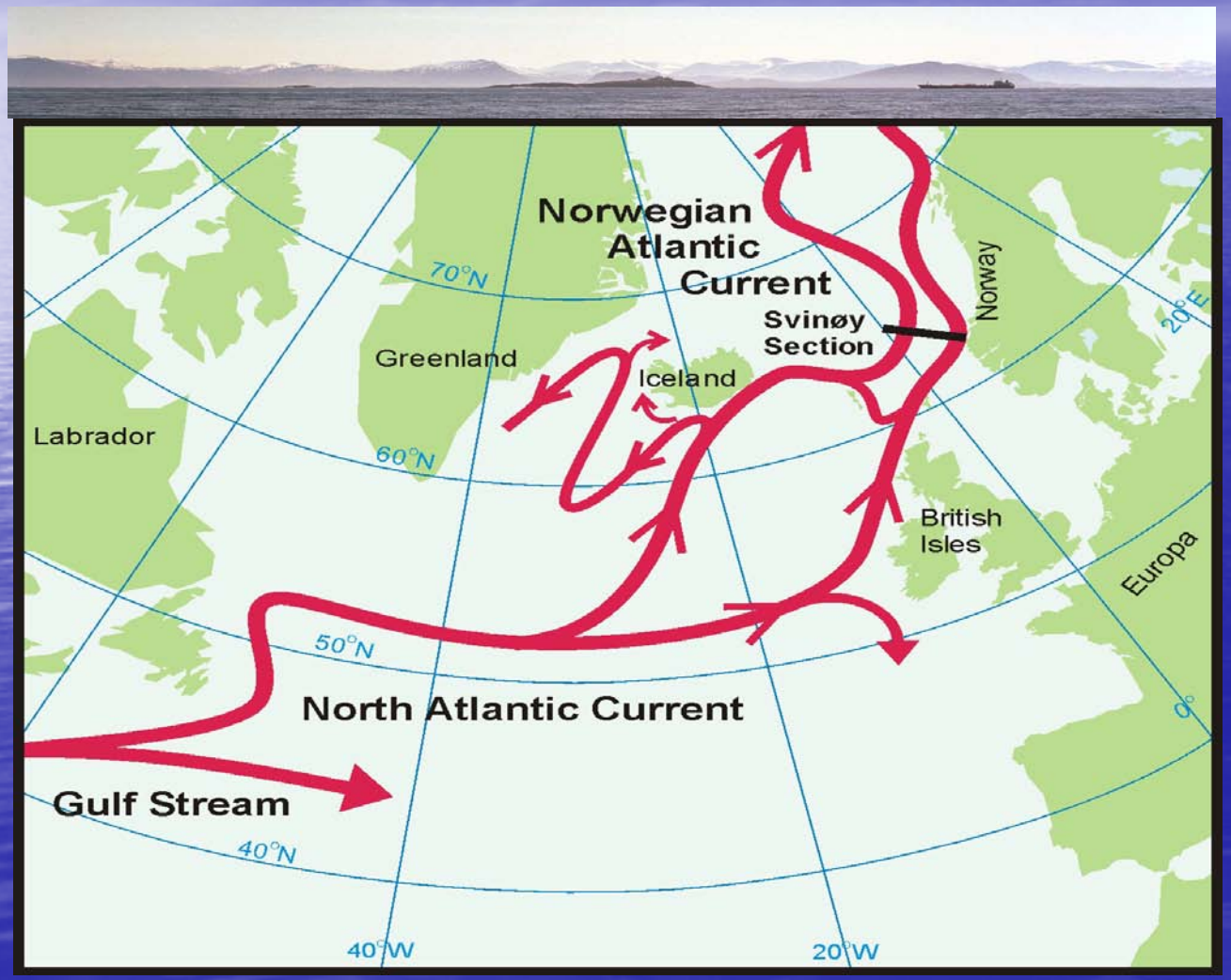
SVINØY SECTION

A full-scale ocean climate laboratory in the Norwegian Atlantic Current



VEINS

DAMOCLES 2005 - 2009

The connection between the variability of temperature and velocity fields of the Atlantic inflow to the Norwegian Sea and northern North Atlantic, 1995-2009

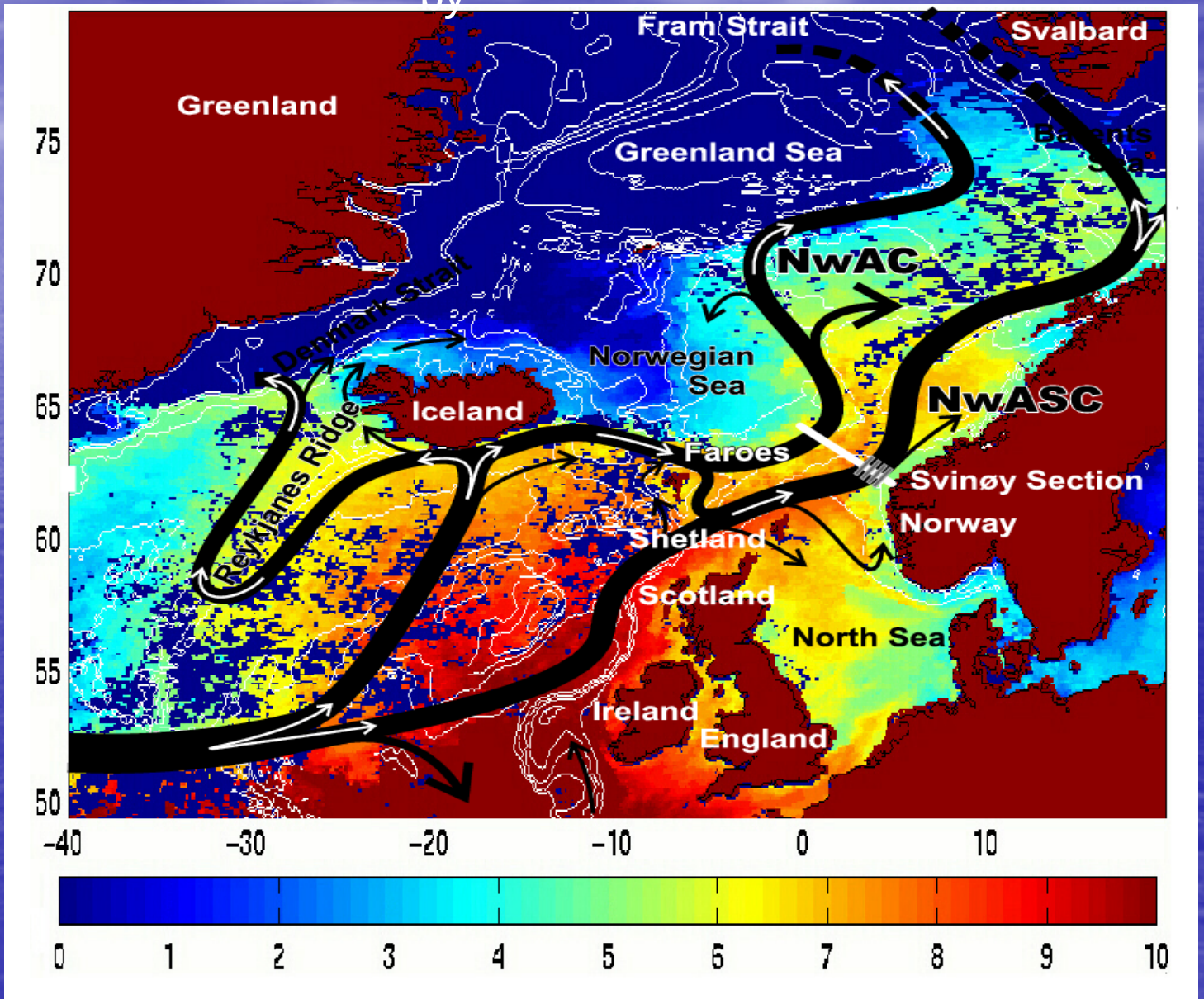
- Kjell Arild Orvik,
- Geophysical Institute, Univ og Bergen
- Øystein Skagseth,
- Institute of Marine Research, Bergen

