
High resolution modelling in the Nordic Seas

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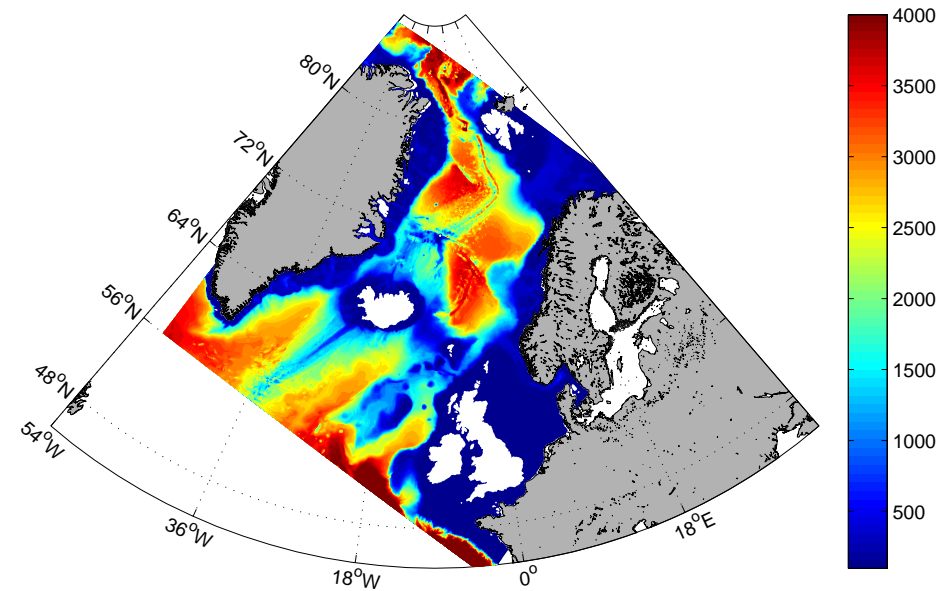
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Outline

- ◇ Objective and ideas
- ◇ Model domain and setup
- ◇ Some VERY preliminary results
- ◇ Future plans

Objective

Objective: Explore the effect of mesoscale activity on a coupled ecosystem-physical model system in the Nordic Seas, with focus on the Norwegian and East Greenland coasts

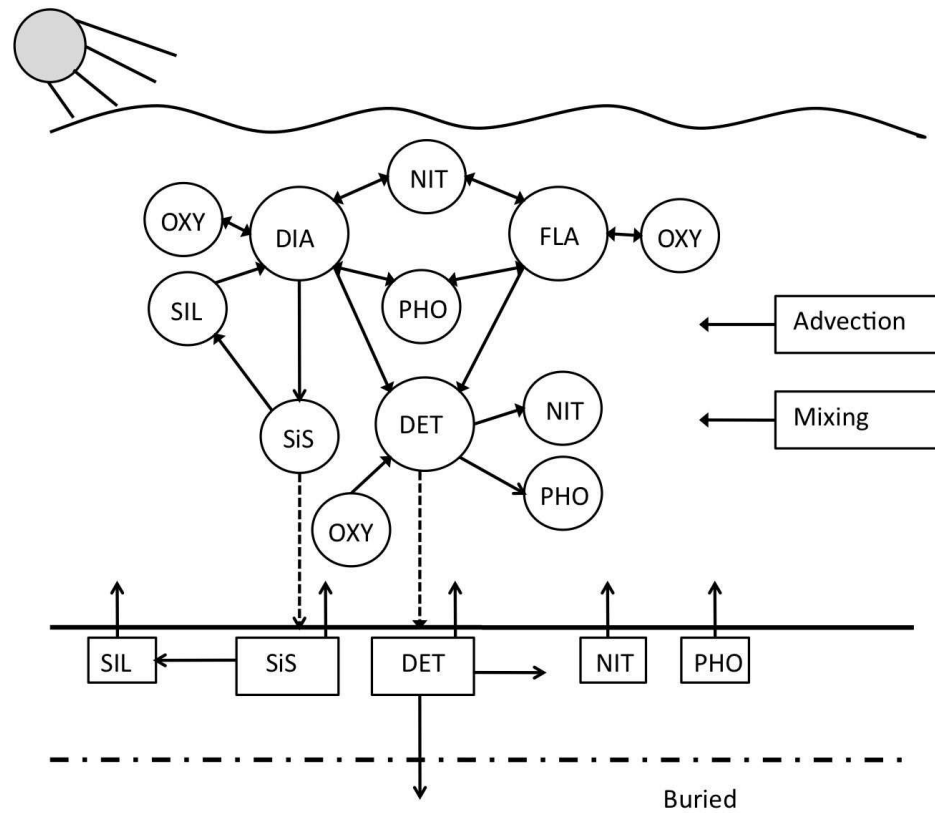


Model domain and setup

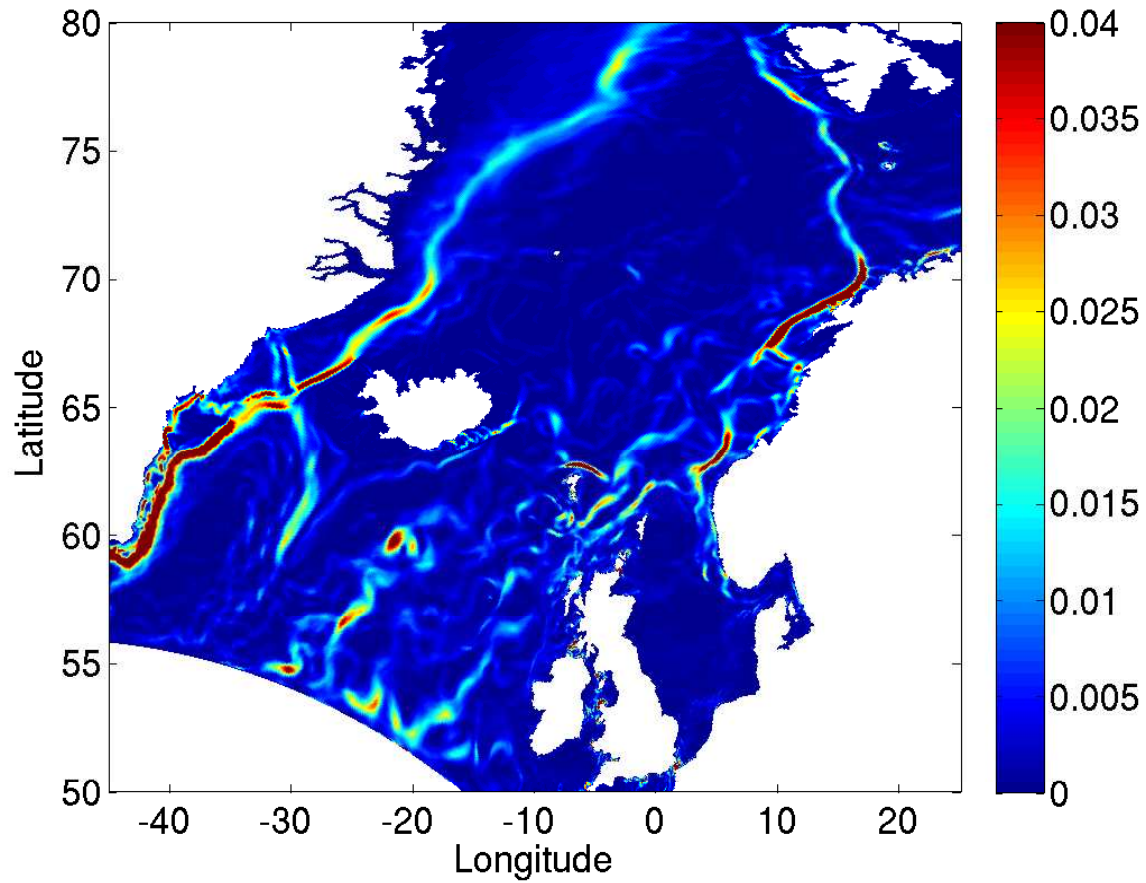
- ◇ 750x730 grid cells, which gives a horizontal resolution of \sim 4.5 km in the whole domain
- ◇ 28 vertical layers, with properties especially for the Nordic Seas
- ◇ Spin-up from climatology (due to restart-file problems), but nesting from TOPAZ3
- ◇ TOPAZ3 will also be run in coupled mode with NORWECOM, to provide biological boundary conditions
- ◇ The NORDIC model will, eventually, provide nesting conditions for two smaller model domains with 2 km horizontal resolution

