

**AWAKE-2 Annual Meeting
September 29, 2014, Sopot**



AWAKE-2

**Arctic climate system study of ocean,
sea ice and glaciers interactions in Svalbard area**

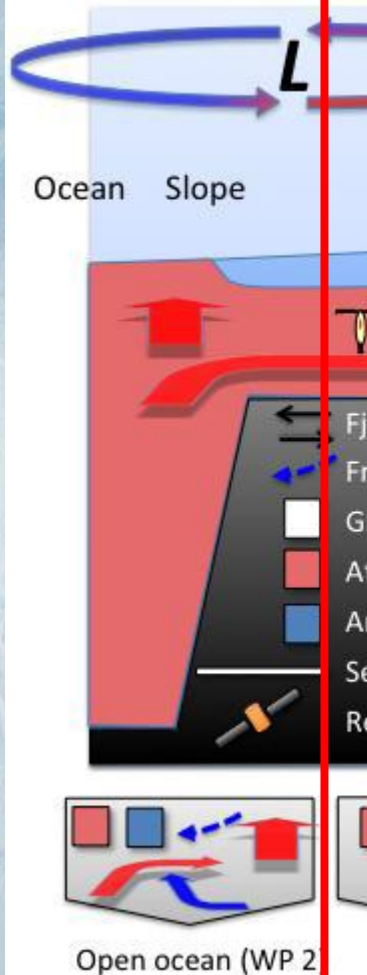
WP2

Open ocean oceanography

A. Beszczynska-Möller, W. Walczowski



Main objectives of WP2



- Understanding the Atlantic water variability in the West Spitsbergen Current on different time scales based on available historical data and new measurements.
- Describing and quantifying of the inter-annual variation of Atlantic and Arctic water and freshwater content on the shelf from available historical hydrographic data and new dedicated observations
- Explaining the mechanisms of the AW circulation onto the shelf and its interaction with the fjords

Main tasks in WP2

- T2.1** To analyze historical data from available archives and to collect dedicated new data to describe and understand the variability of AW properties in the WSC on different time scales (IOPAS)
- T2.2** To investigate the local and remote forcing mechanisms responsible for inter-annual variability of the AW in the West Spitsbergen Current using the available hydrographic and atmospheric data, reanalysis and results of numerical model (IOPAS)
- T2.3** To investigate topographically guided mechanisms of the AW circulation onto the West Spitsbergen shelf. To develop the analytical model and use existing numerical model to study the shelf circulation. (UNIS)

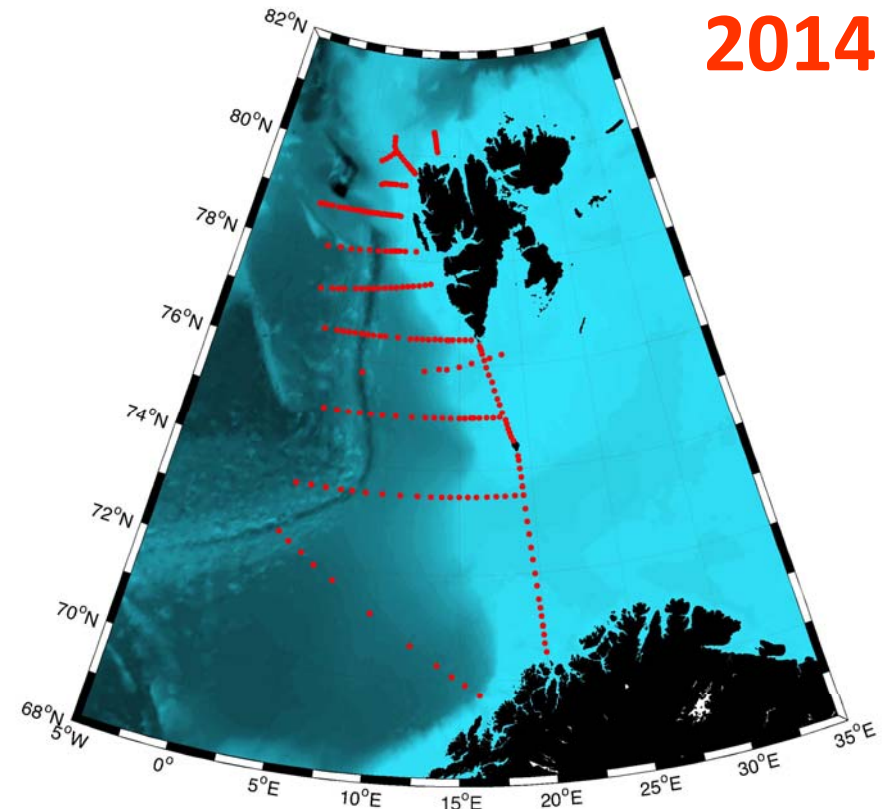
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- 10-11 sections
- ~200 CTD profiles
- ~200 LADCP profiles
- Towed CTD high resolution section
- Measurements in fjords

AREX Cruises

2014



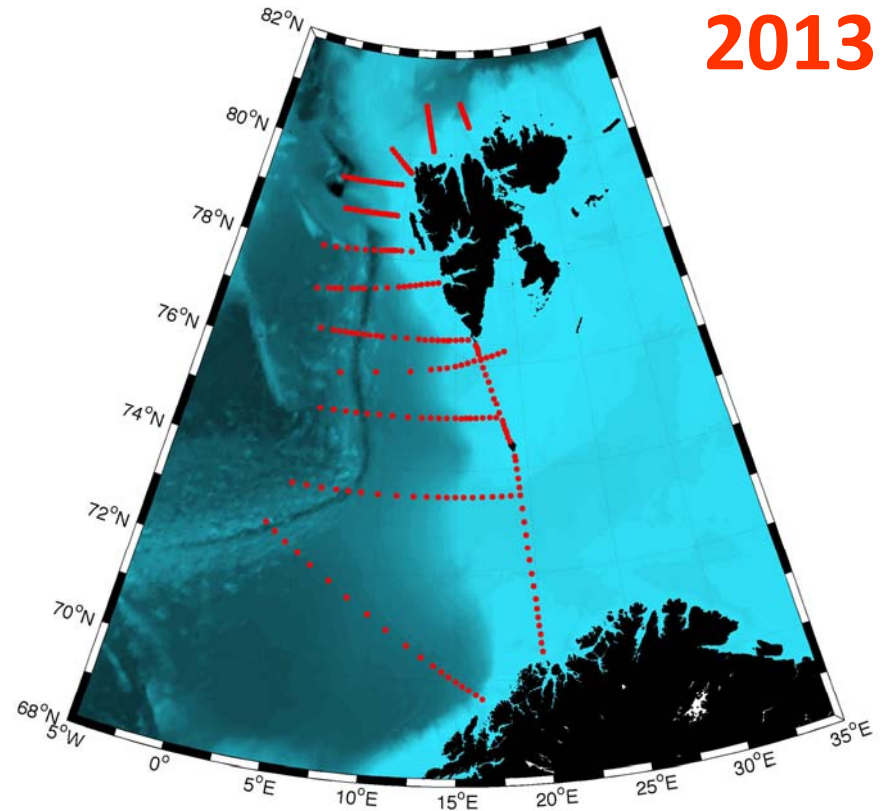
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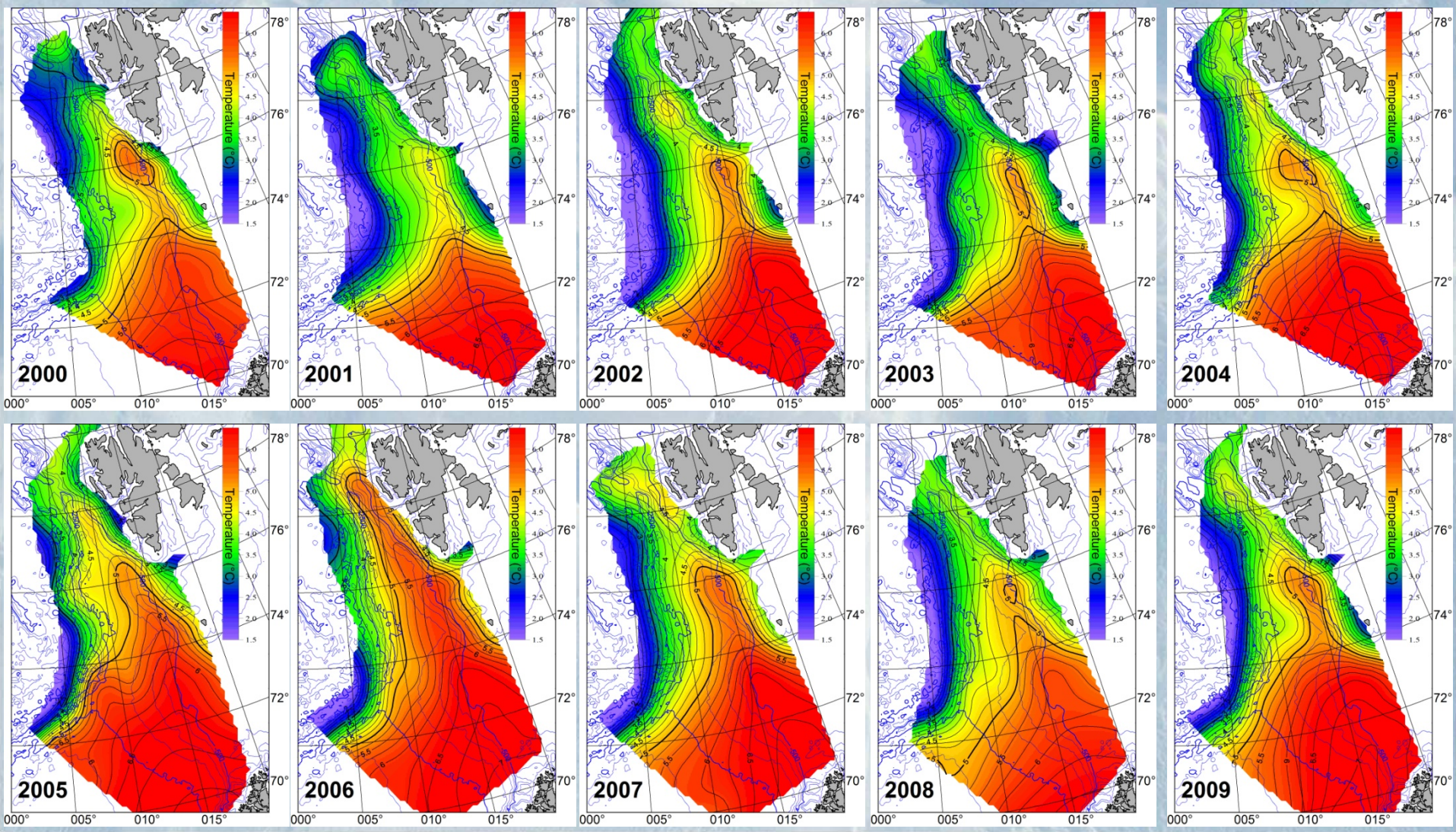
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AREX Cruises