Results from long term observations in Svinøy section; 1995-2009

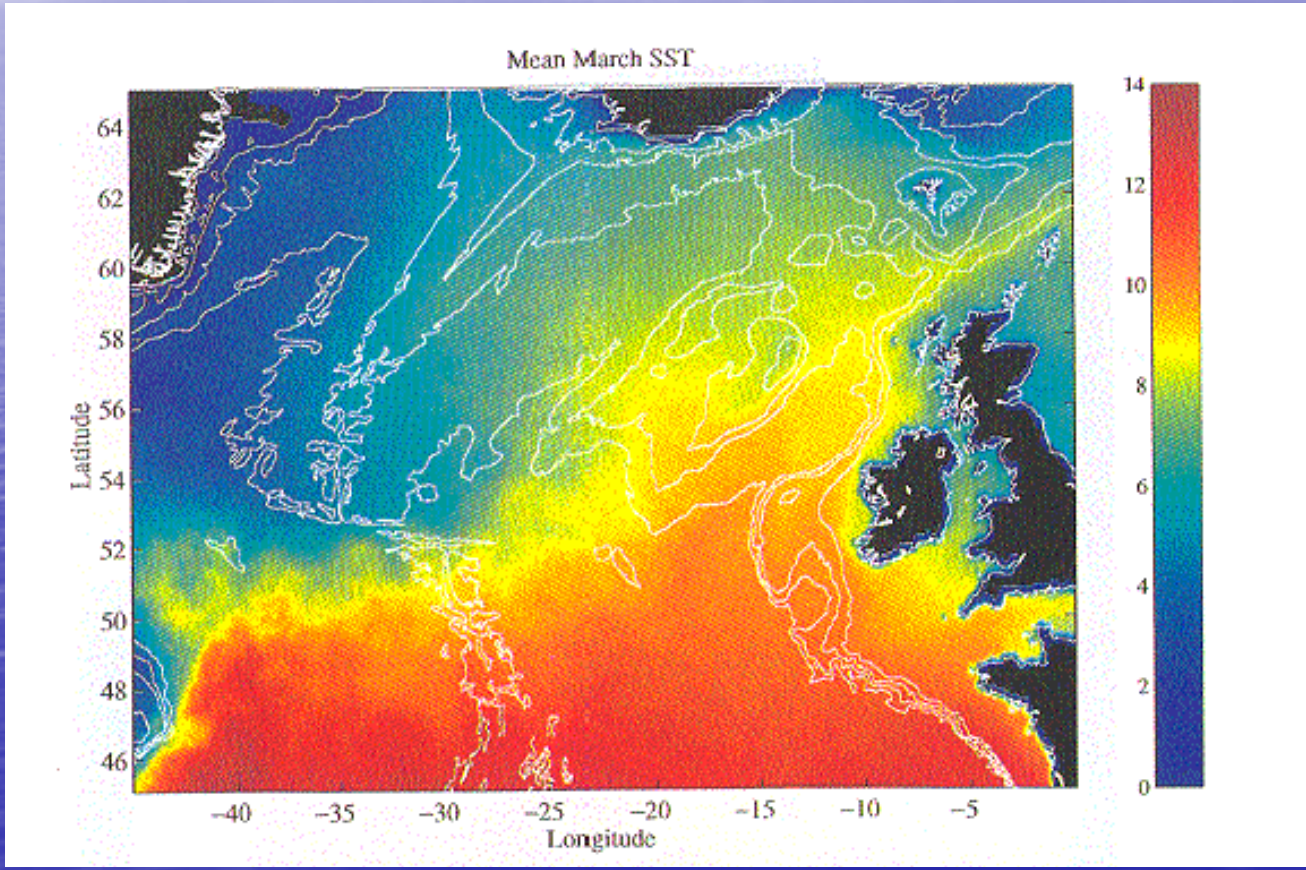
by

Major Pathways of Atlantic Water and extension of Atlantic Water in The North Atlantic &Norwegin Sea, 1014 SVP-drifters

Orvik & Niiler, GRL 2002



Sea surface temperature in March (Rossby 1999)



Svinøy section
Mooring array
during VEINS

Comparison of
Std CTD-section
and
SeaSoar CTD
VM-ADCP

August 1997

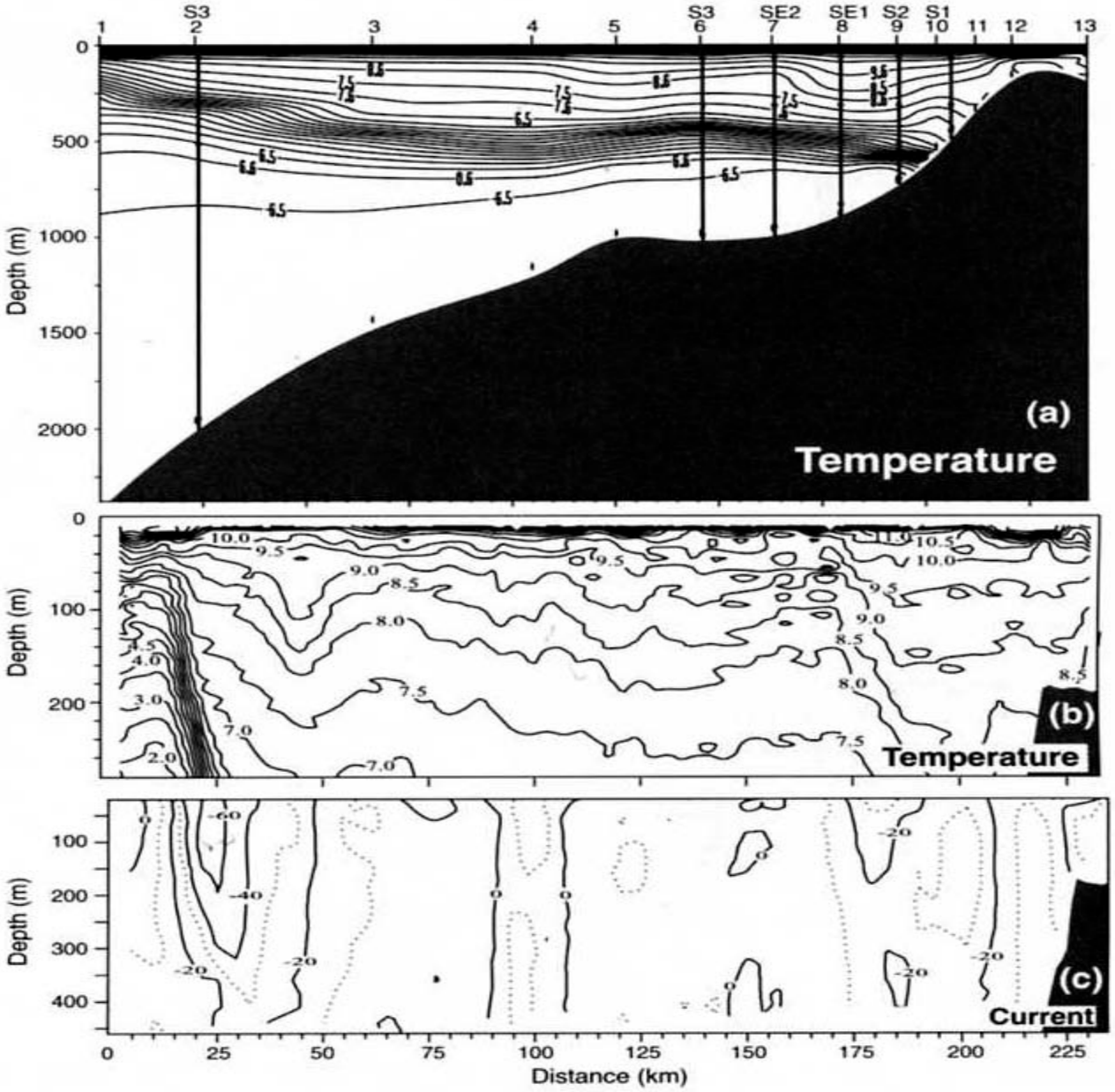


Figure 2. (a) CTD, (b) SeaSoar-CTD, and (c) ADCP section along the Svinøy section, August 1997. Mooring lines and current meter depths are indicated.

