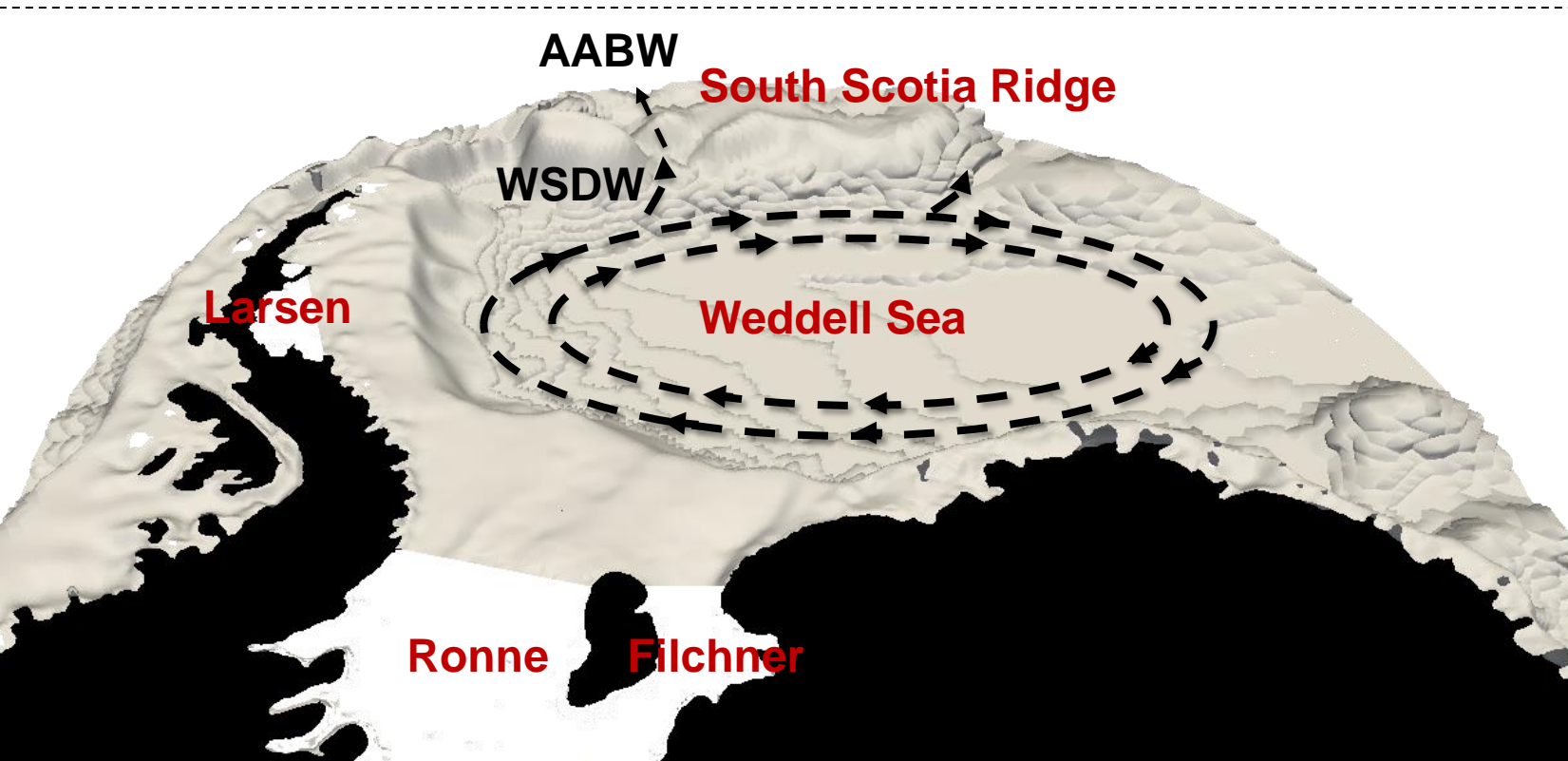


Formation of Antarctic Bottom Water on the continental shelf off Larsen ice shelf