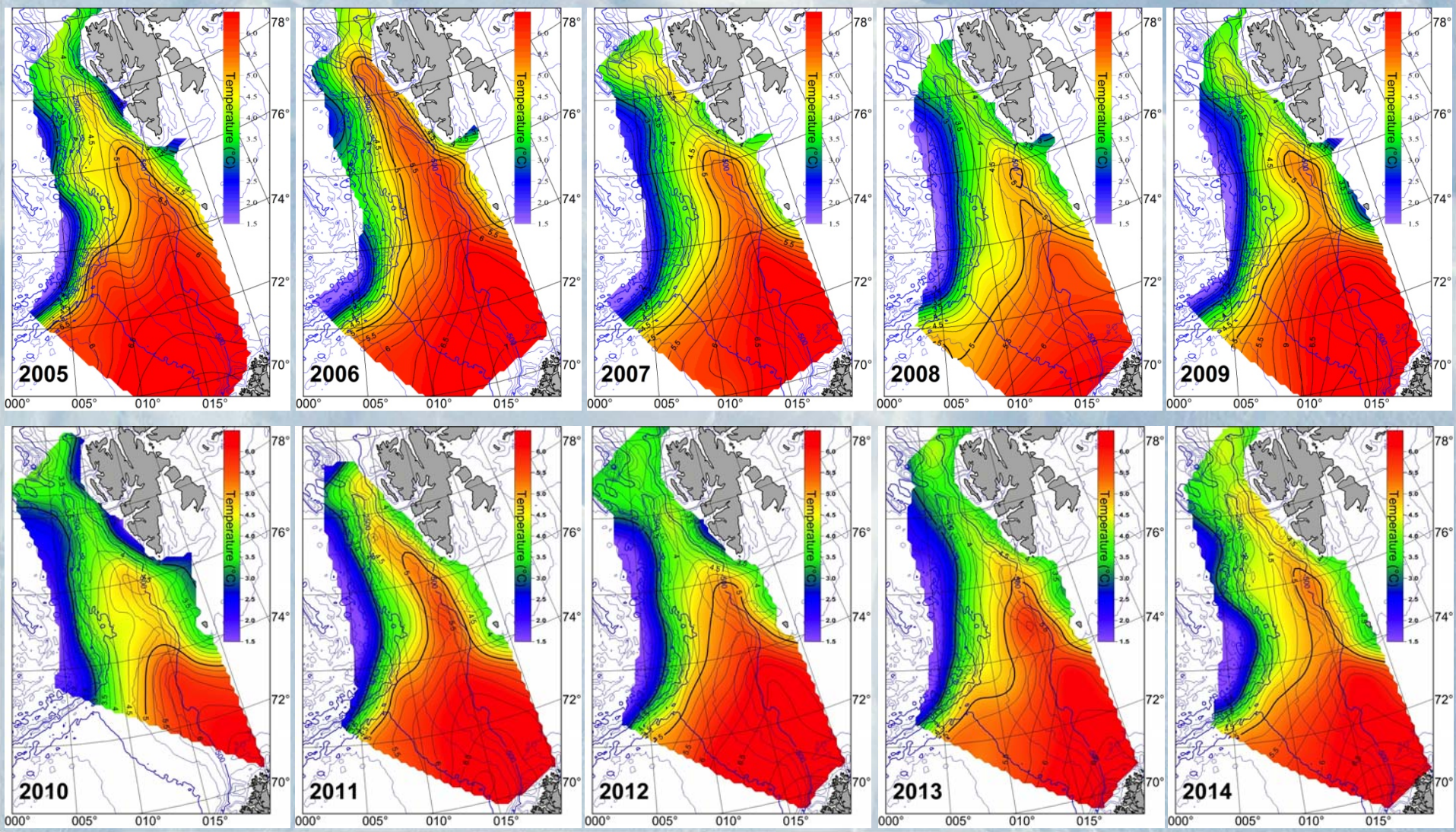
2013



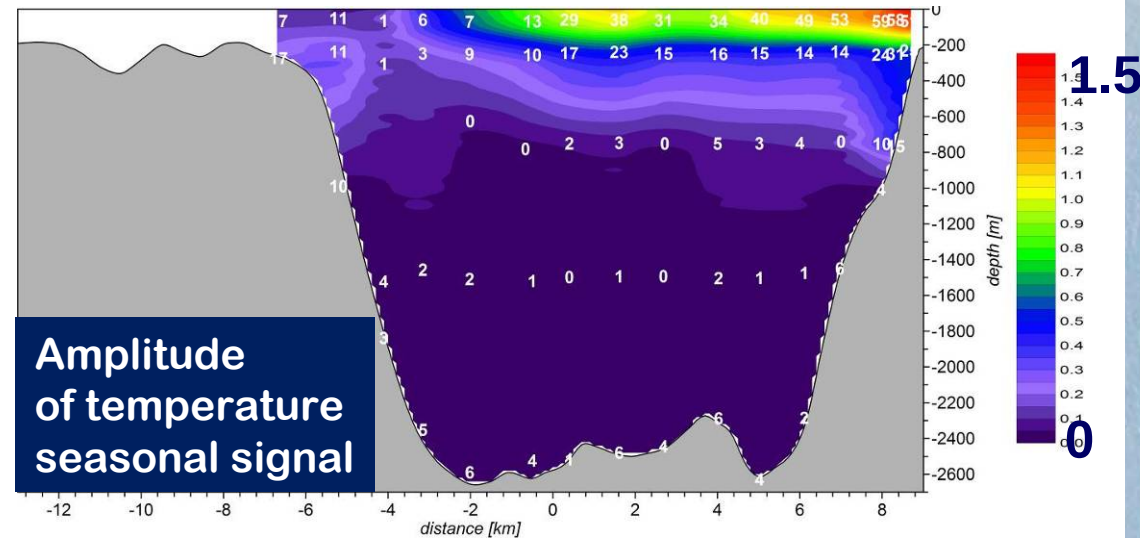
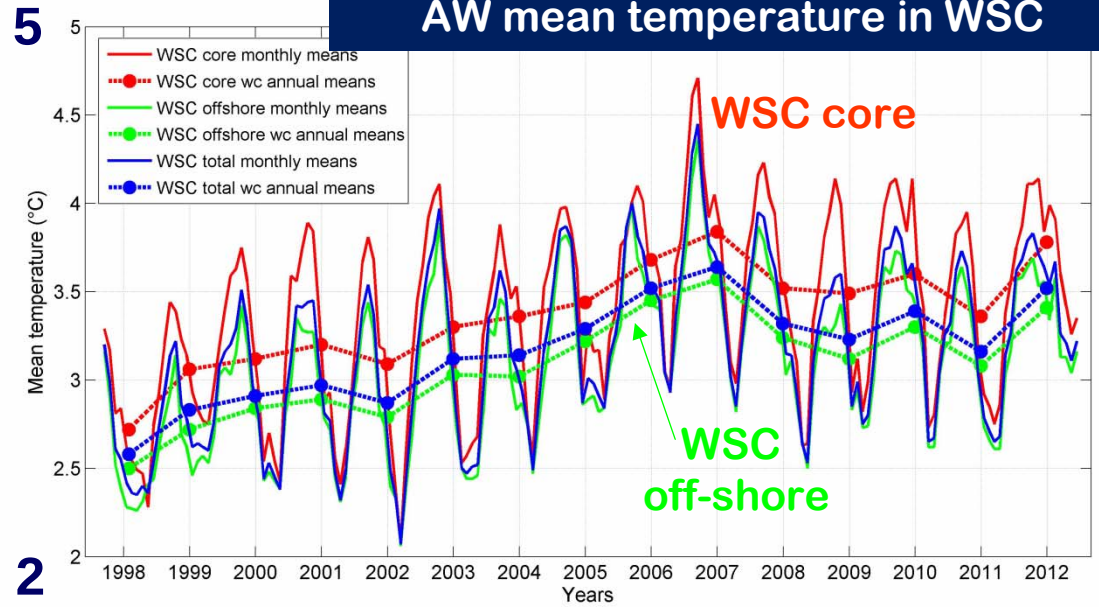
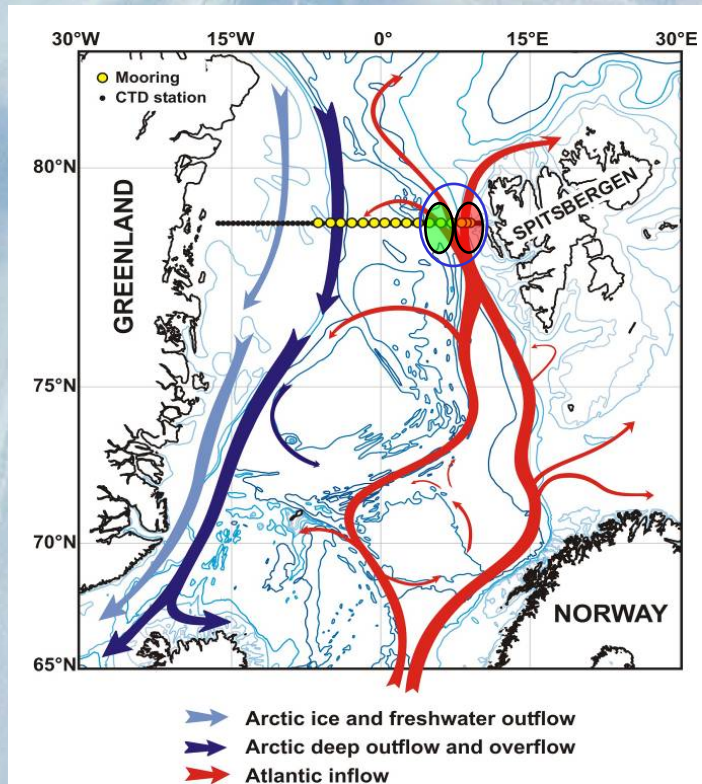
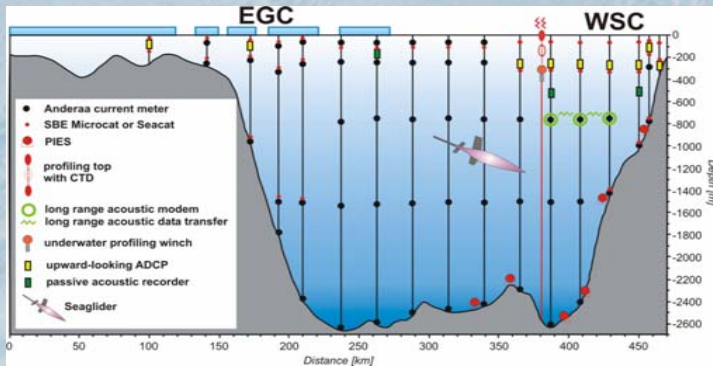
Temperature distribution at 100 dbar in 2000-2009