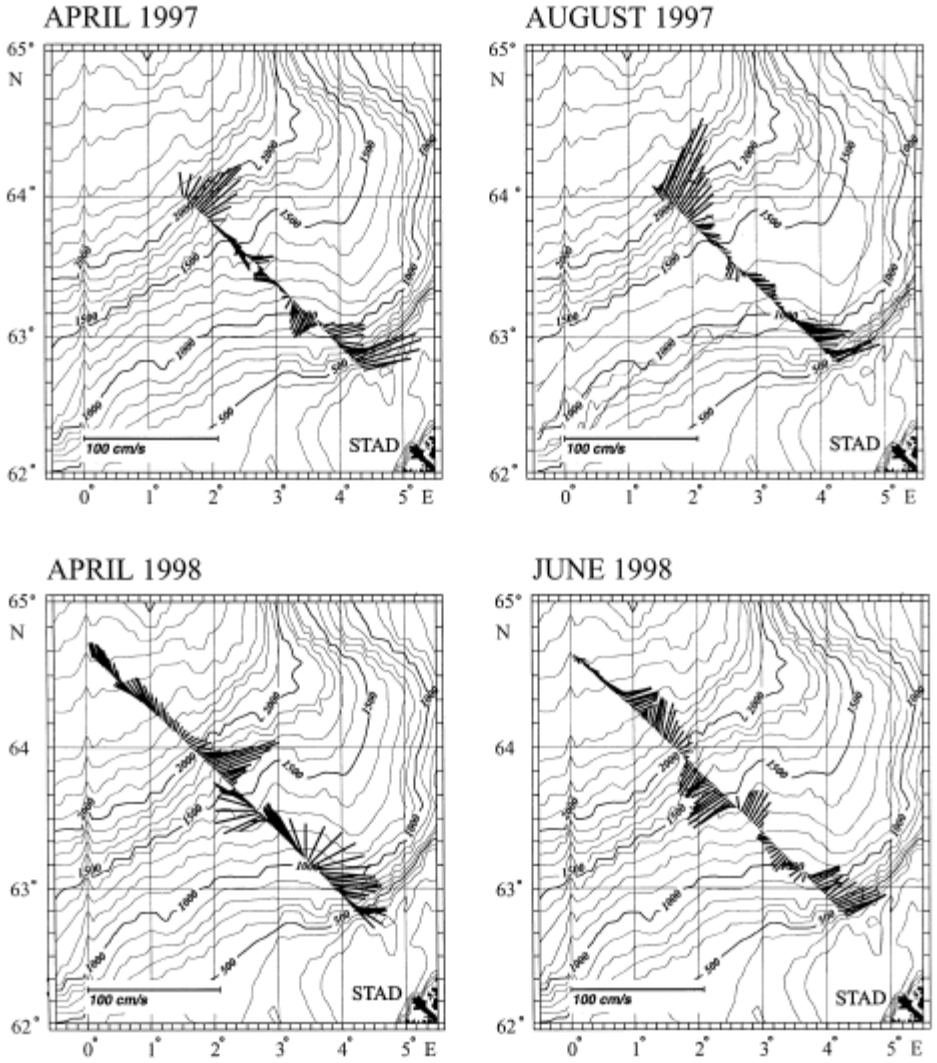


Fig. 4. ADCP current stick plots (5 min means) along the Svinøy section at 100 m depth from April and August 1997 and April and June 1998. Bottom contours are also indicated.

Vertically integrated transport of Atlantic Inflow
Orvik, Skagseth & Mork, DSR 2001
Orvik & Skagseth, CSR 2003

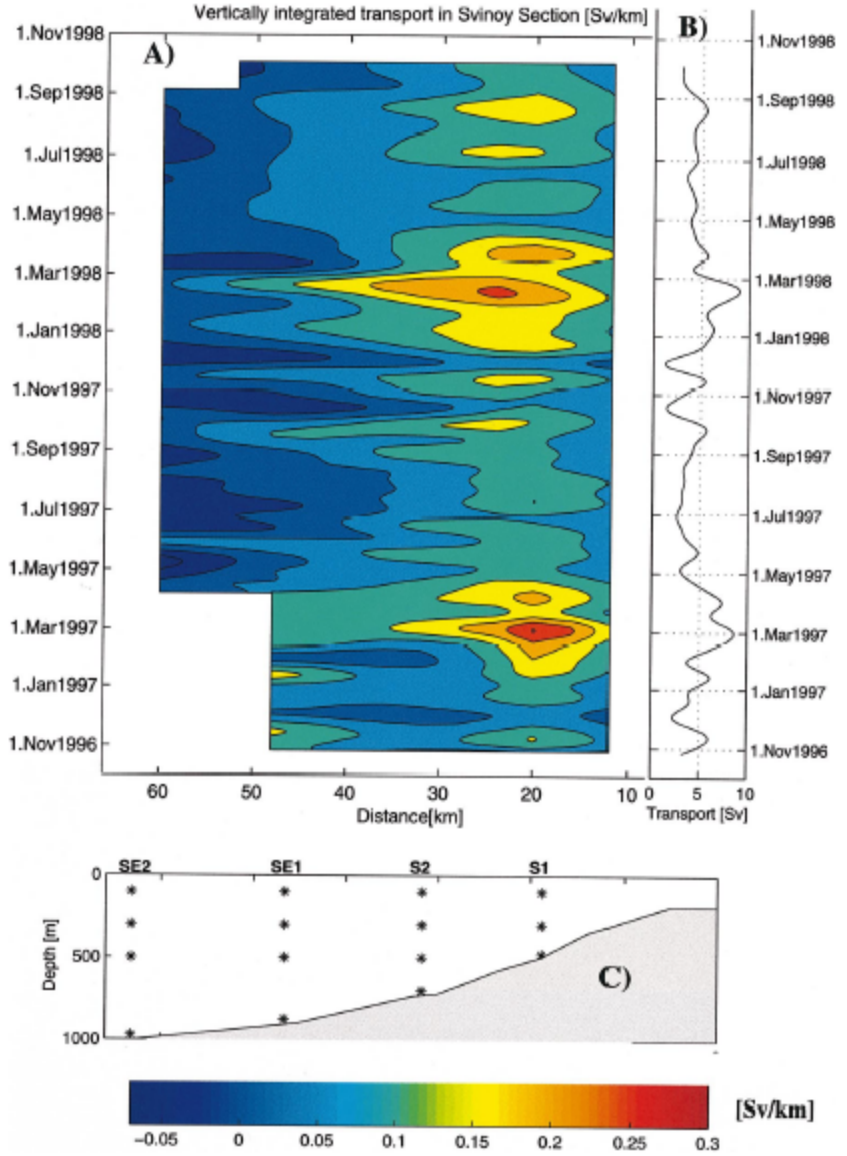
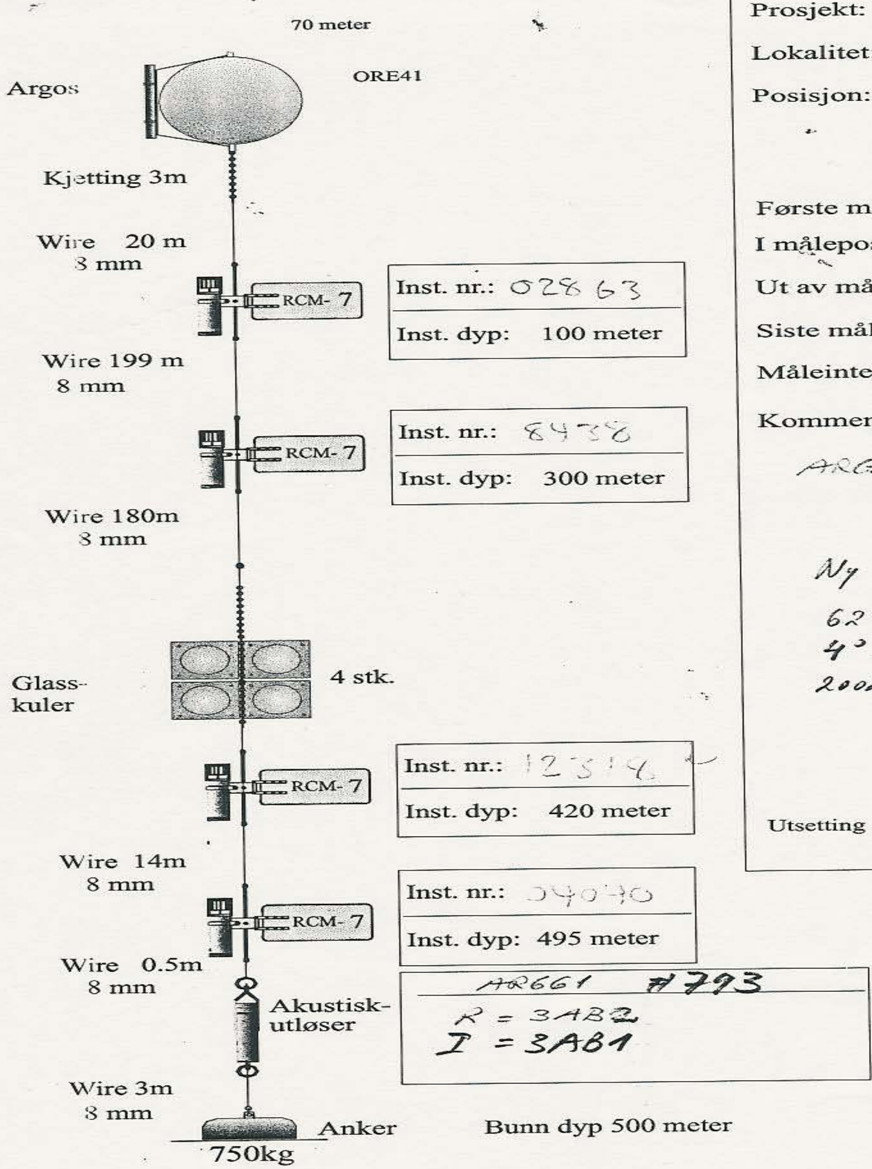