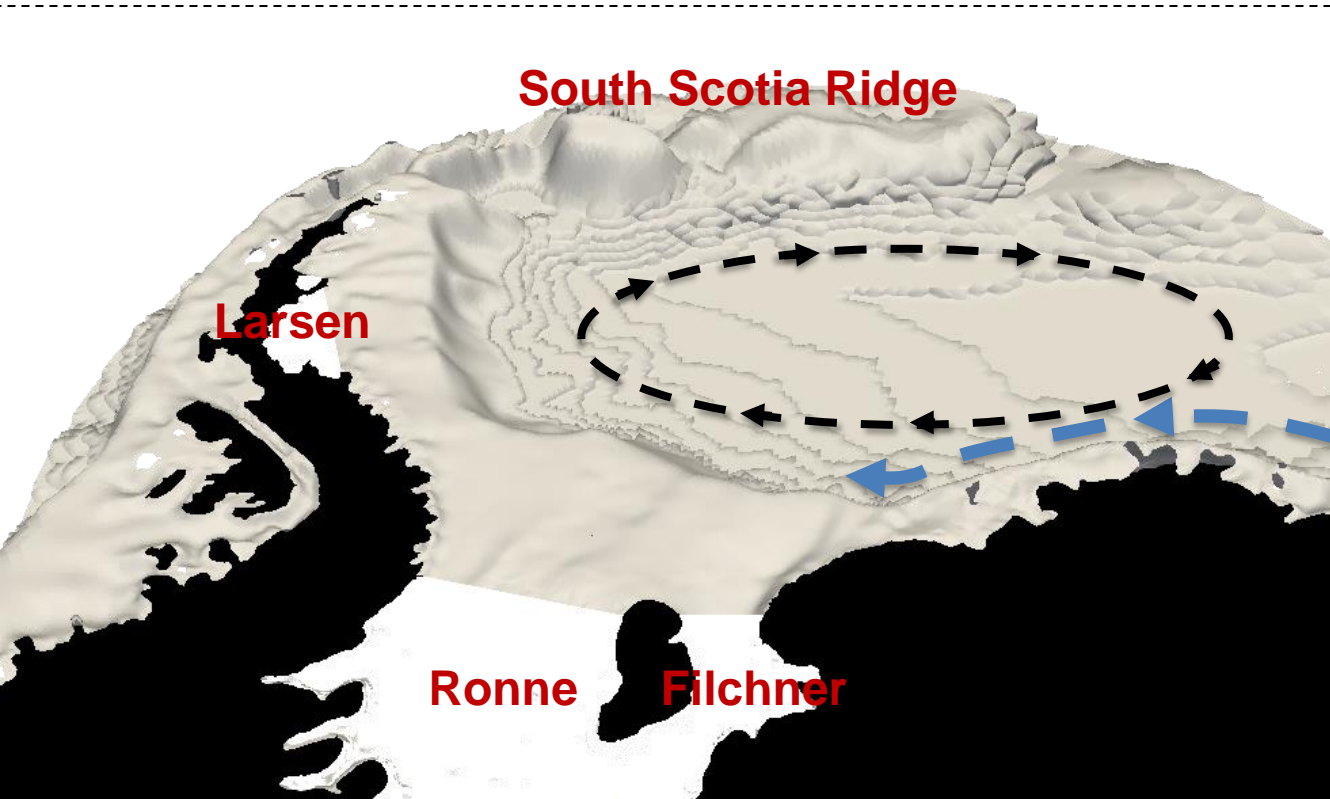
Mathias van Caspel, Ralph Timmermann, Michael Schröder, Hartmut Hellmer