Temperature distribution at 100 dbar in 2005-2014

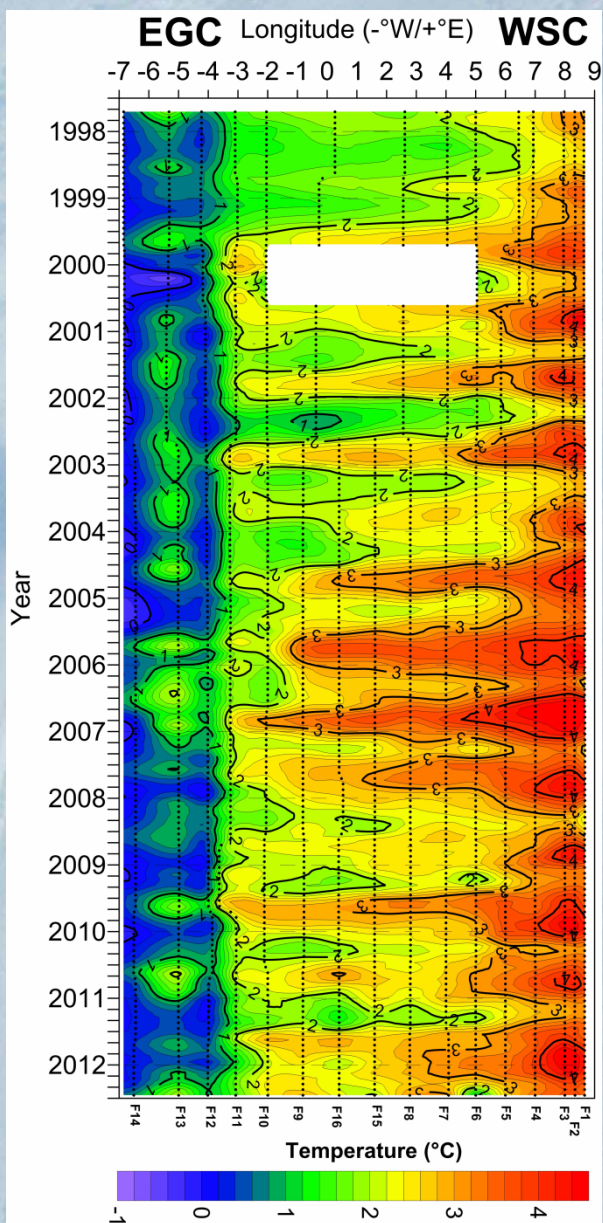


Seasonal and interannual variability of the AW temperature in the WSC

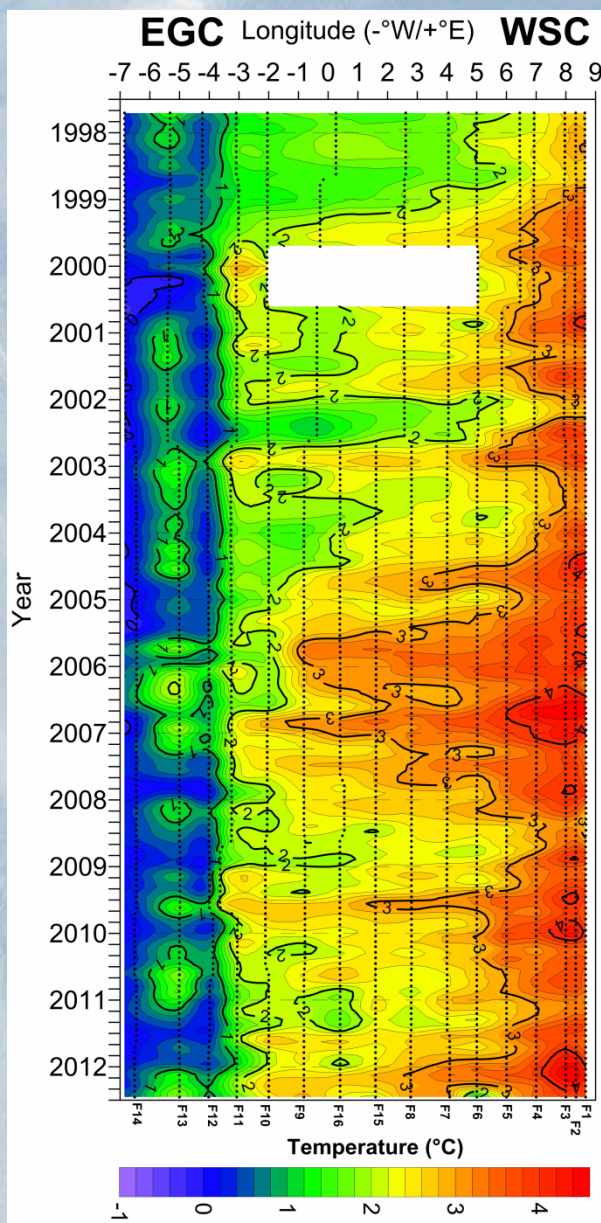


Spatio-temporal variability of AW temperature @ 230 m

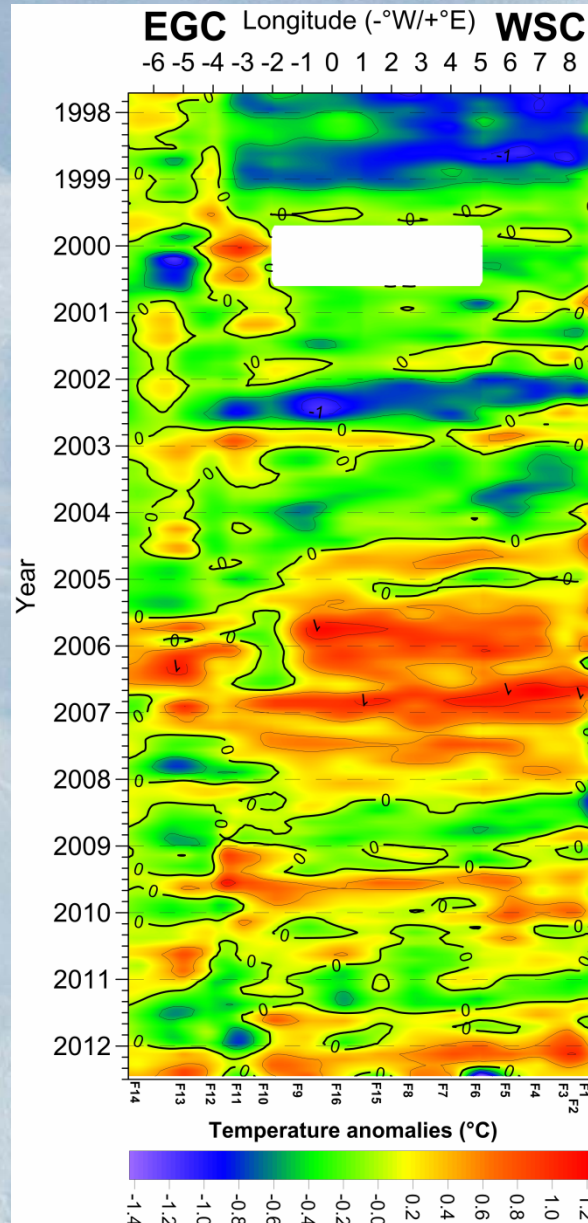