Biological-chemical model:

NORWECOM

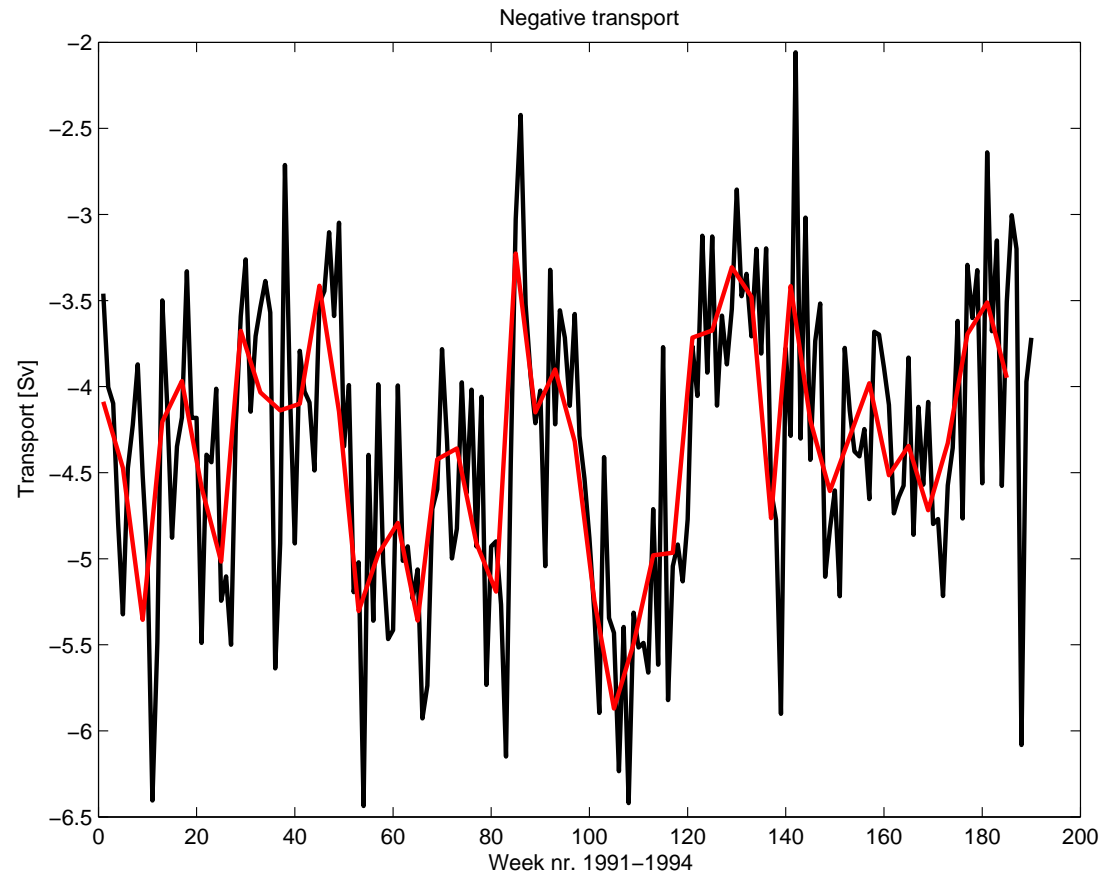


Current system (annual MKE)