Weddell Sea: AABW source

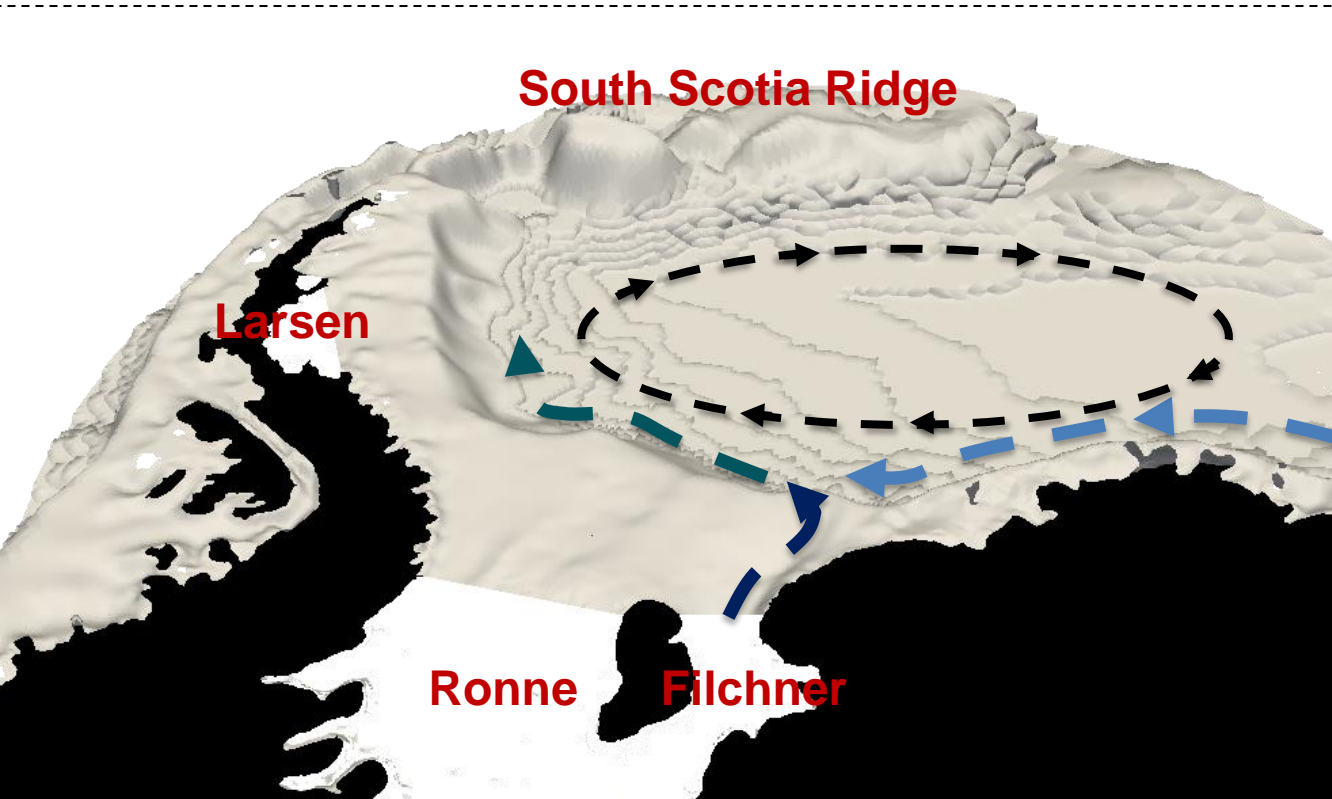


Weddell Sea Deep Water origin