Fig. 8. Two-dimensional time series of vertically integrated transports and total transport of Atlantic water ($S > 35.0$) in the slope area for the period October 1996 to October 1998.

S1.



UNIVERSITETET I BERGEN
Geofysisk Institutt

Prosjekt: Veins

Lokalitet: Svinøy Rigg S1. Juli 2002

Posisjon: ° °

	år	mnd.	dag	kl.GMT
Første måling:	2002	07	02	14.00
I måleposisjon:				
Ut av måleposisjon:				
Siste måling:				

Måleintervall: 60 min

Kommentar:

ARGOS : ID 1574
AMP : 144
AYP : 100

Ny AR661 er på rigg

62°N 180
4° 17. 326
2002/07/03 16:38

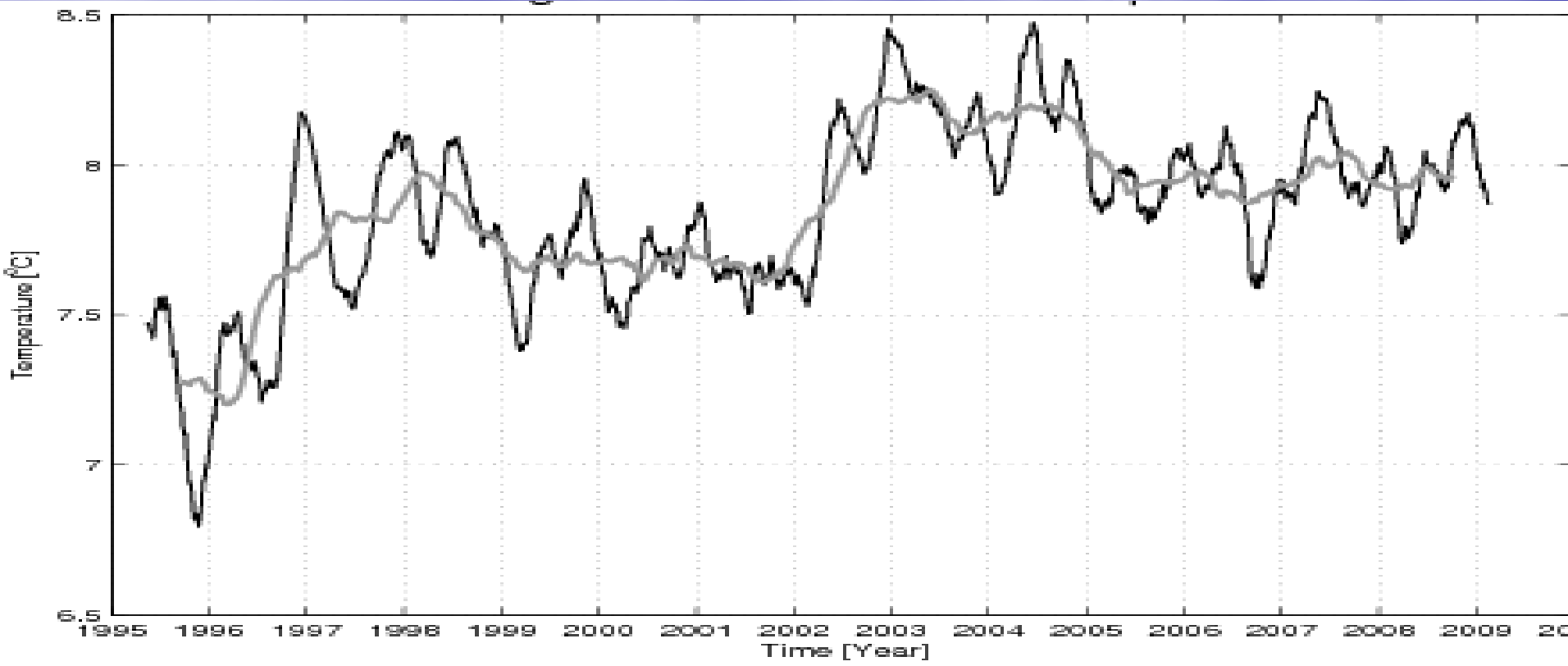
Utsetting ______ sign Opptaking ______ sign

ORE41 U-bøye	oppdrift	430kg
1 Glasskuler	oppdrift	25kg
4 inst. RCM-	17kg pr. inst.	51kg
1 Akustisk utløser		25kg.