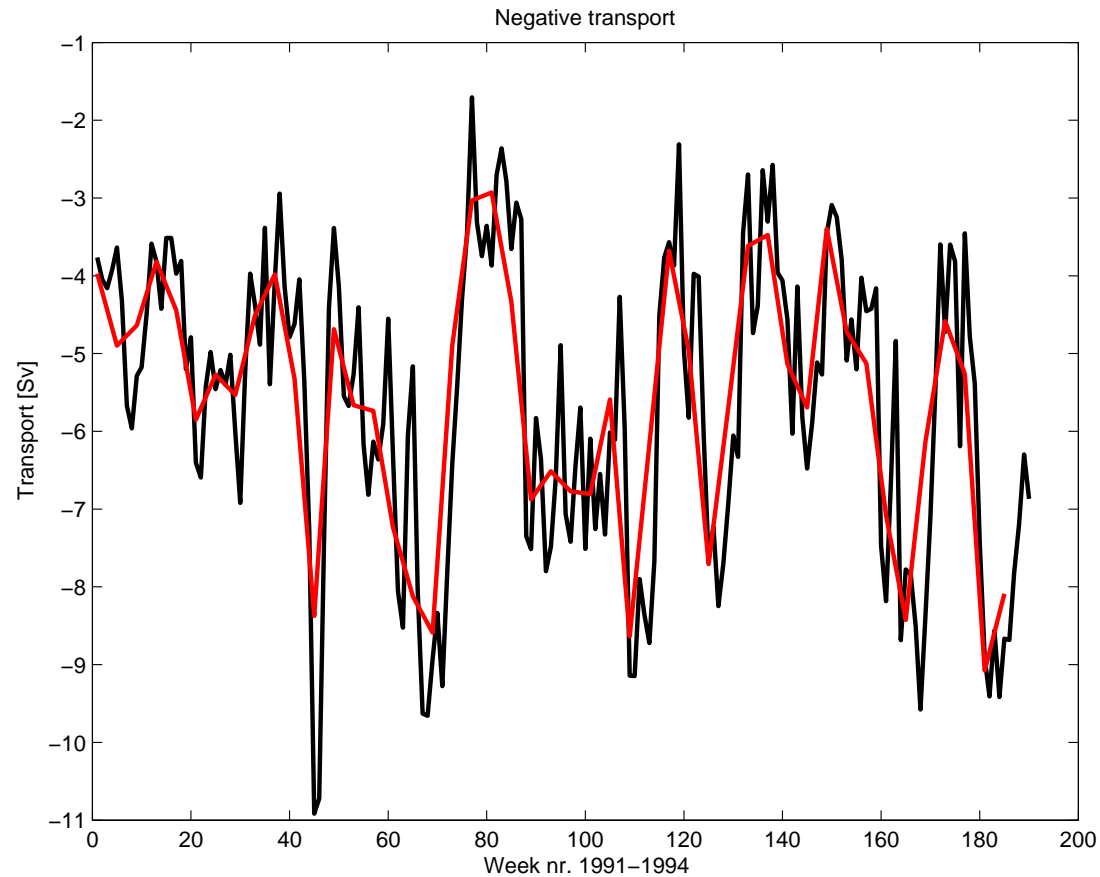
Transports - Iceland-Faroes Islands

Mean transport into the Norwegian Sea: 4.4 Sv



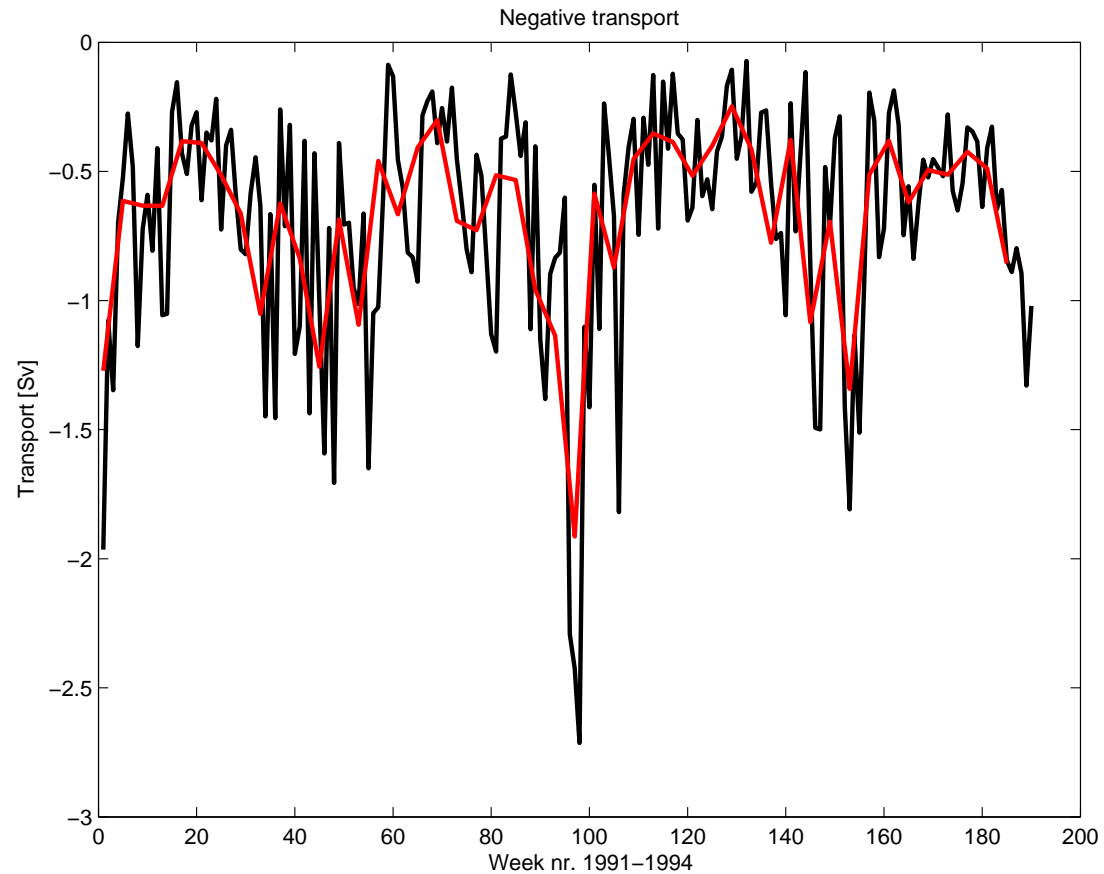
Transports - Faroes Islands-Shetland

Mean transport into the Norwegian Sea: 5.6 Sv



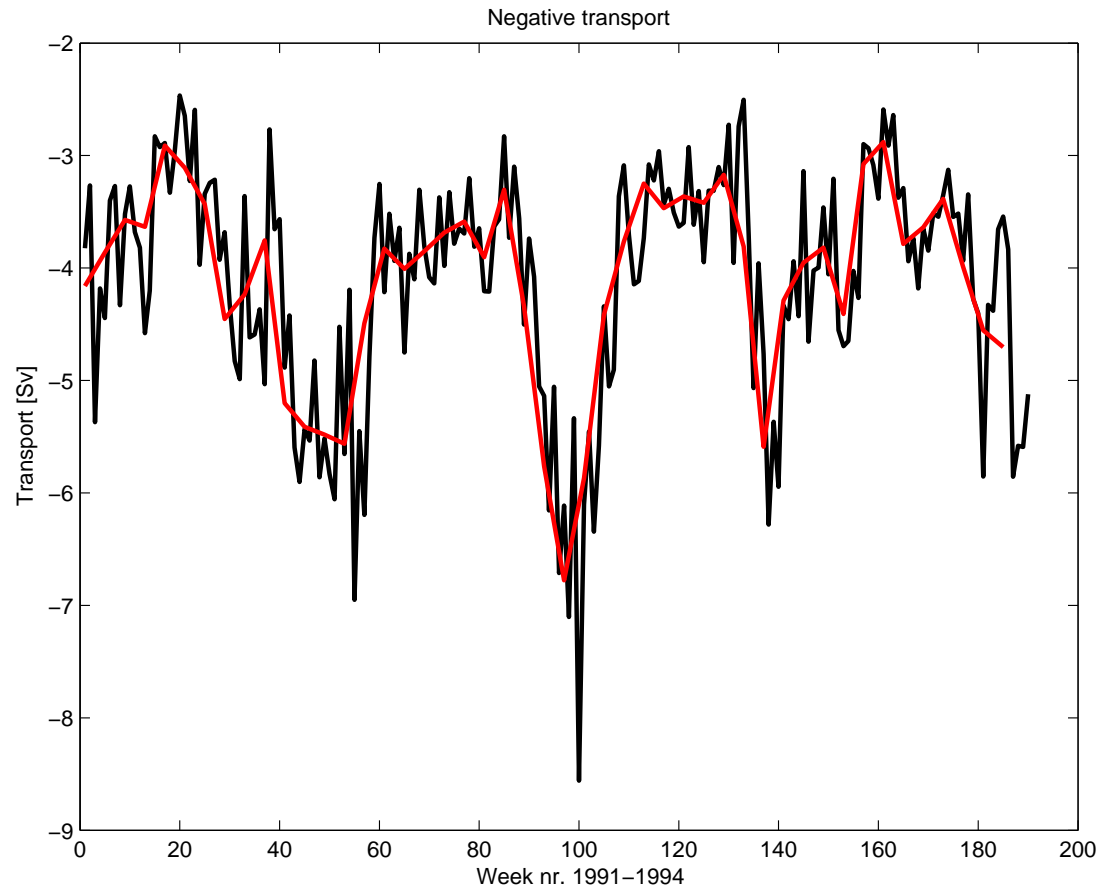
Transports - Shetland-Scotland

Mean transport into the Norwegian Sea: 0.7 Sv