- Inflow from the East

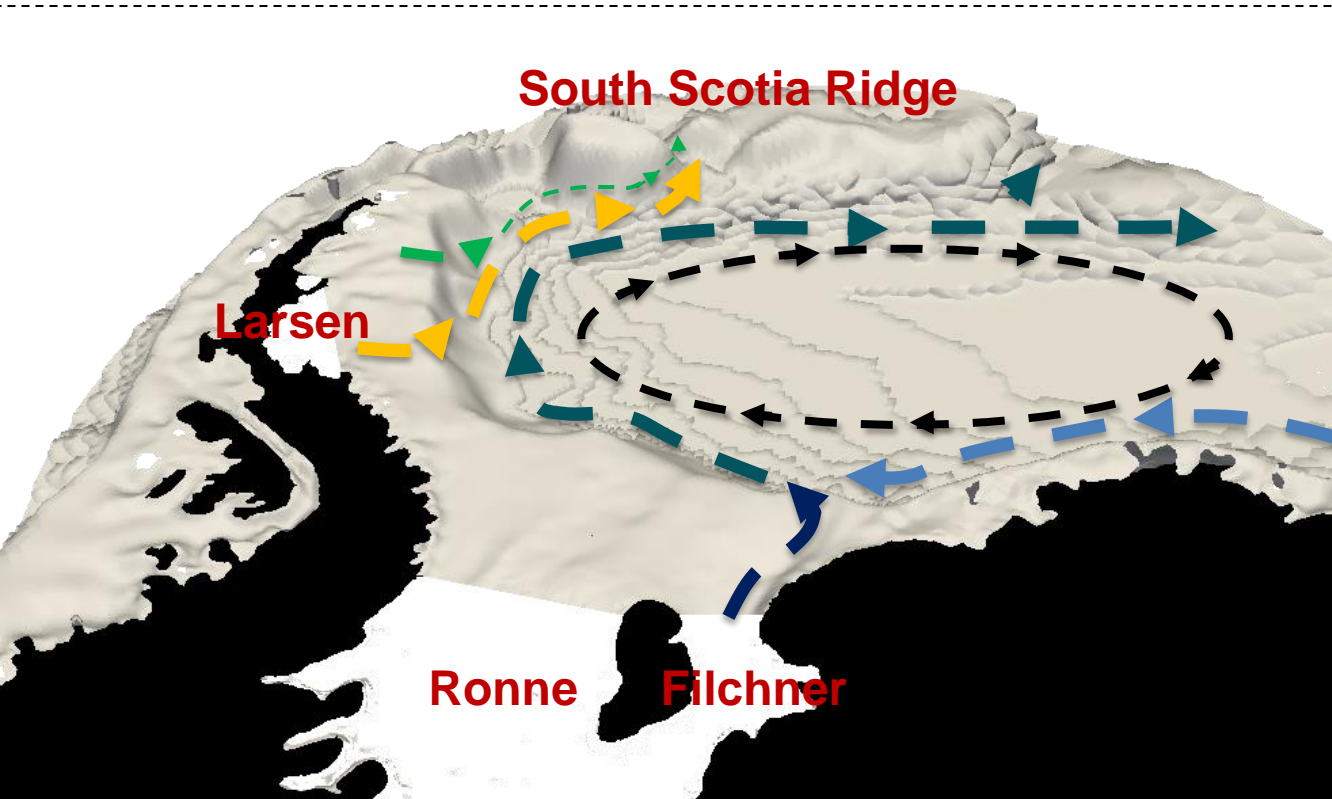


Weddell Sea Deep Water origin