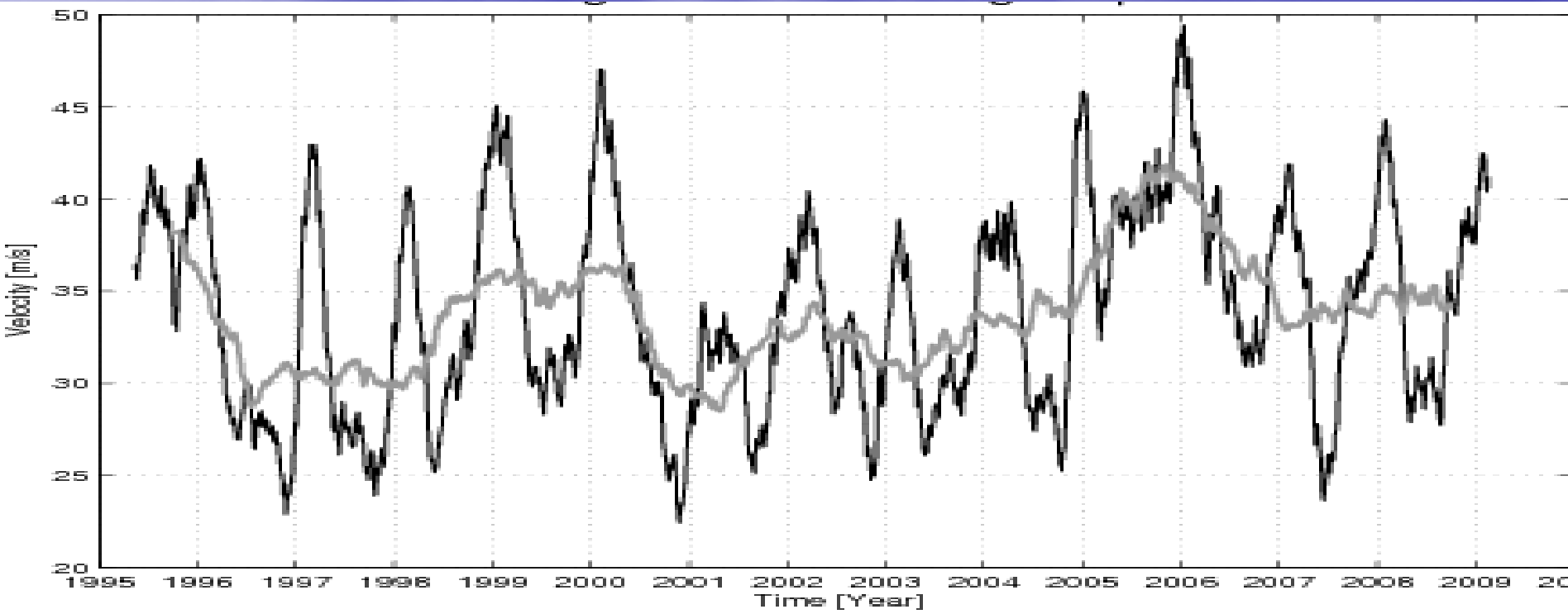
8mm Wire Vekt 0.17kg pr.m

Ankervekt 750kg

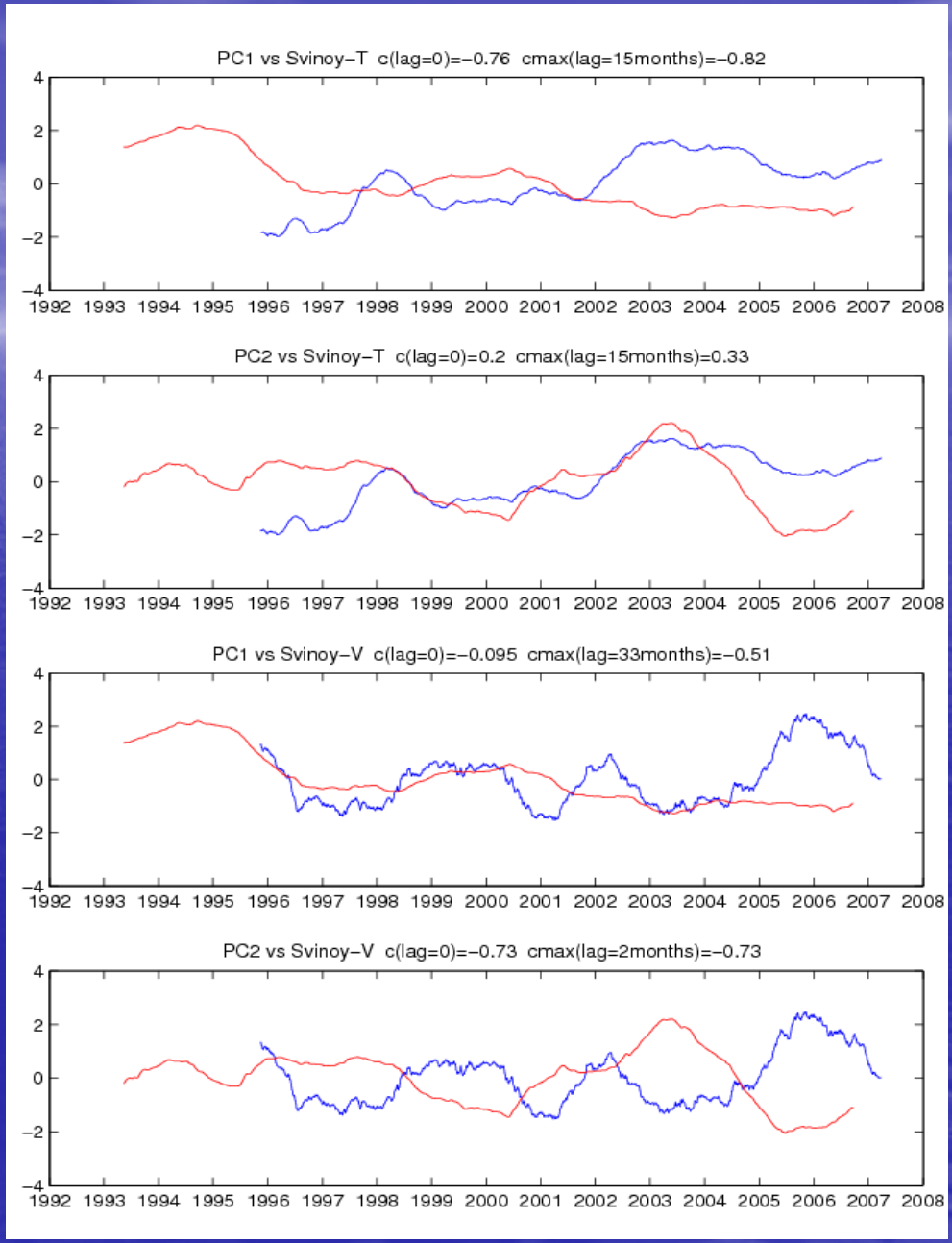
S1-300m: Temperature April 1995 –March 2009



S1-100m: Current speed April 1995 – April 2009



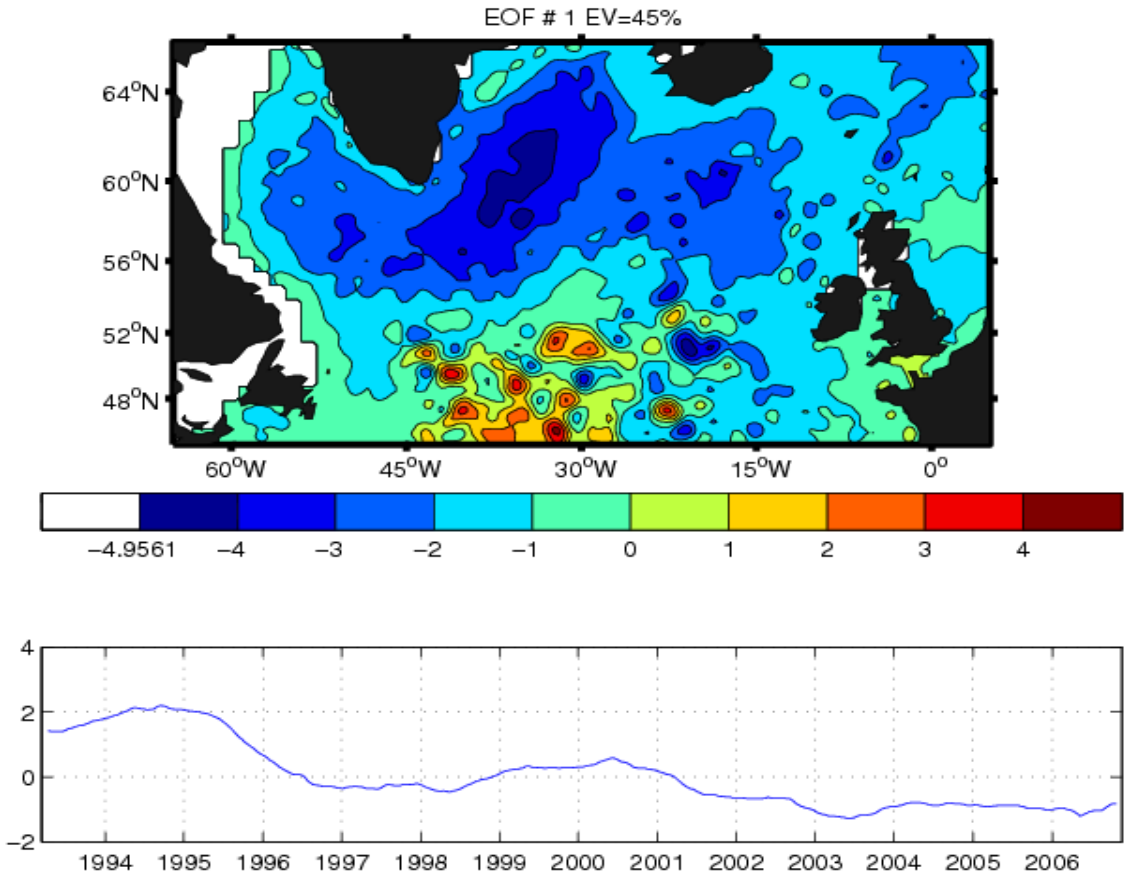
Time series of v and T in Svinøy Section vs SSH EOF-mode 1 and 2 in North Atlantic
1-year mv-filter