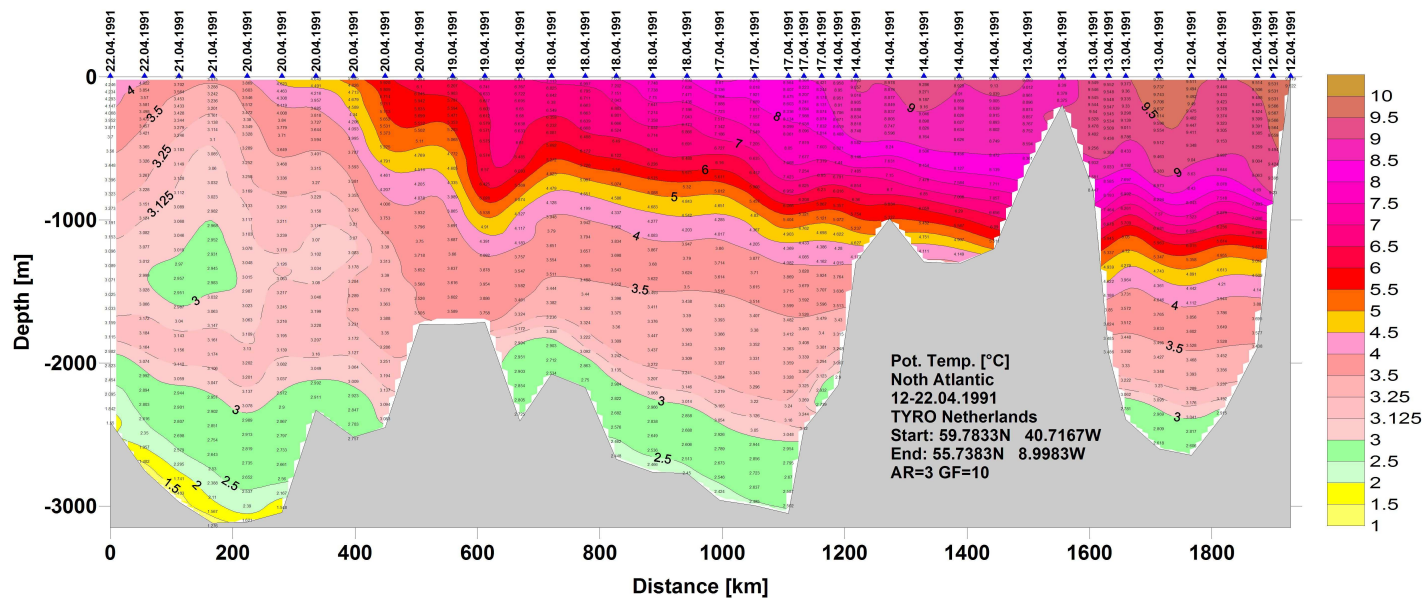


Transports - Barents Sea entrance

Mean transport into the Barents Sea: 4.12 Sv

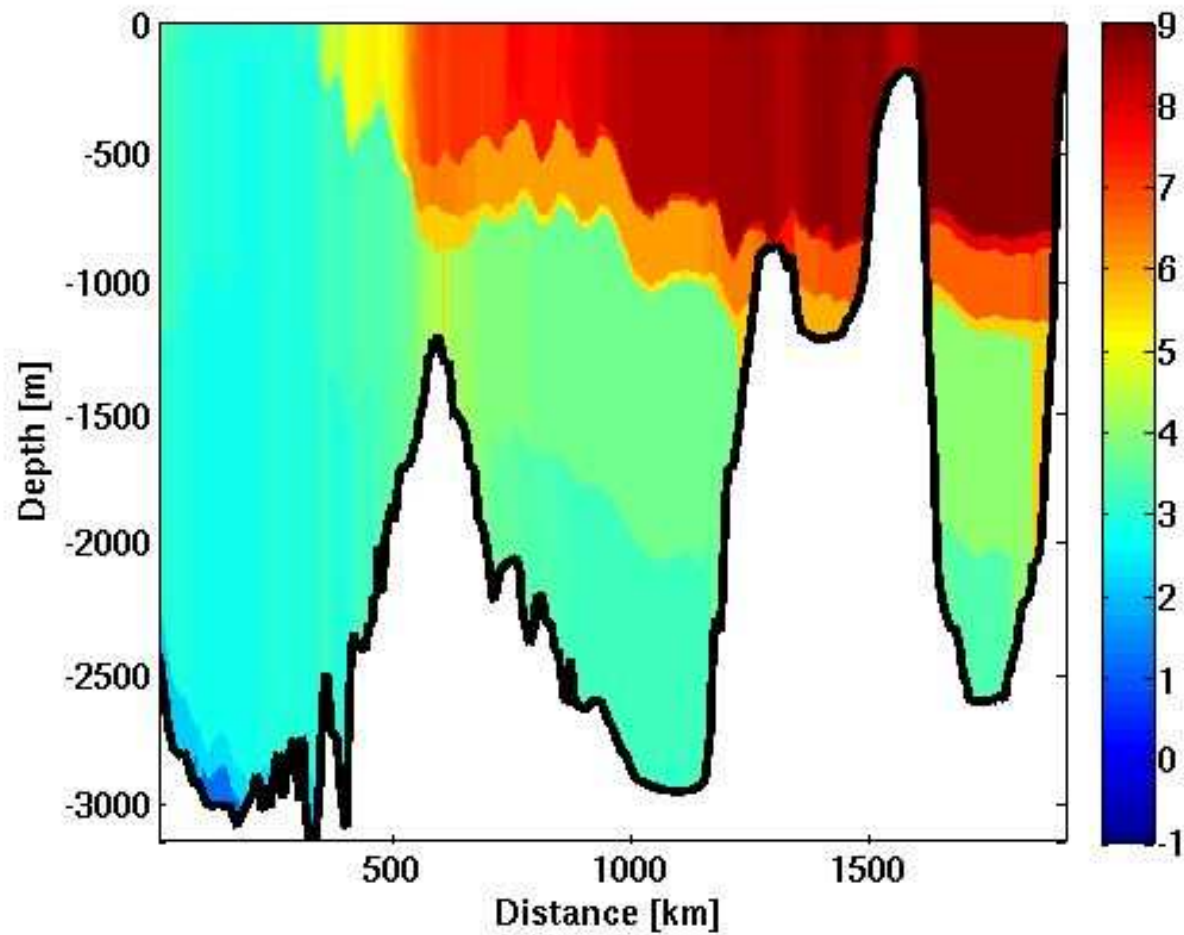


A quick comparison with observed sections - North Atlantic

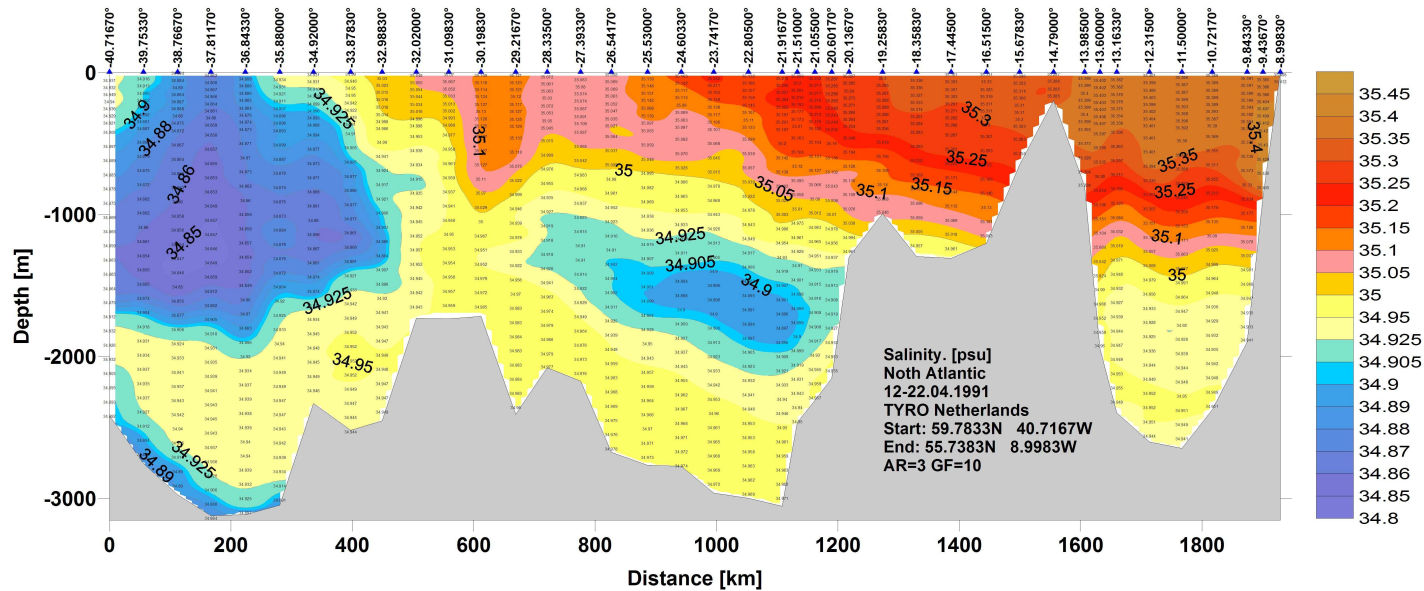


Graphics: Alexander Kudryatsev

NORDIC- North Atlantic

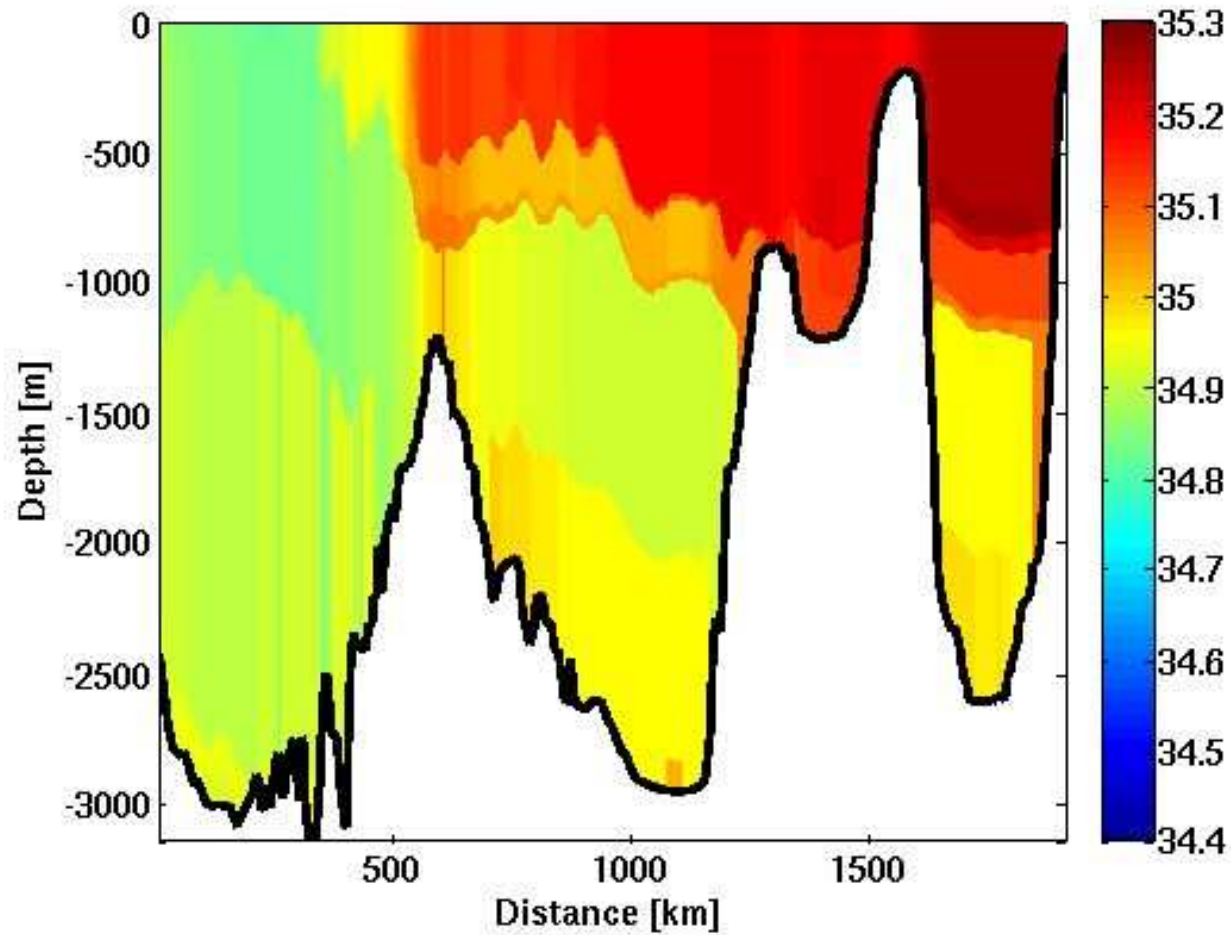