Temperature



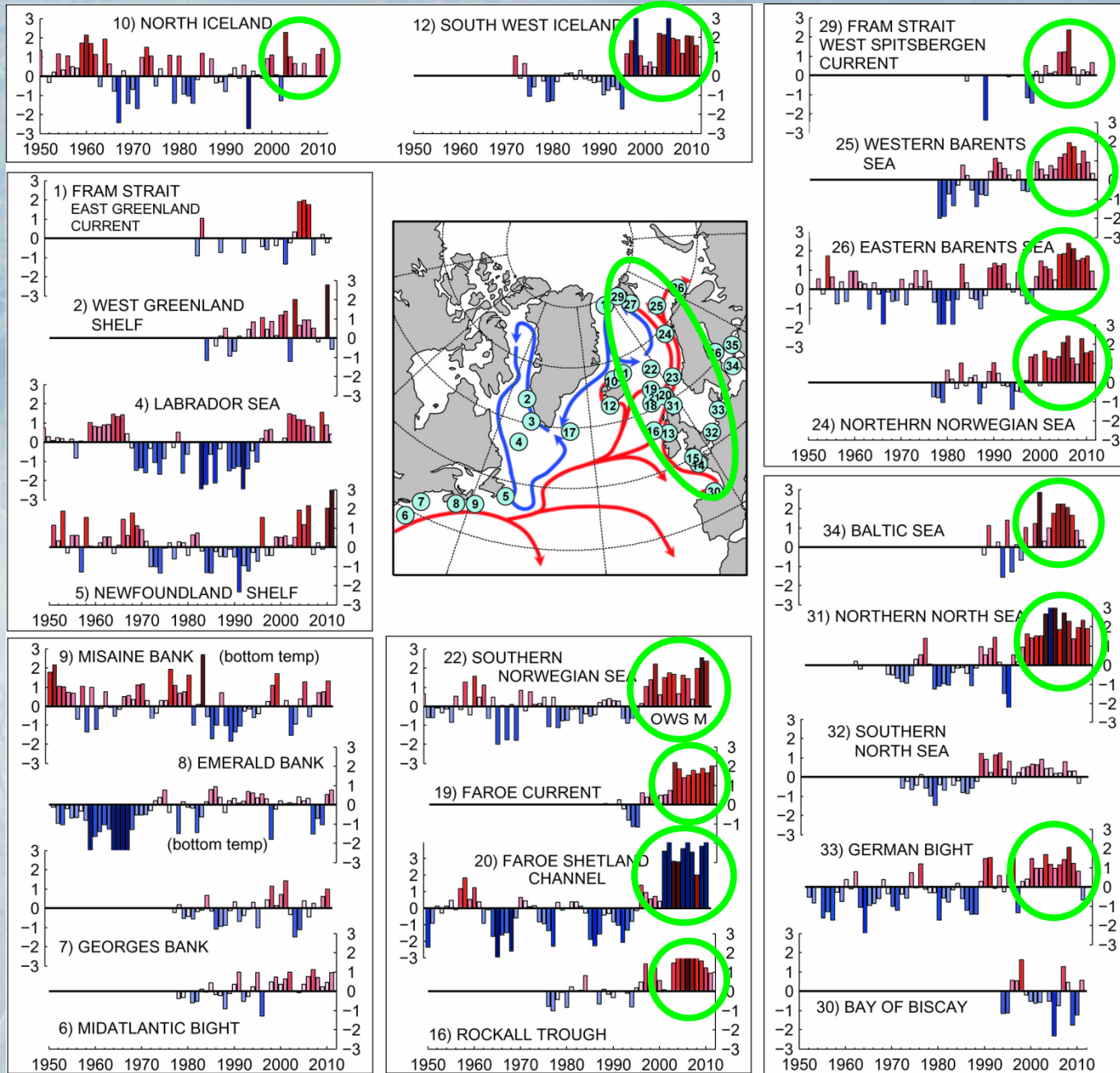
Temperature deseasoned



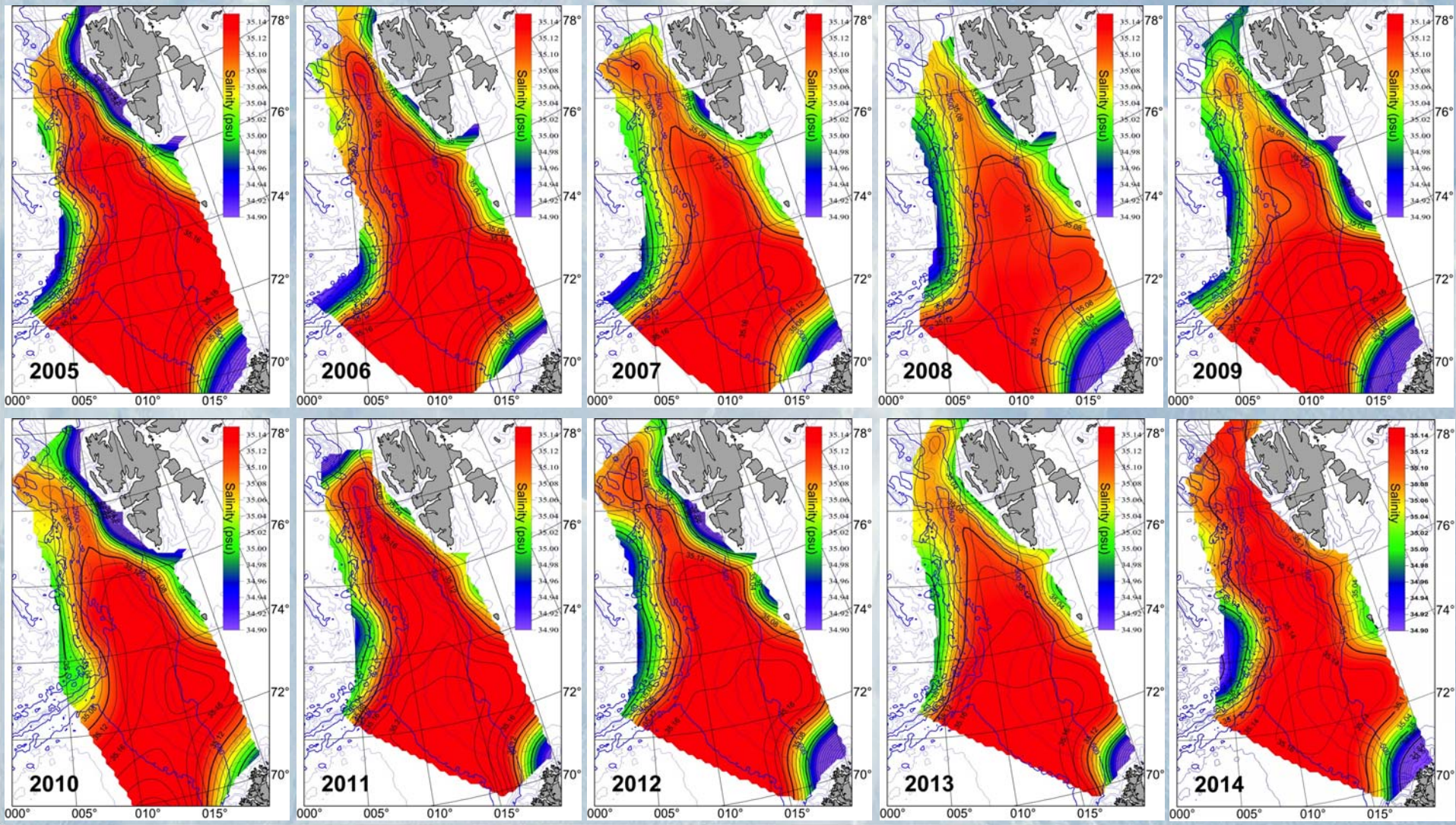
Temperature anomaly



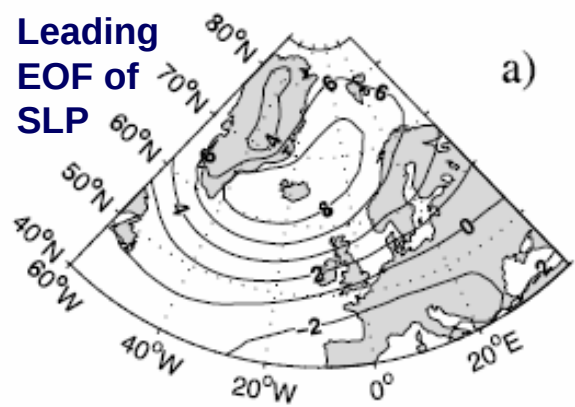
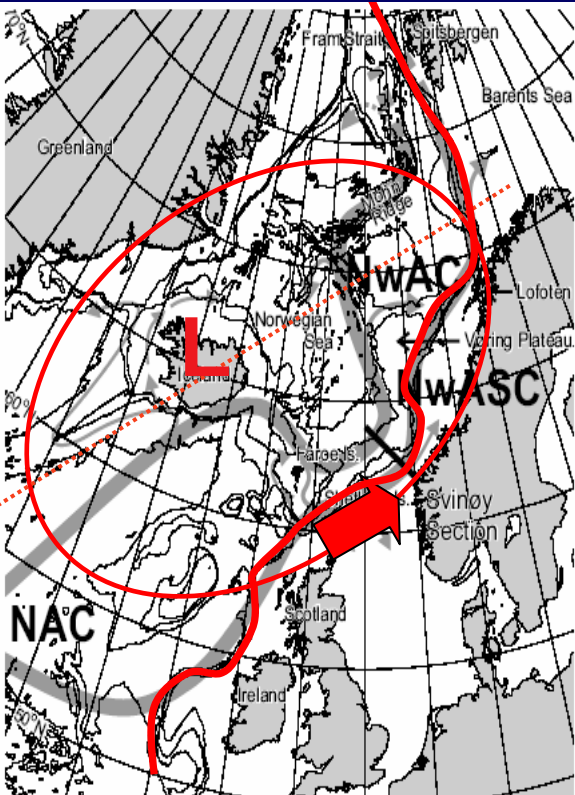
Propagation of warm anomalies from the North Atlantic