Corr. Coef: T vs EOF-1: r= -0.82; V vs. EOF-2: r= 0.73

Hakkinen & Rhines, 2004
Hatun et al, 2007

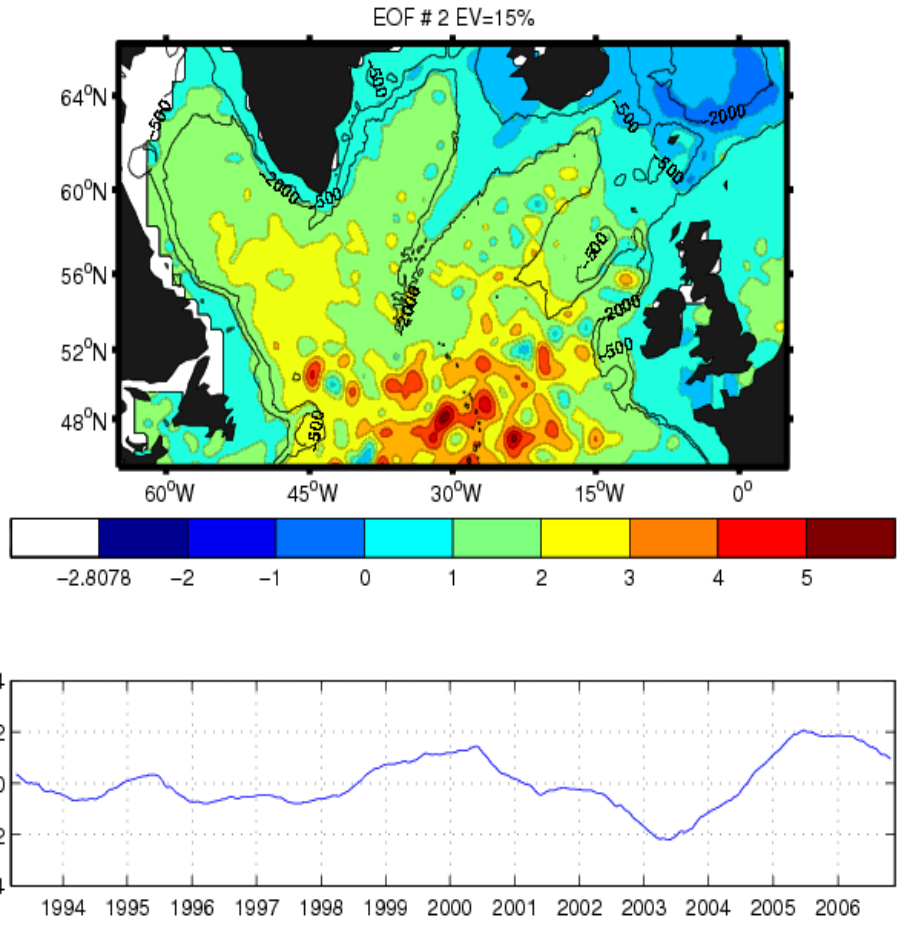
Sea Surface High (SSH) from TOPEX/Poseidon altimeter.
1/3 deg resolution
1-year mv-filter



EOF-mode 1: 45 % of Variance

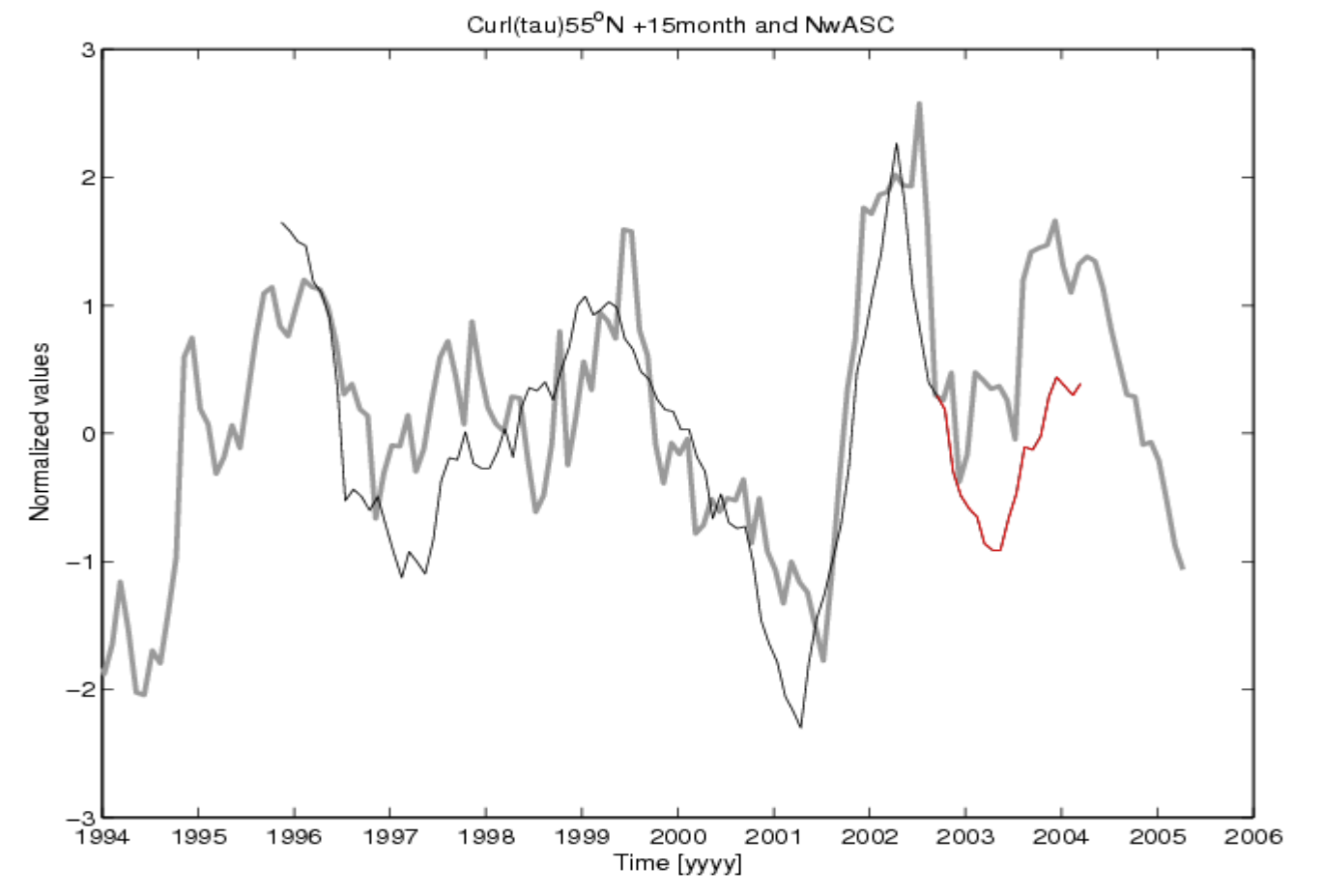
Hakkinen & Rhines, 2004

Sea Surface High (SSH) from TOPEX/Poseidon altimeter.
1/3 deg resolution
1-year mv-filter



EOF-mode 2: 15 % of Variance

Long term - interannual variability

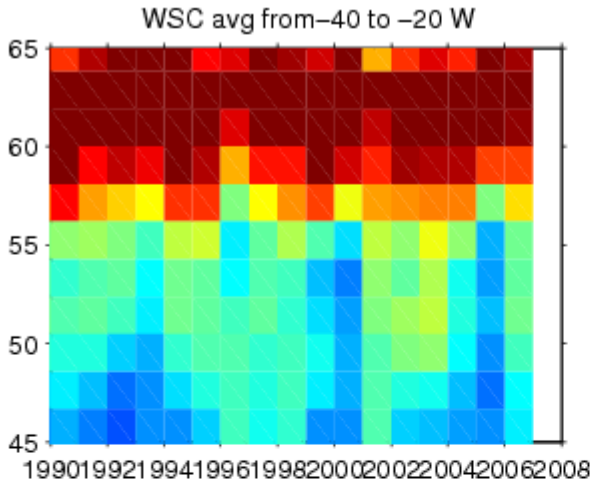


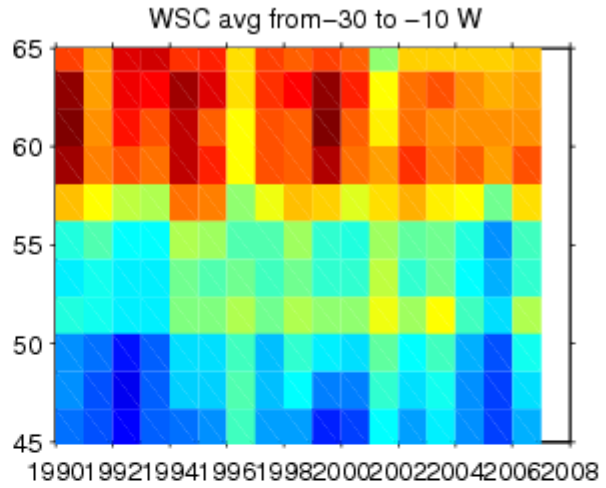
Key Result!