A quick comparison with observed sections - North Atlantic

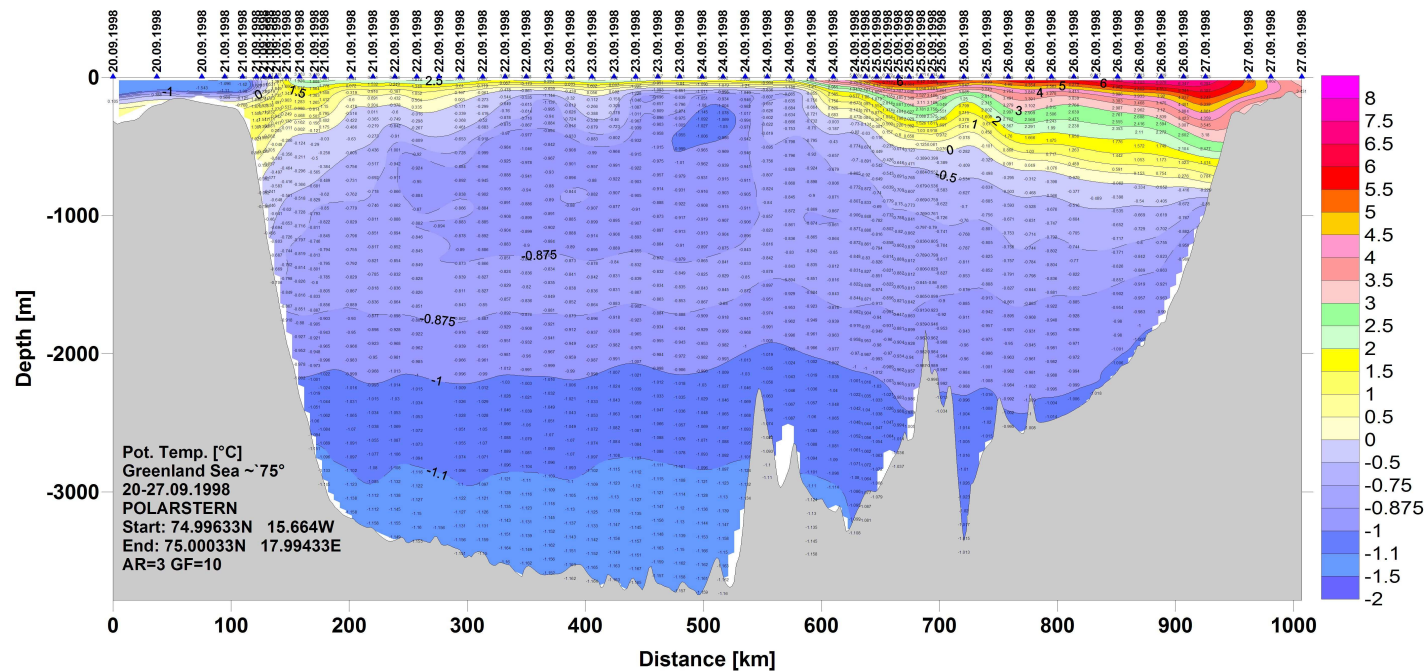


Graphics: Alexander Kudryatsev

NORDIC- North Atlantic

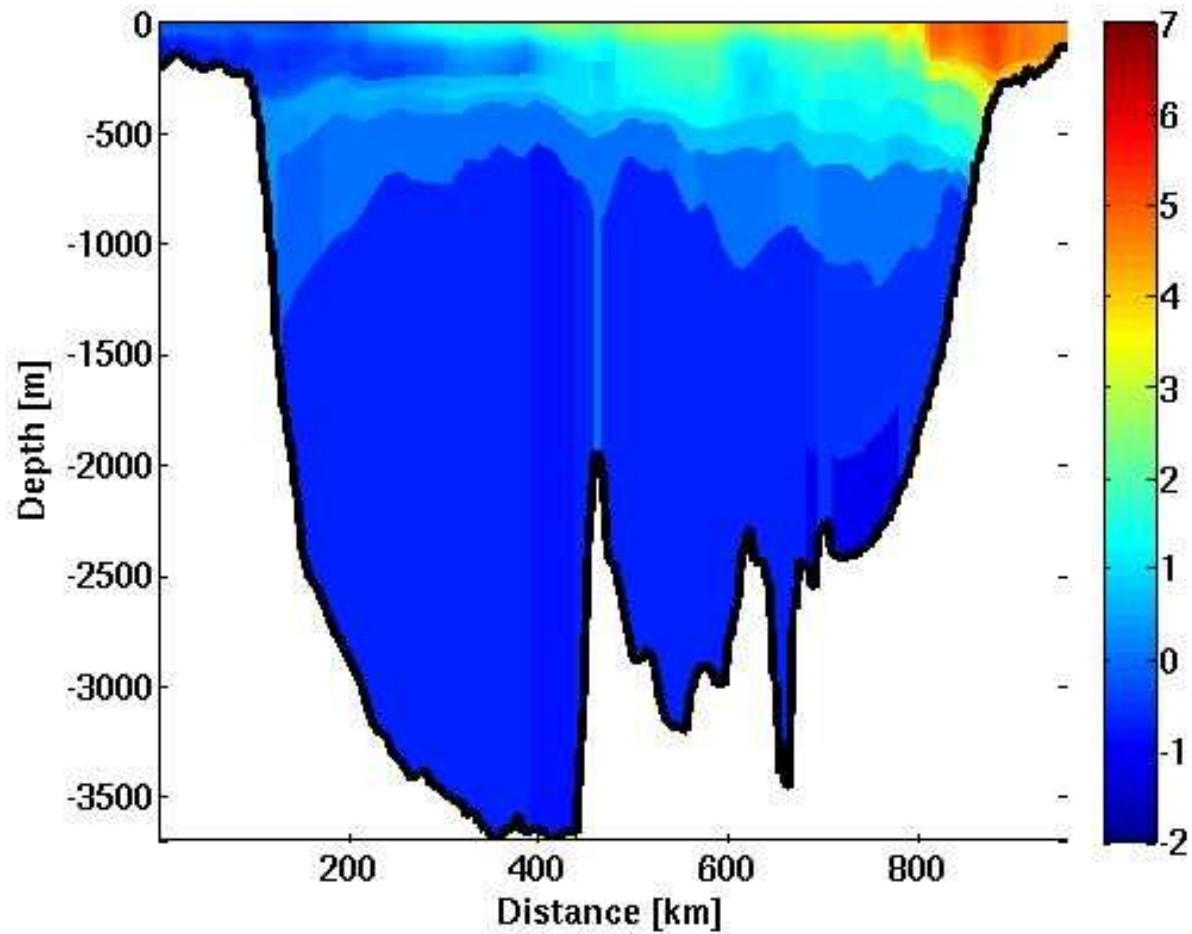


A quick comparison with observed sections - Greenland Sea

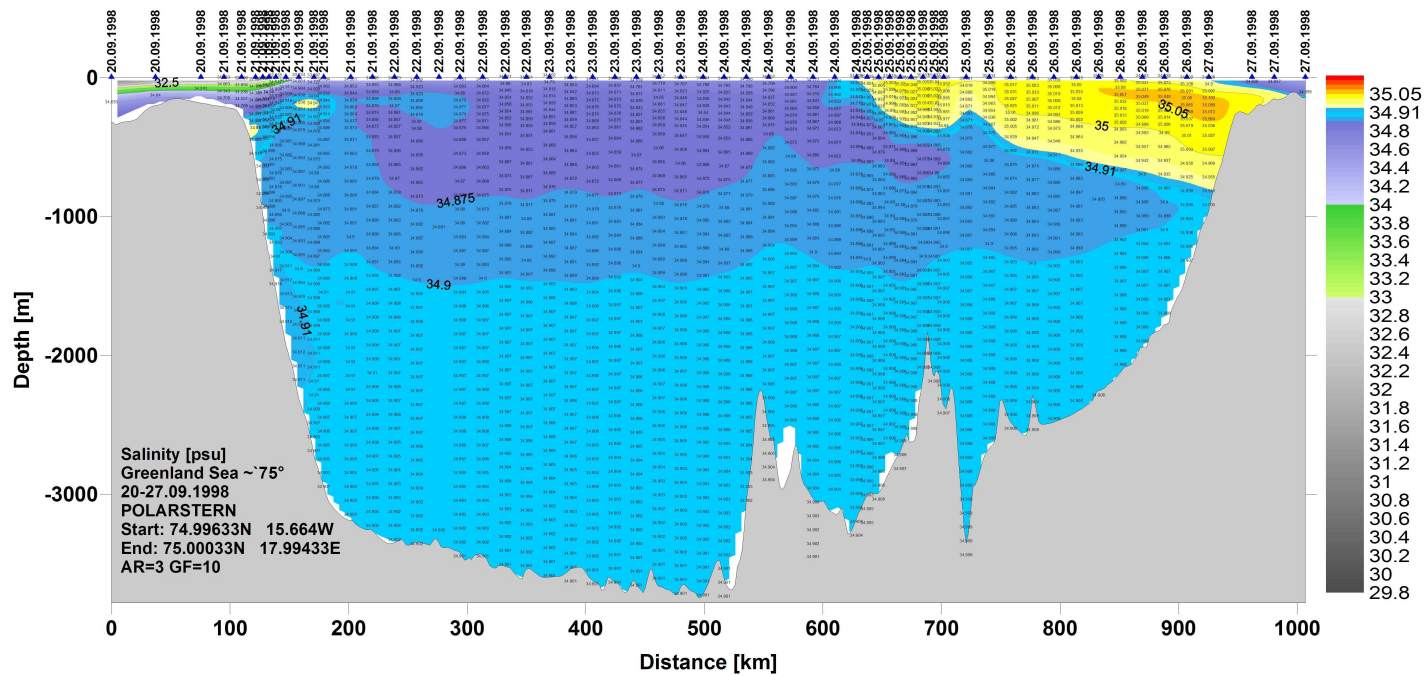


Graphics: Alexander Kudryatsev

NORDIC- Greenland Sea