Salinity distribution at 100 dbar in 2005-2014

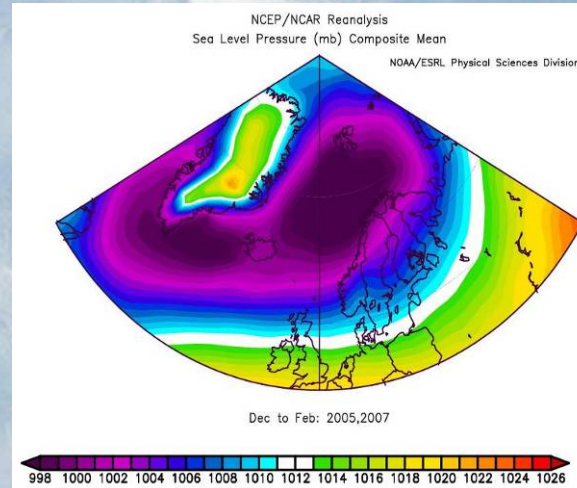


Coherent changes in the slope current (NwASC nad WSC)

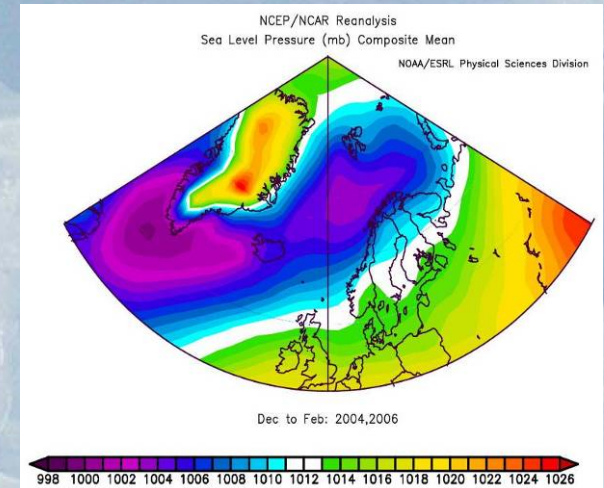


Skagseth et al., GRL 2004

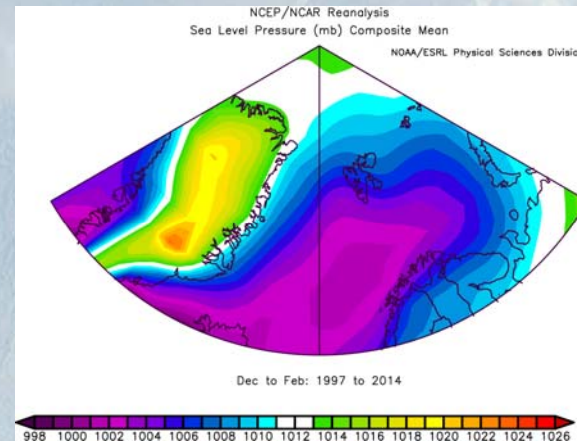
Composites of SLP for winter (DJF) for strong and weak inflow in the WSC



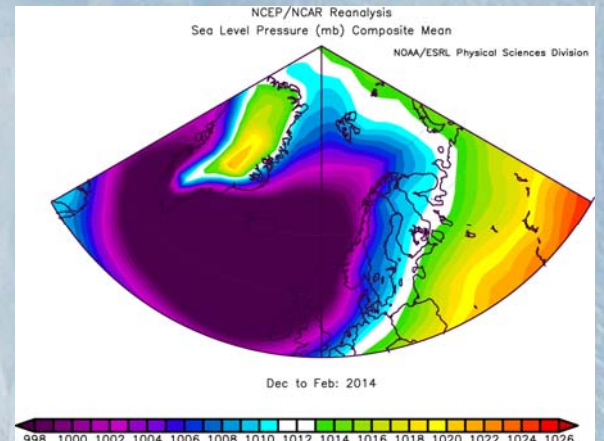
for maximum WSC transport winters (2005, 2007, 2009)



for minimum WSC transport winters (2004, 2006, 2010)



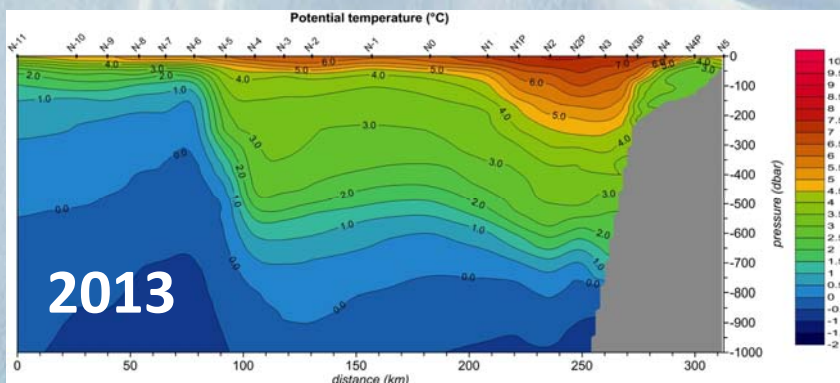
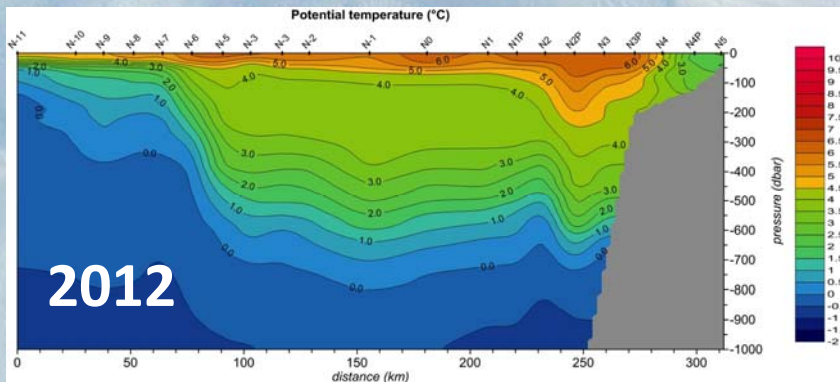
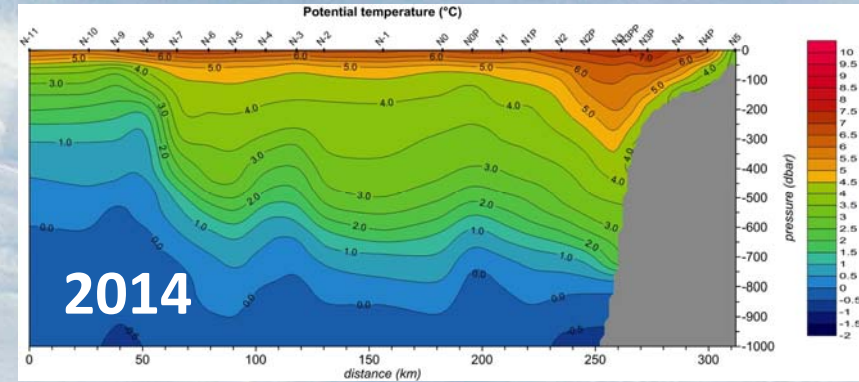
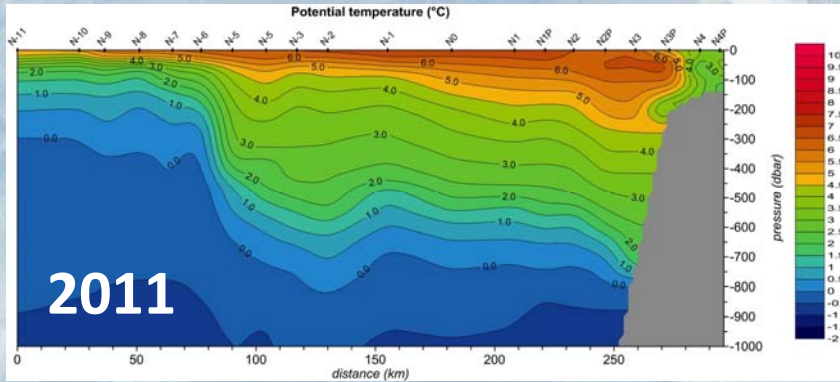
mean 1997-2014