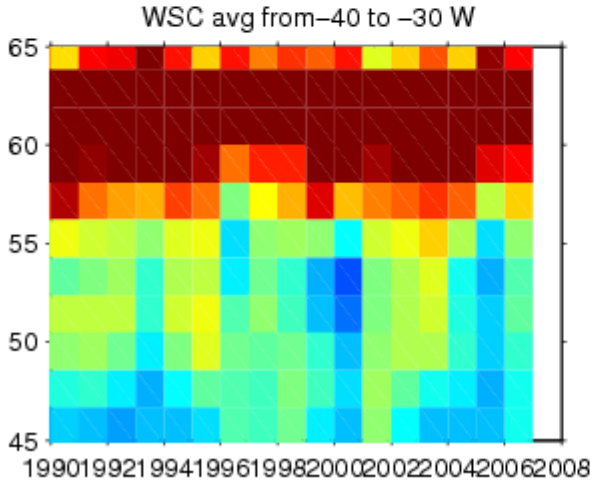
Recently updated at the CLIVAR Conference

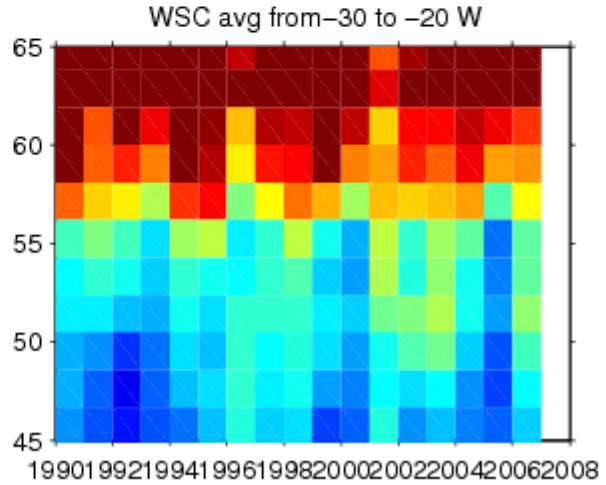
So a range of remote influences await discovery:-Orvik & Skagseth (GRL2003) have discovered one of these: a close link (r= 0.88) between the N'ward transport of the warm salty NwAC at Svinoy (62N) and Atlantic windstress curl at 55N, 15 months earlier.