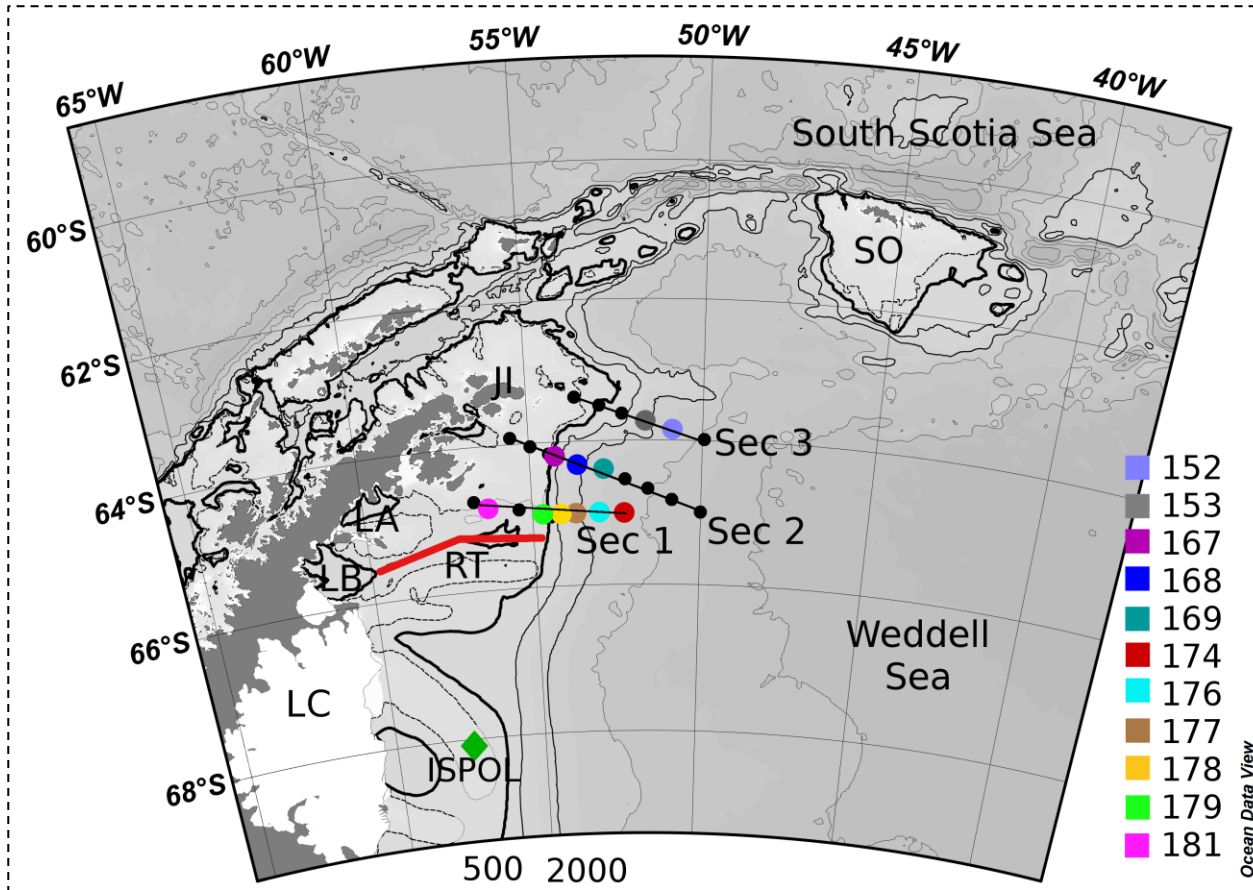
- Inflow from the East
- Filchner-Ronne

Weddell Sea Deep Water origin