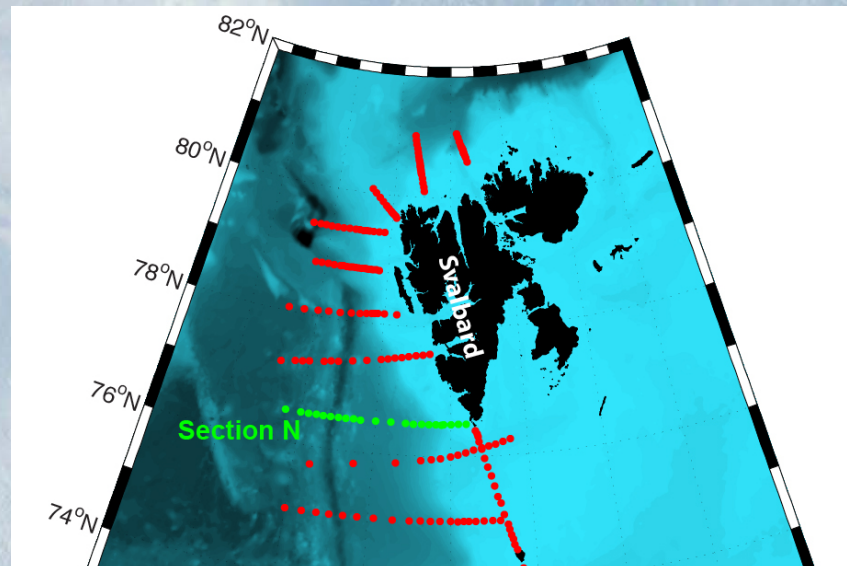
winter 2014

Data from the NCEP/NCAR Reanalysis Project, ESRL Physical Sciences Division

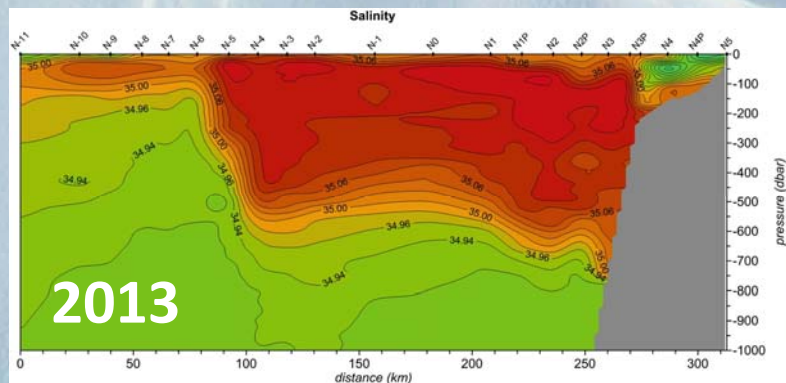
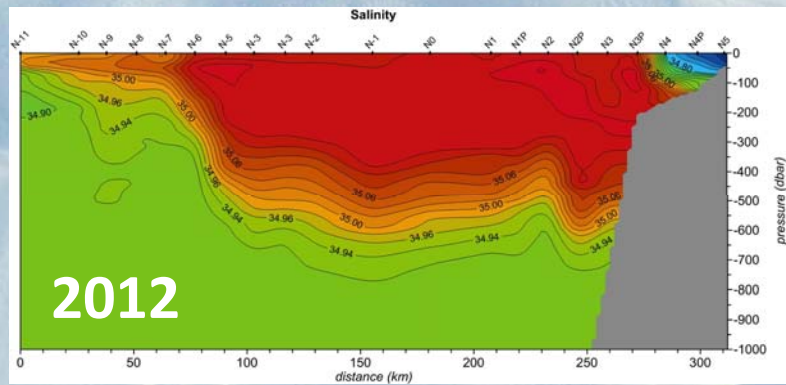
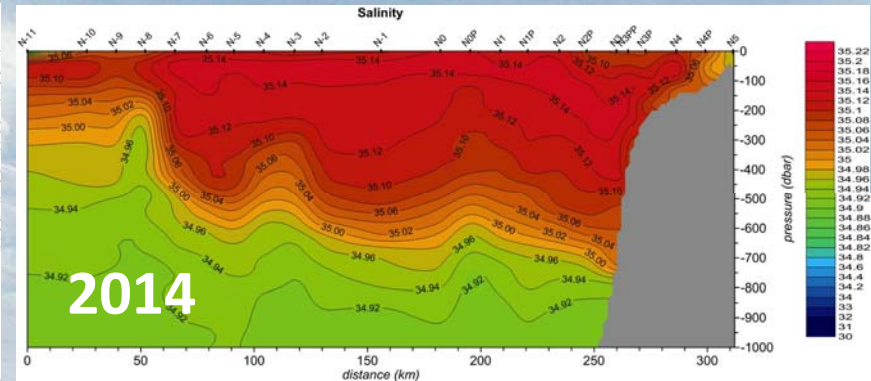
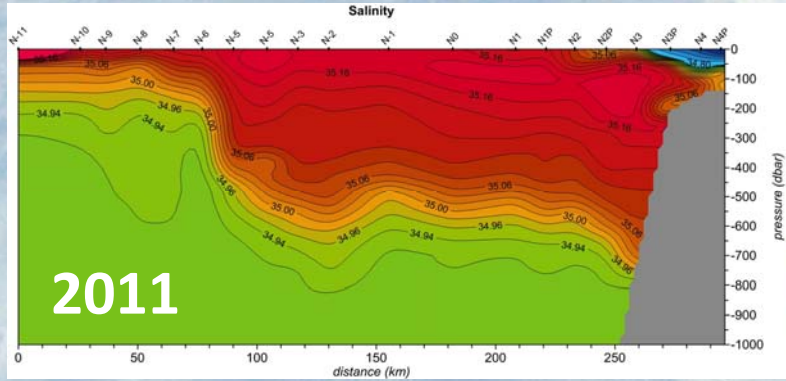
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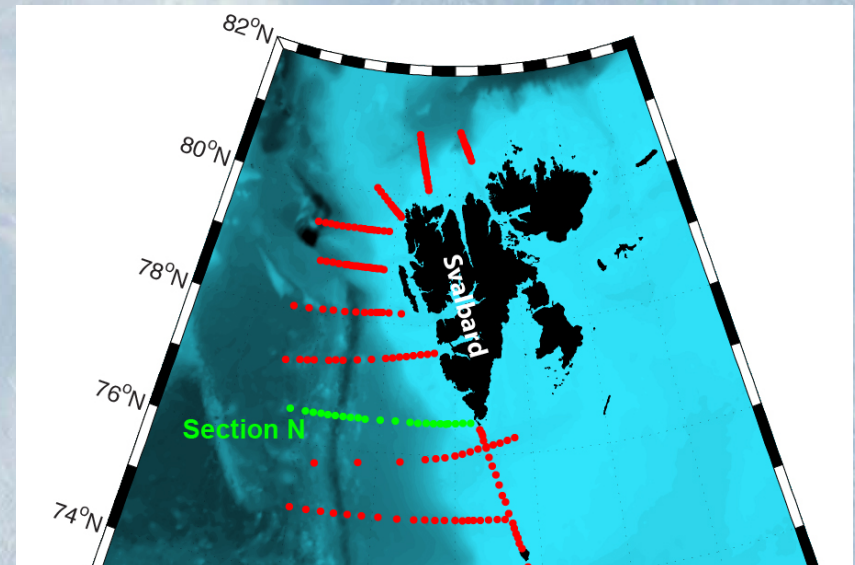
Temperature Section N



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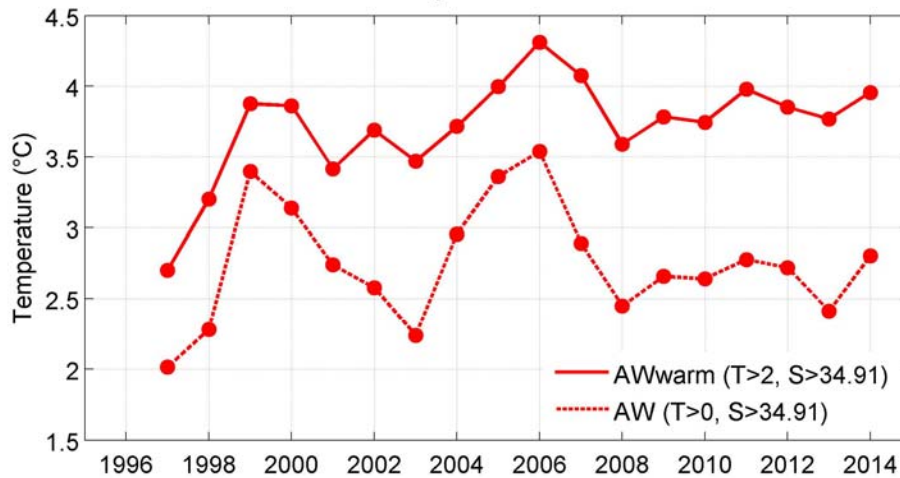
Salinity Section N



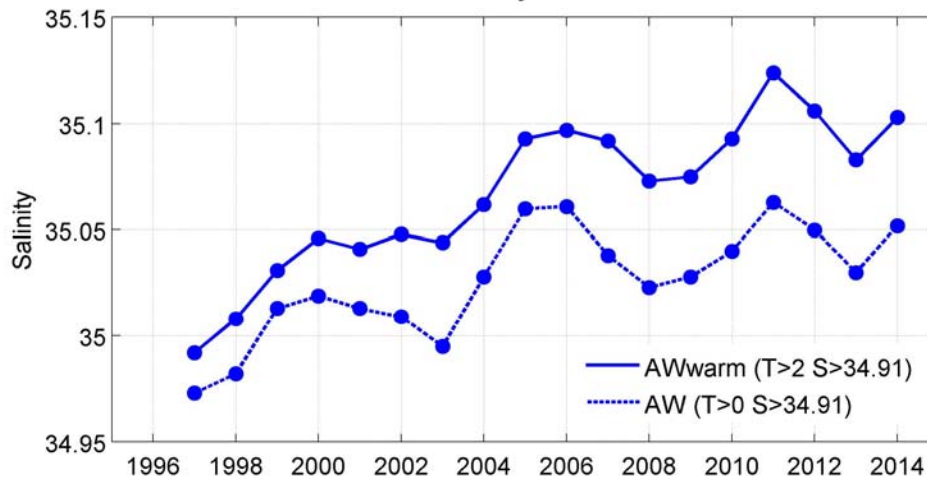
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AW mean temperature at the section N