Timeseries of annual wind stress curl vs longitude

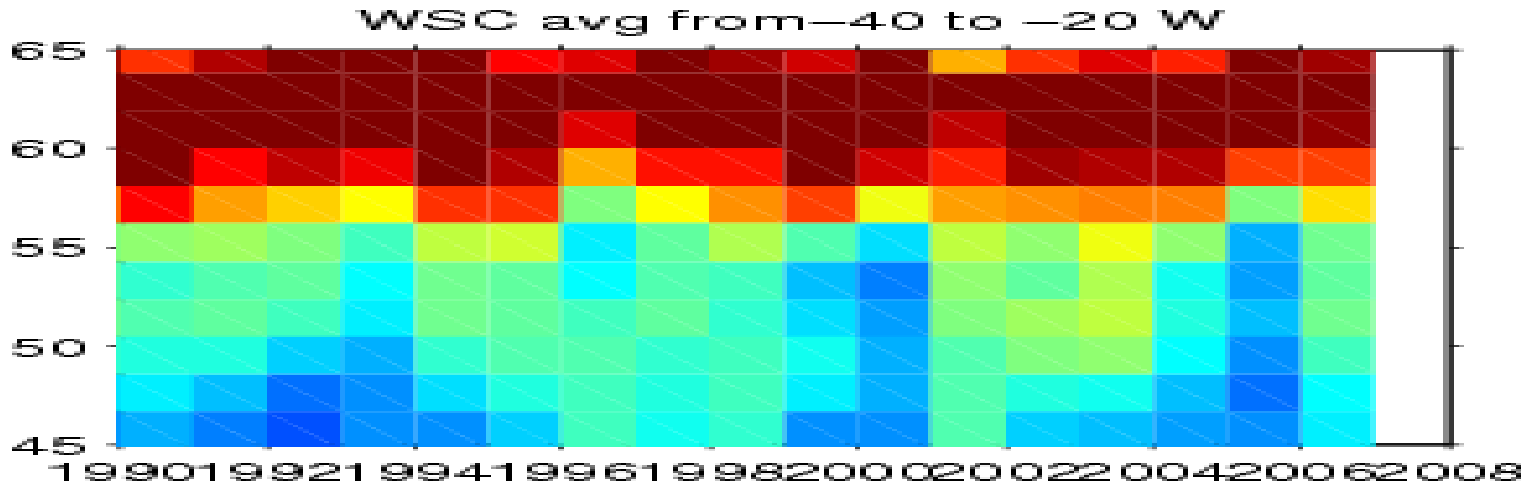


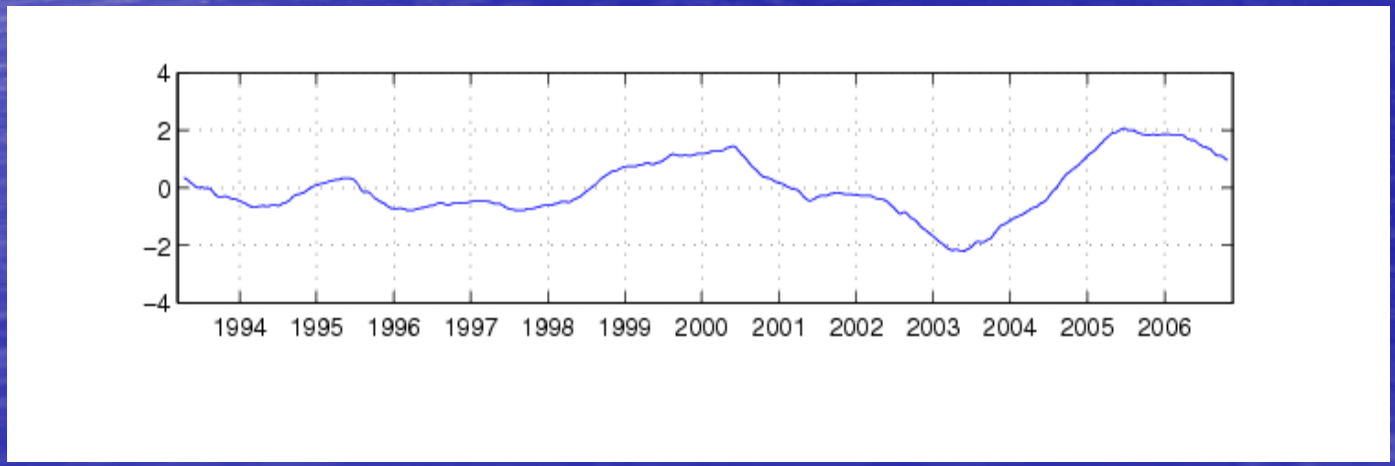




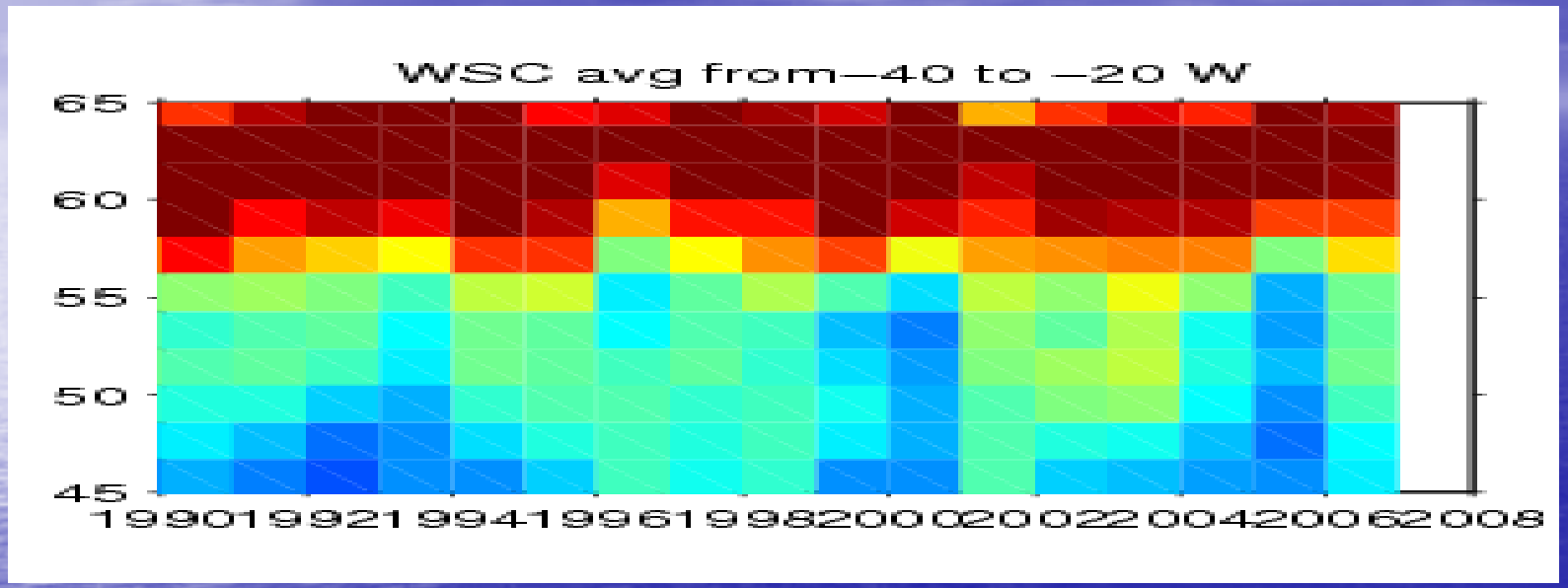


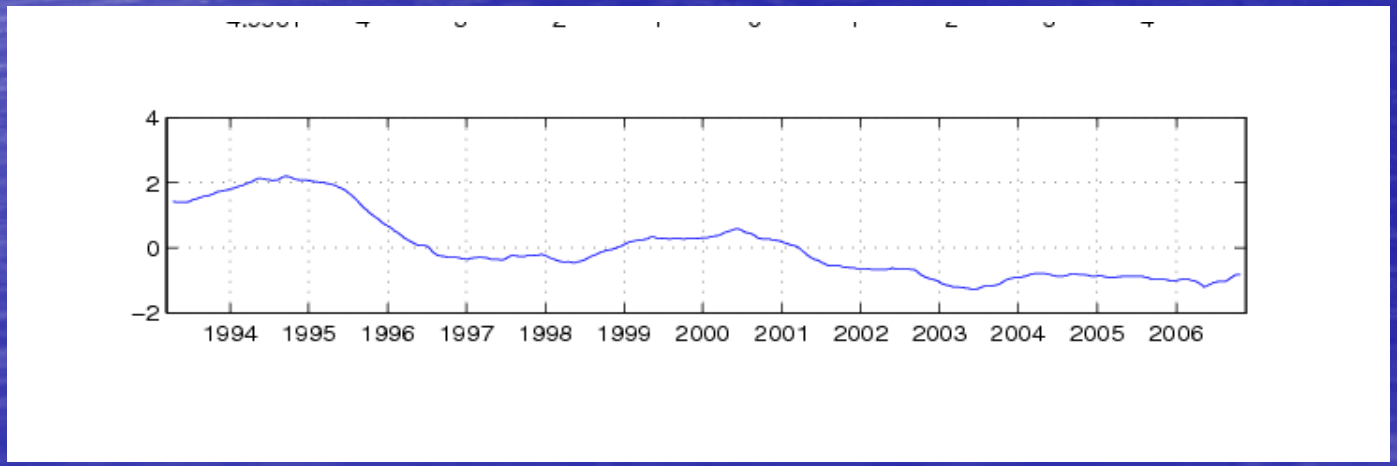
Comparison of annual wind stress curl vs latitude and EOF-PC2





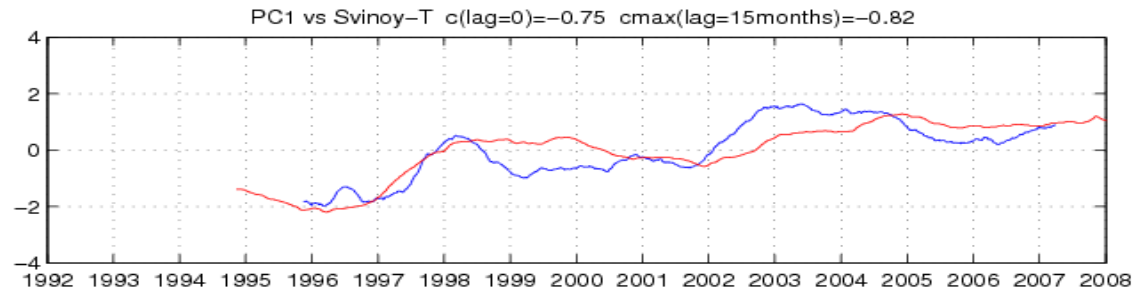
Comparison of annual wind stress curl vs latitude and EOF-PC1

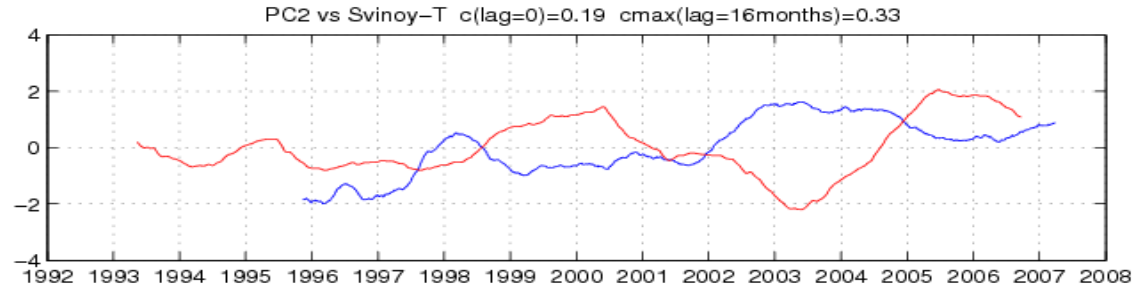


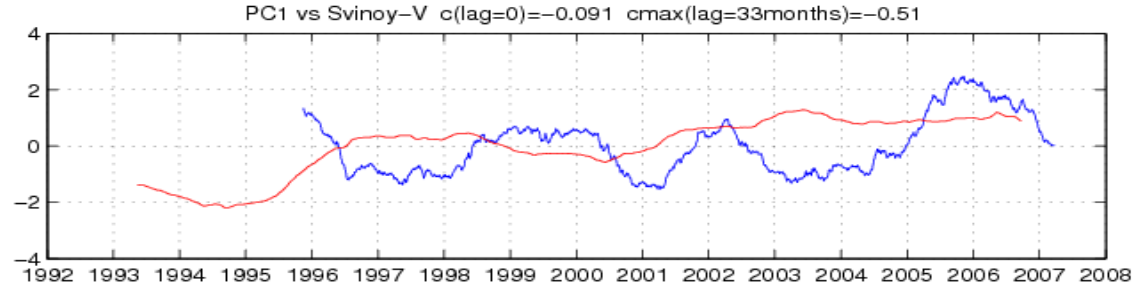


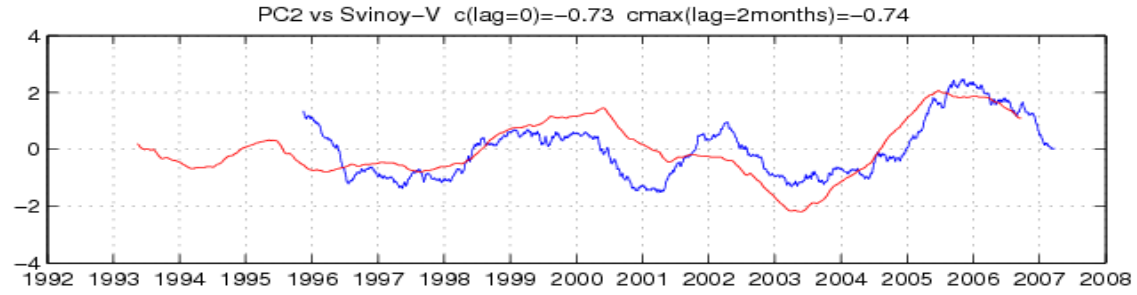
Conclusion

Time series of v and T in Svinøy Section vs EOF-mode 1 and 2 in North Atlantic
1-year mv-filter









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