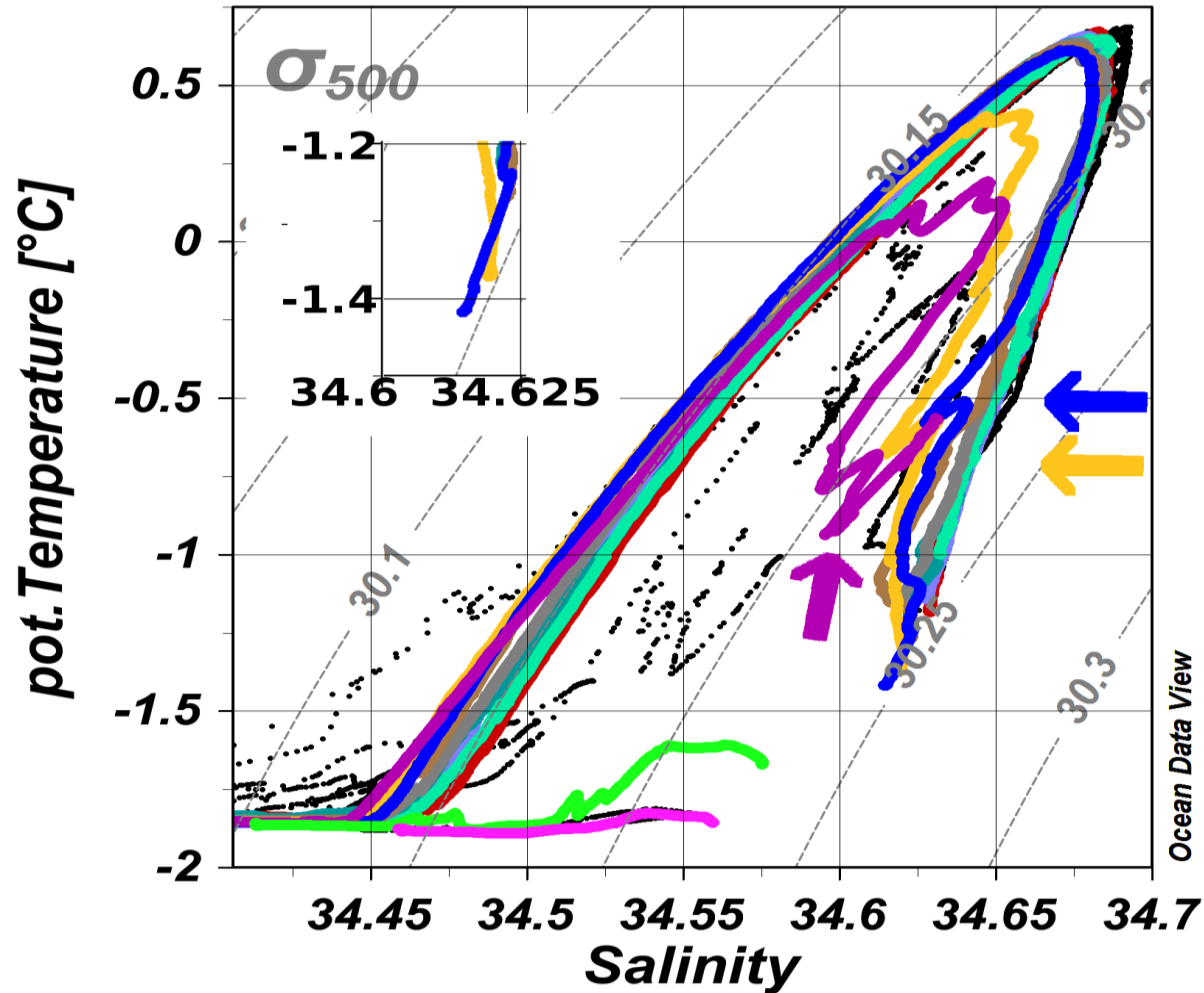
- Inflow from the East
- Filchner-Ronne
- Larsen