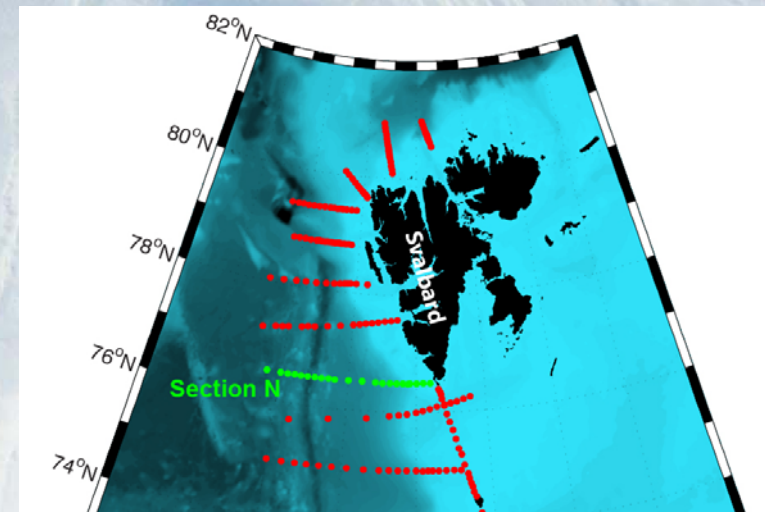


AW mean salinity at the section N



AW mean temperature

Section N



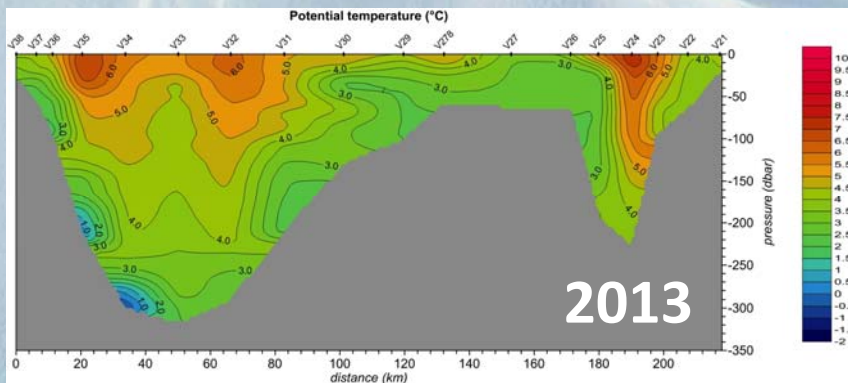
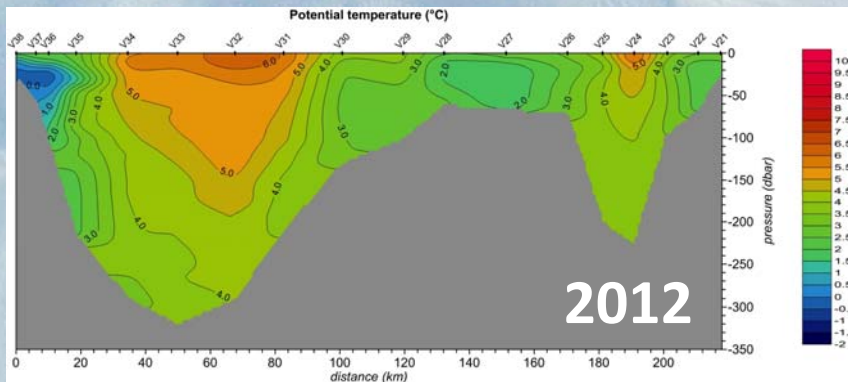
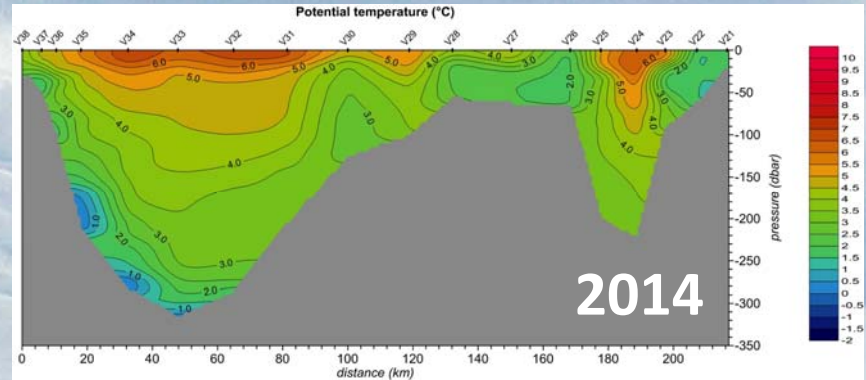
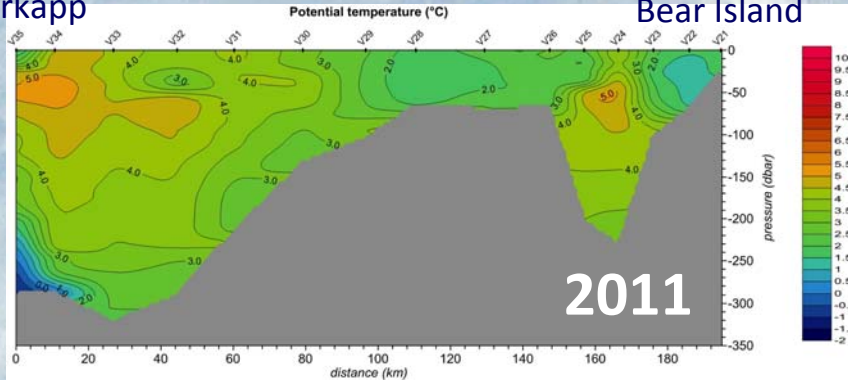
AW mean salinity

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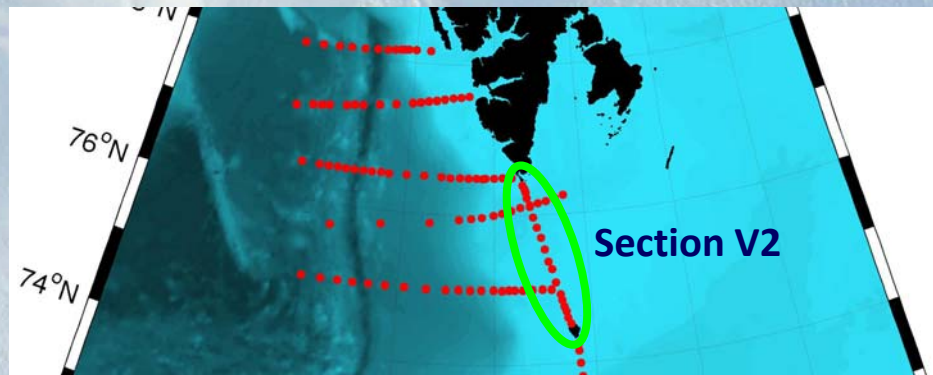


Sørkapp

Bear Island



Temperature Section V2

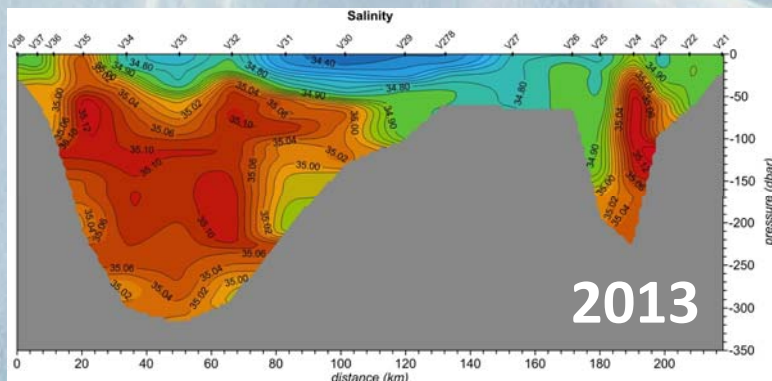
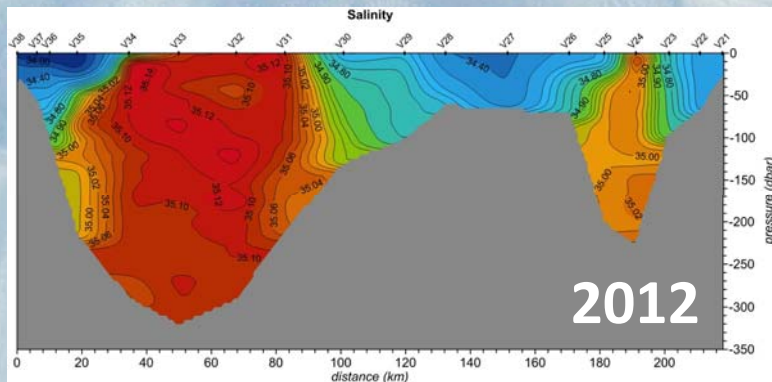
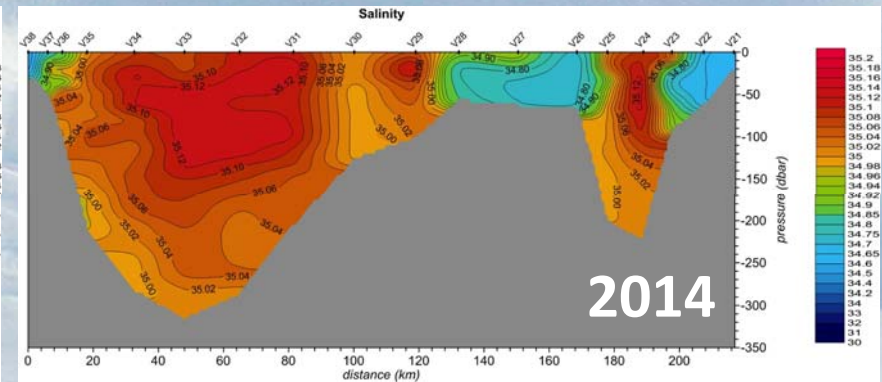
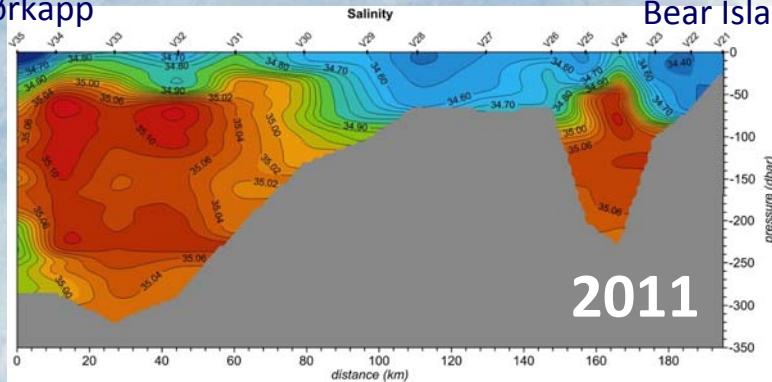


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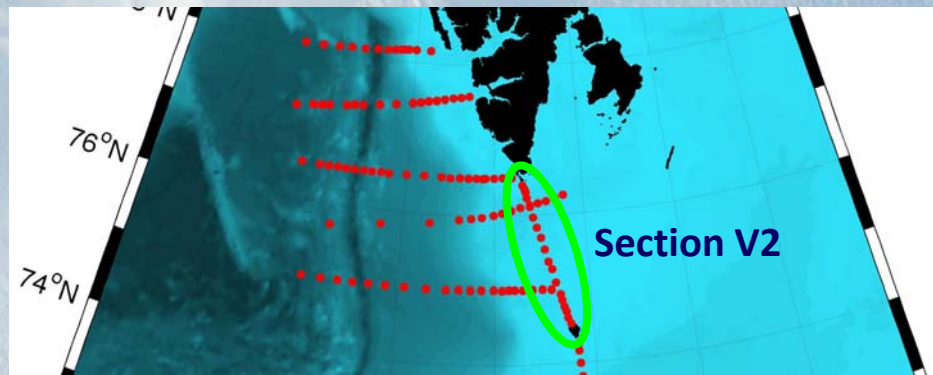