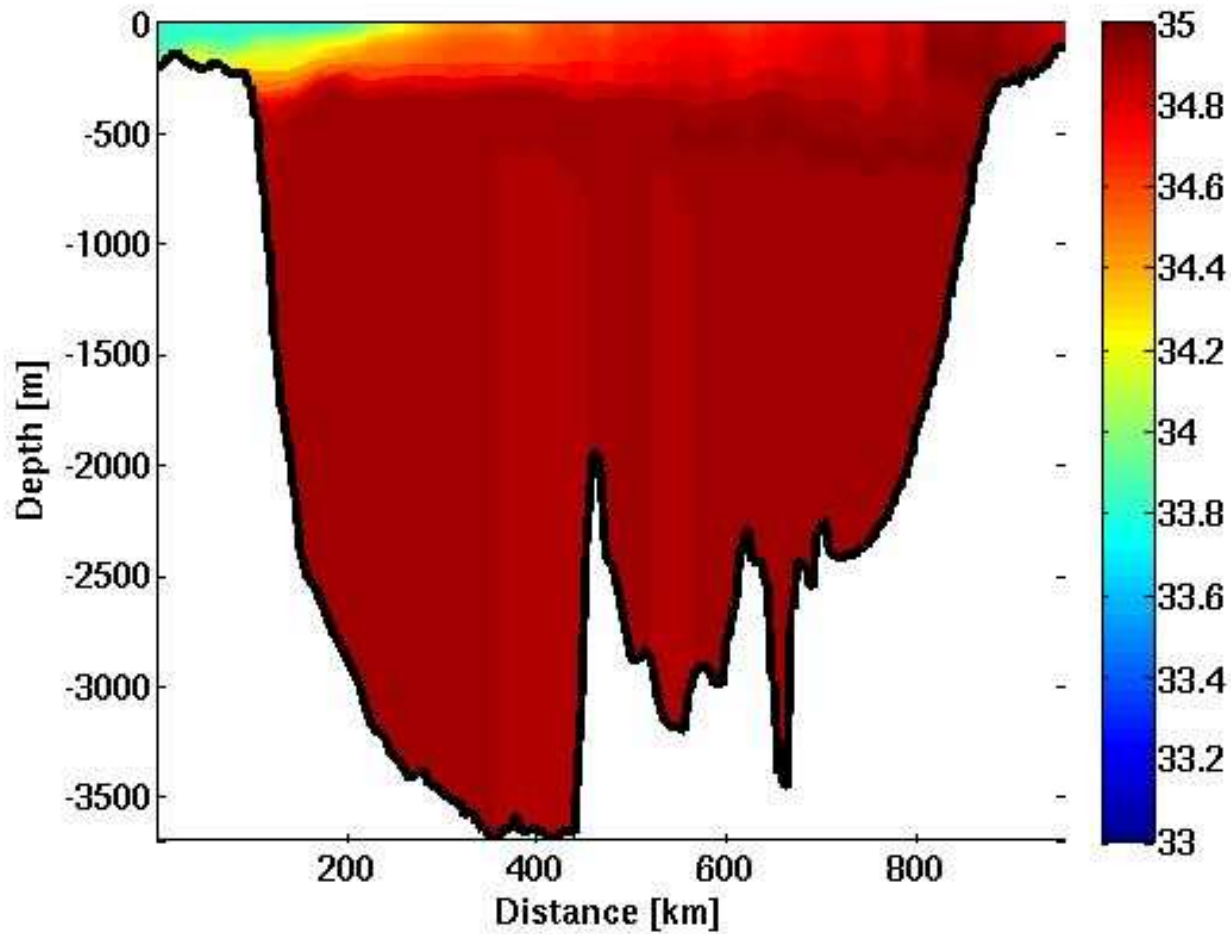


A quick comparison with observed sections - Greenland Sea

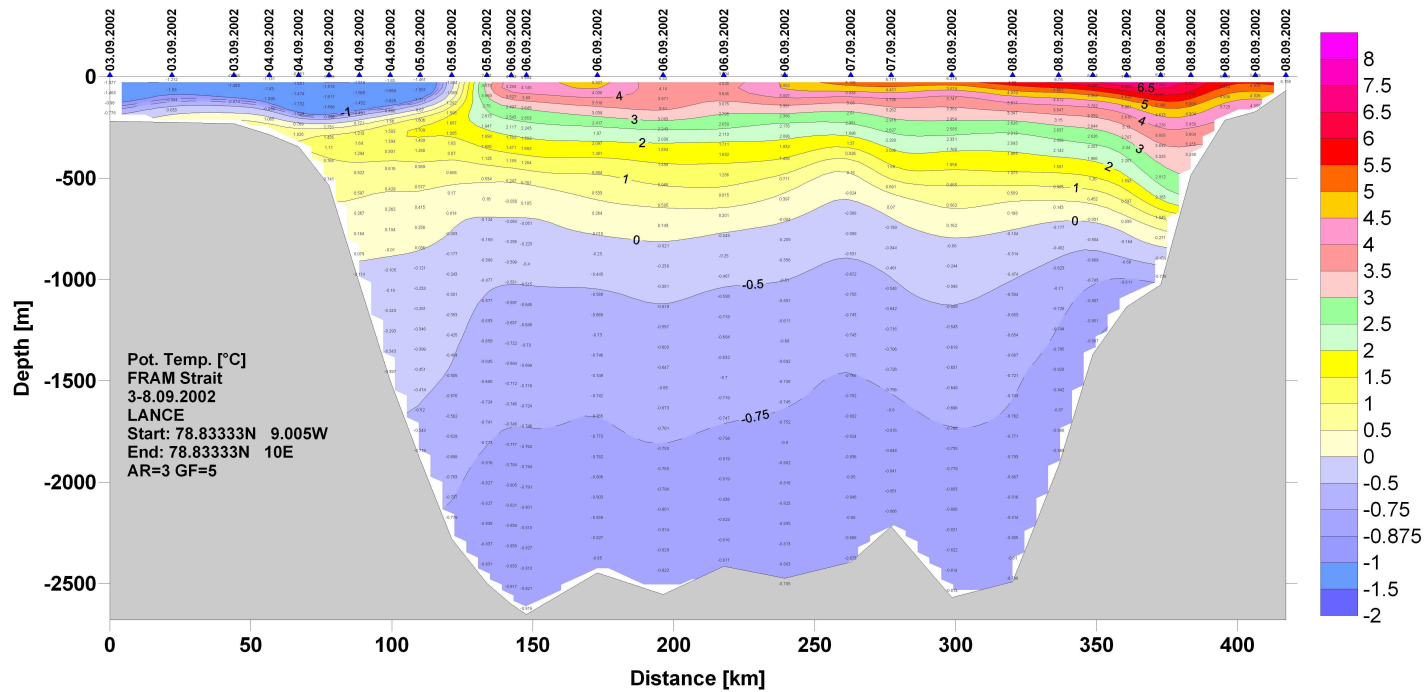


Graphics: Alexander Kudryatsev

NORDIC- Greenland Sea

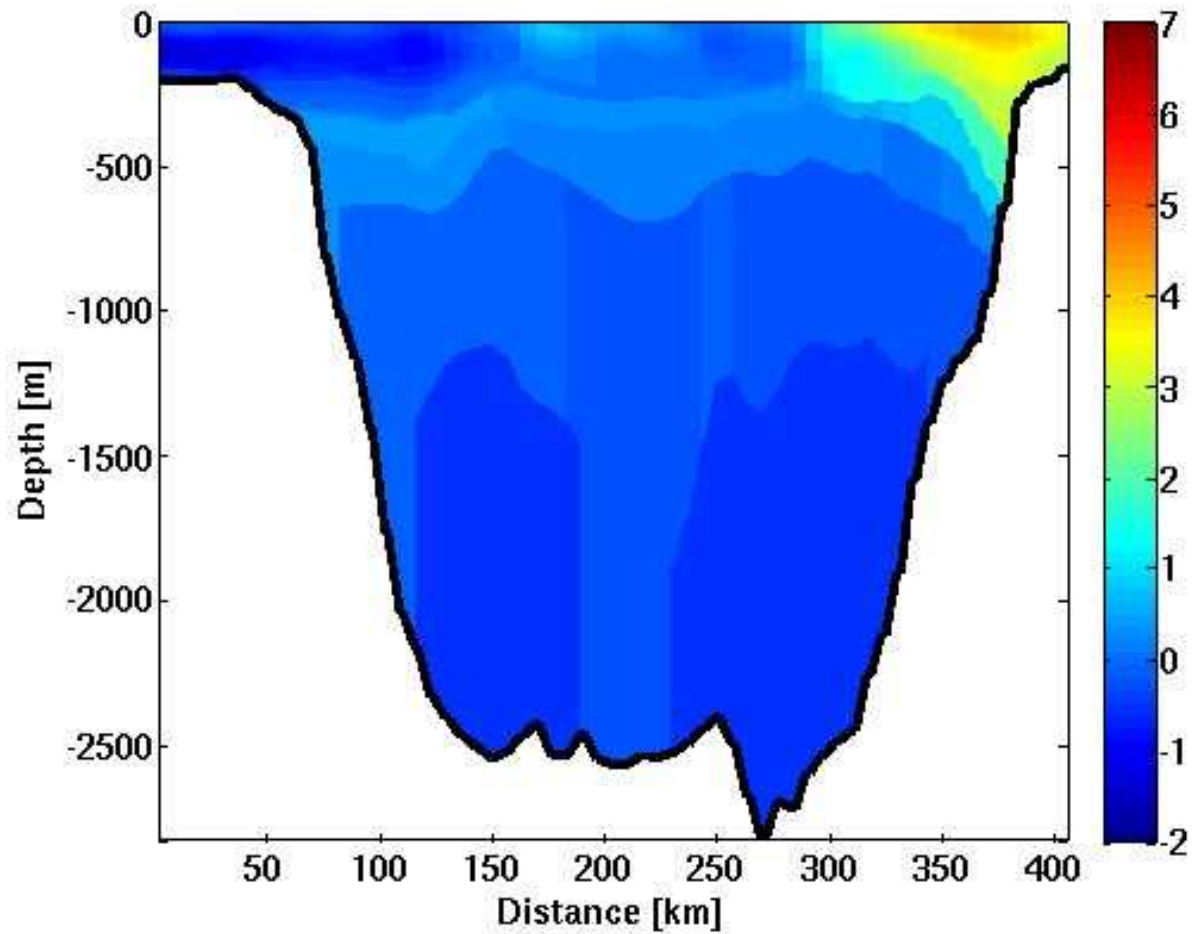


A quick comparison with observed sections - Fram Strait

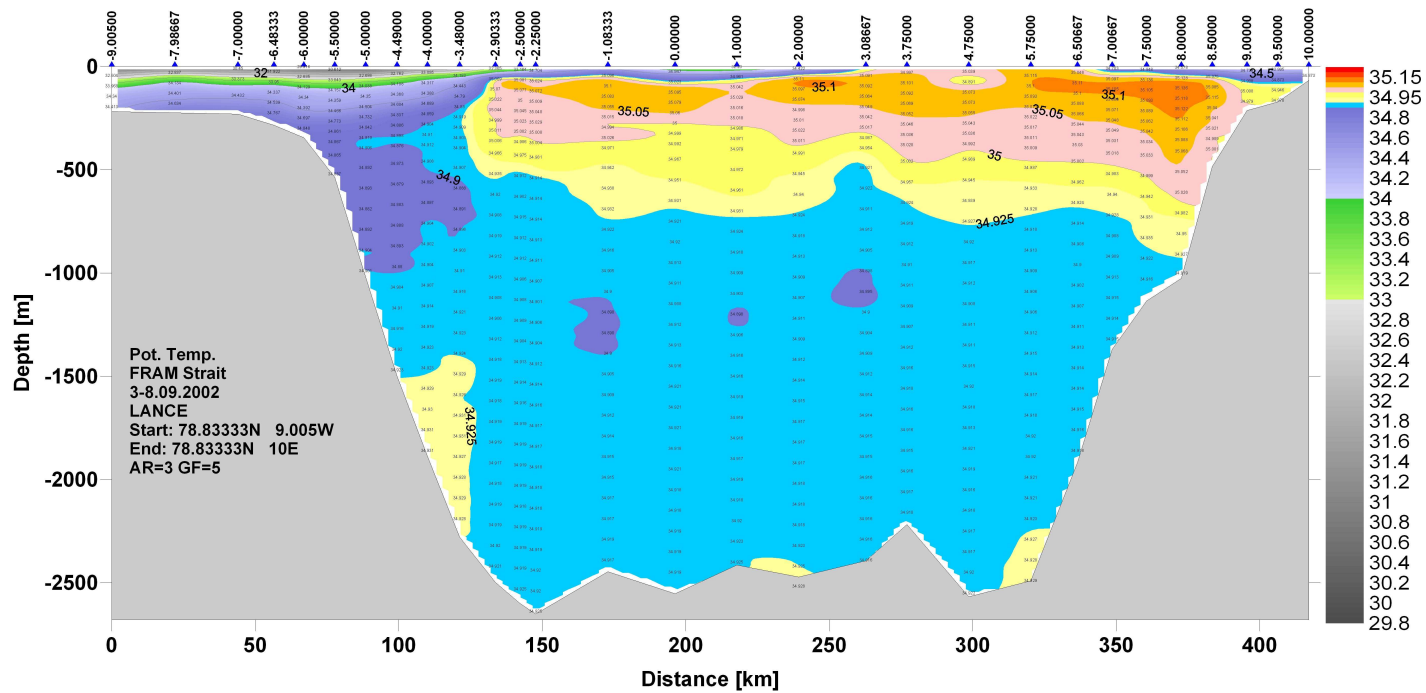


Graphics: Alexander Kudryatsev

NORDIC- Fram Strait