Sørkapp

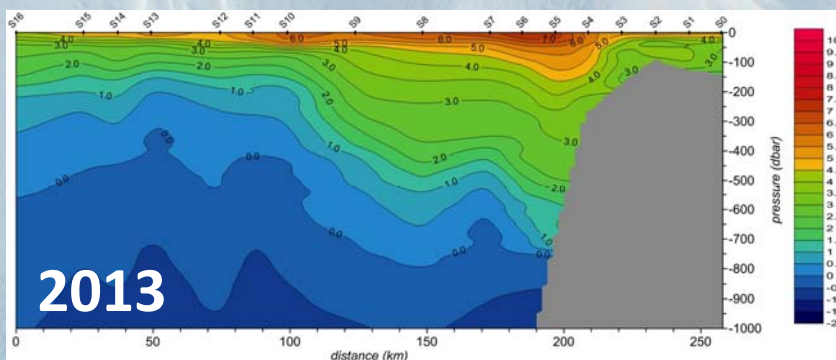
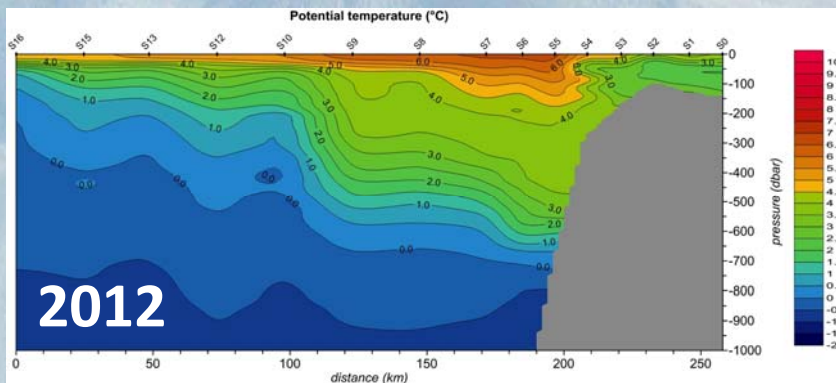
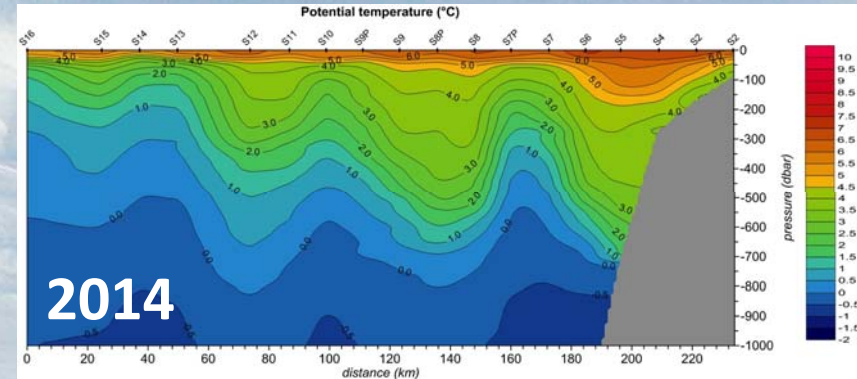
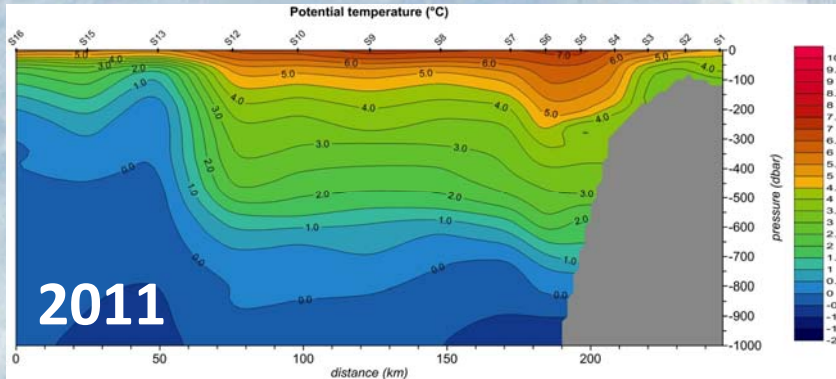
Bear Island



Salinity
Section V2



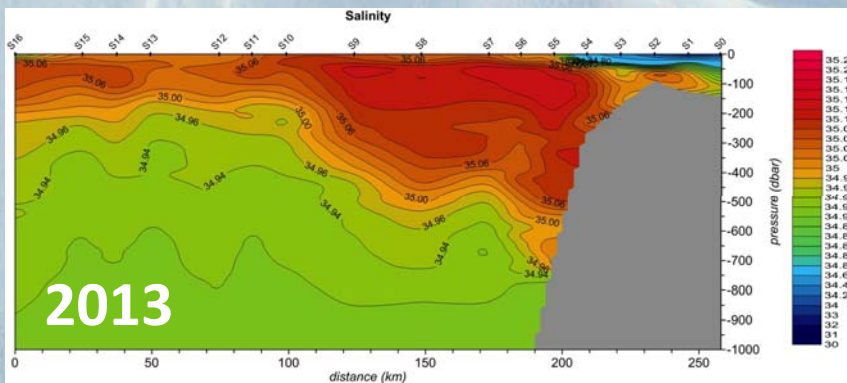
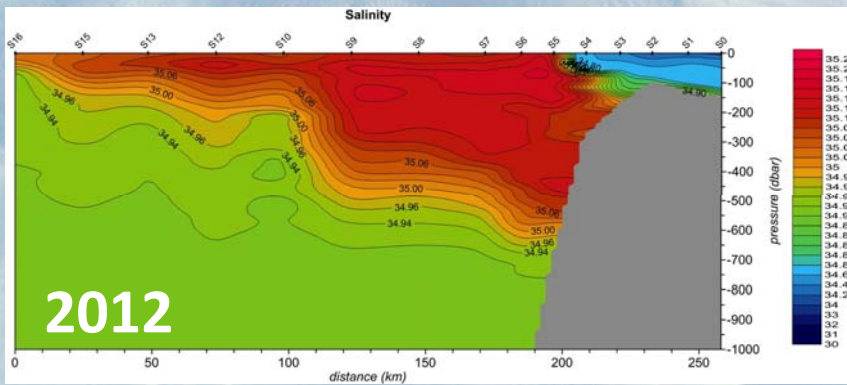
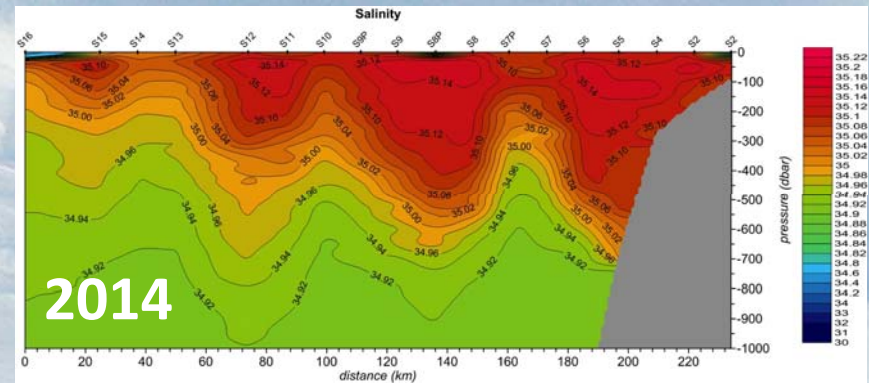
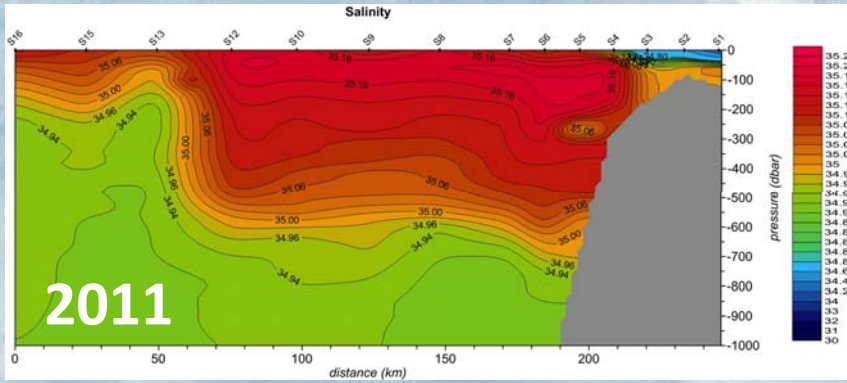
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Temperature Section S



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Salinity Section S





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DELIVERABLES IN WP2

D2.1.1 The report on the variability of AW properties and transport in the WSC, based on the available historical data (IOPAS, month 12)

D2.1.2 The cruise reports and collections of new data sets obtained during the first field season (IOPAS with UNIS contr., month 18)

D2.1.3 The cruise reports and collections of new data sets obtained during the second field season (IOPAS with UNIS contr., month 30)

D2.2.1. The scientific paper in the peer reviewed journal focused on forcing mechanisms of the AW variability in the WSC (IOPAS, month 34)

D2.3.1 The prognostic model for determination of dominating water masses on the shelf (UNIS, month 32)

D2.3.2. The scientific paper in the peer reviewed journal describing the mechanisms of water masses domination on the shelf (UNIS, month 36)

AWAKE !



Thank you for your attention !