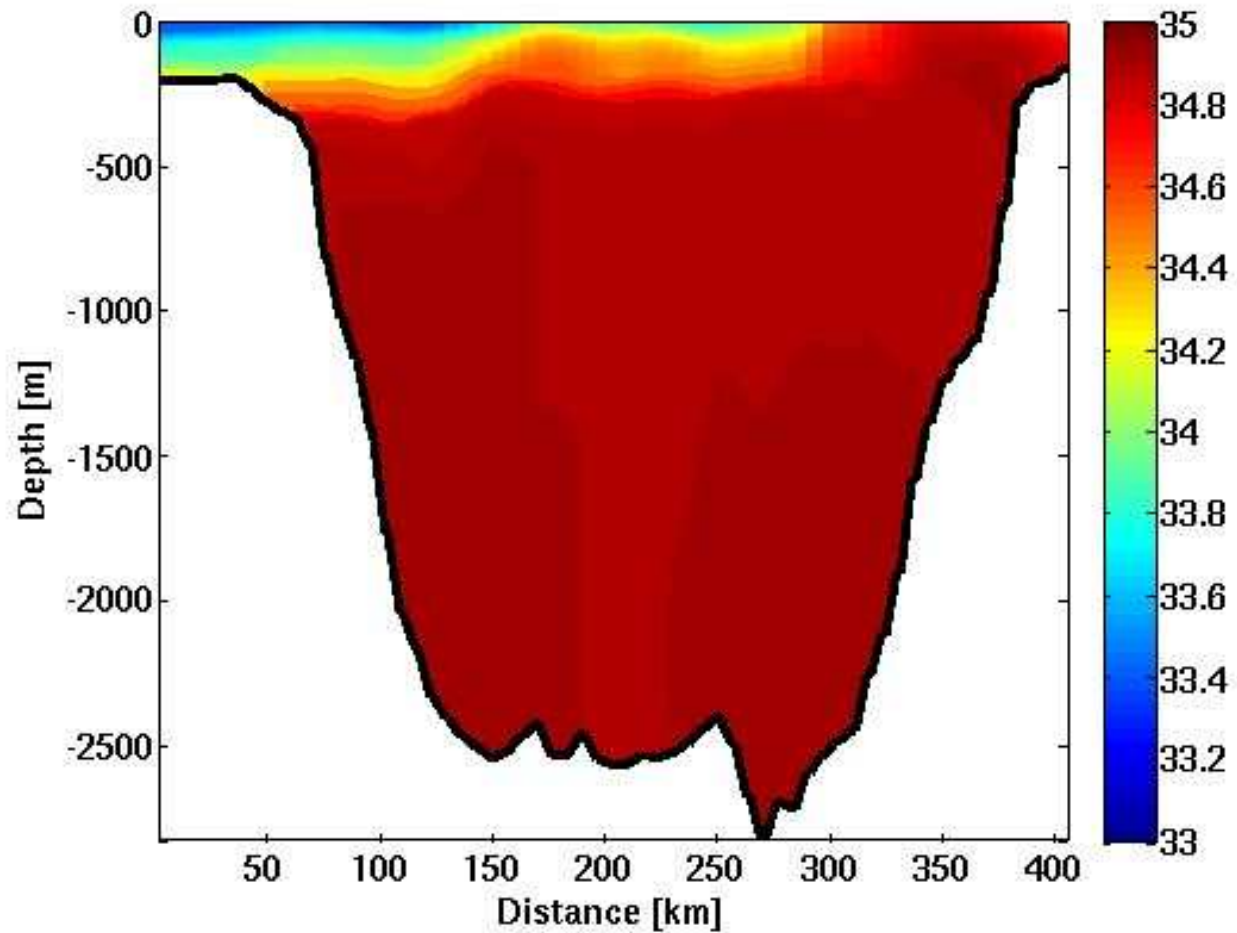


A quick comparison with observed sections - Fram Strait



Graphics: Alexander Kudryatsev

NORDIC- Fram Strait



Future ideas and conclusions so far

- ◇ The model shows promising results, regarding water masses and transports
- ◇ We still have challenges, suggestions for solutions are welcome!
- ◇ There are plans for running the model for the last 20 years, if we are satisfied with the results it shows from the short run
- ◇ Of special interest is the mesoscale activity along the Norwegian and East Greenland coasts, and the influence of this on the primary production
- ◇ In the East Greenland model domain, we will also investigate the influence of the fresh water flux on the primary production