Hydrographic Data

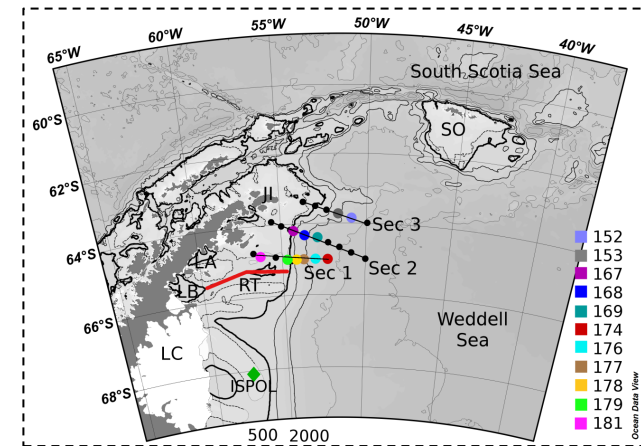


- Three Sections
- T, S, O₂

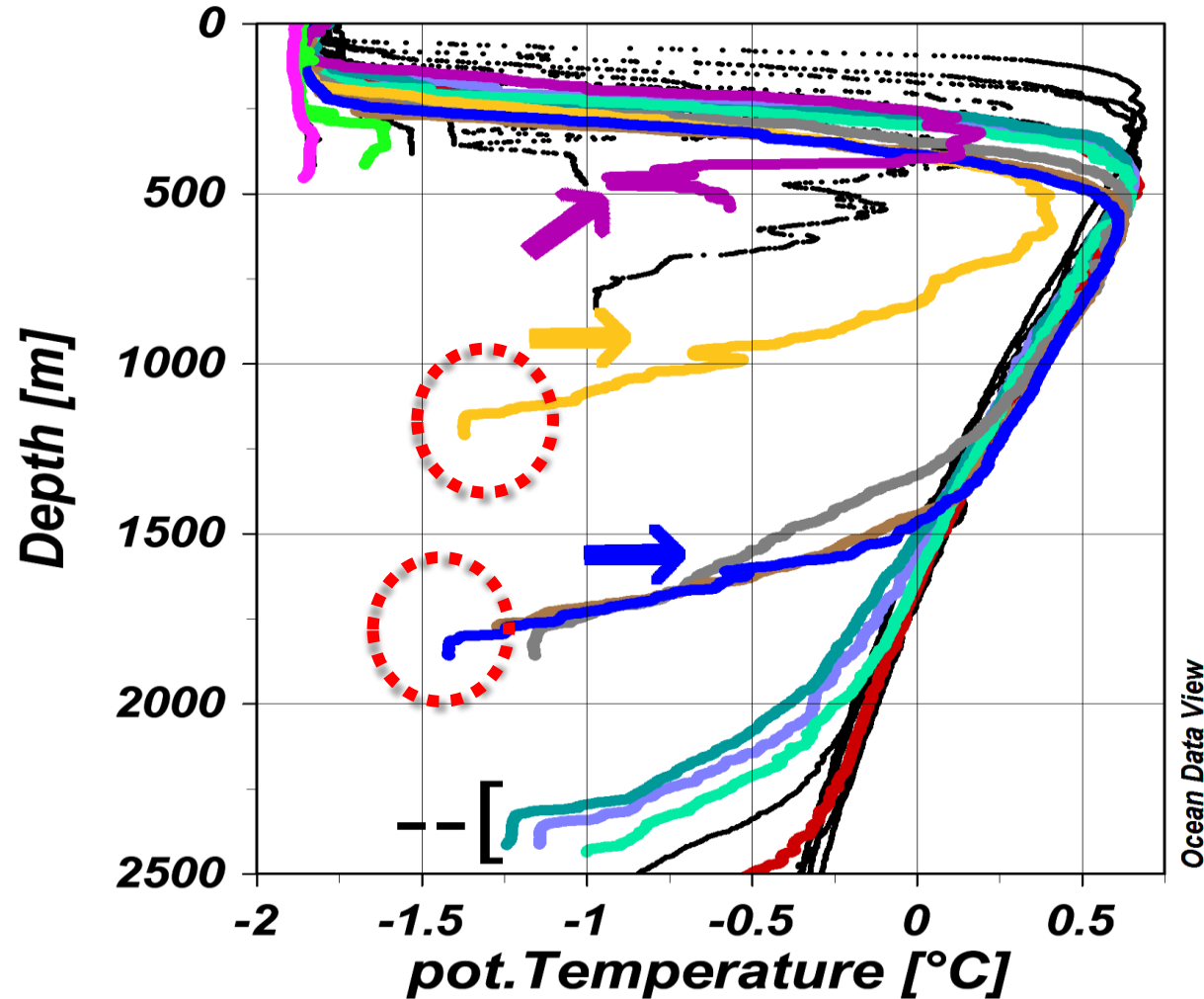
Hydrographic Data



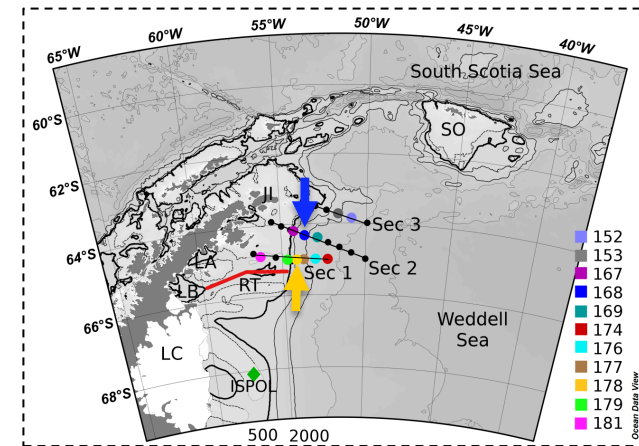
• TS



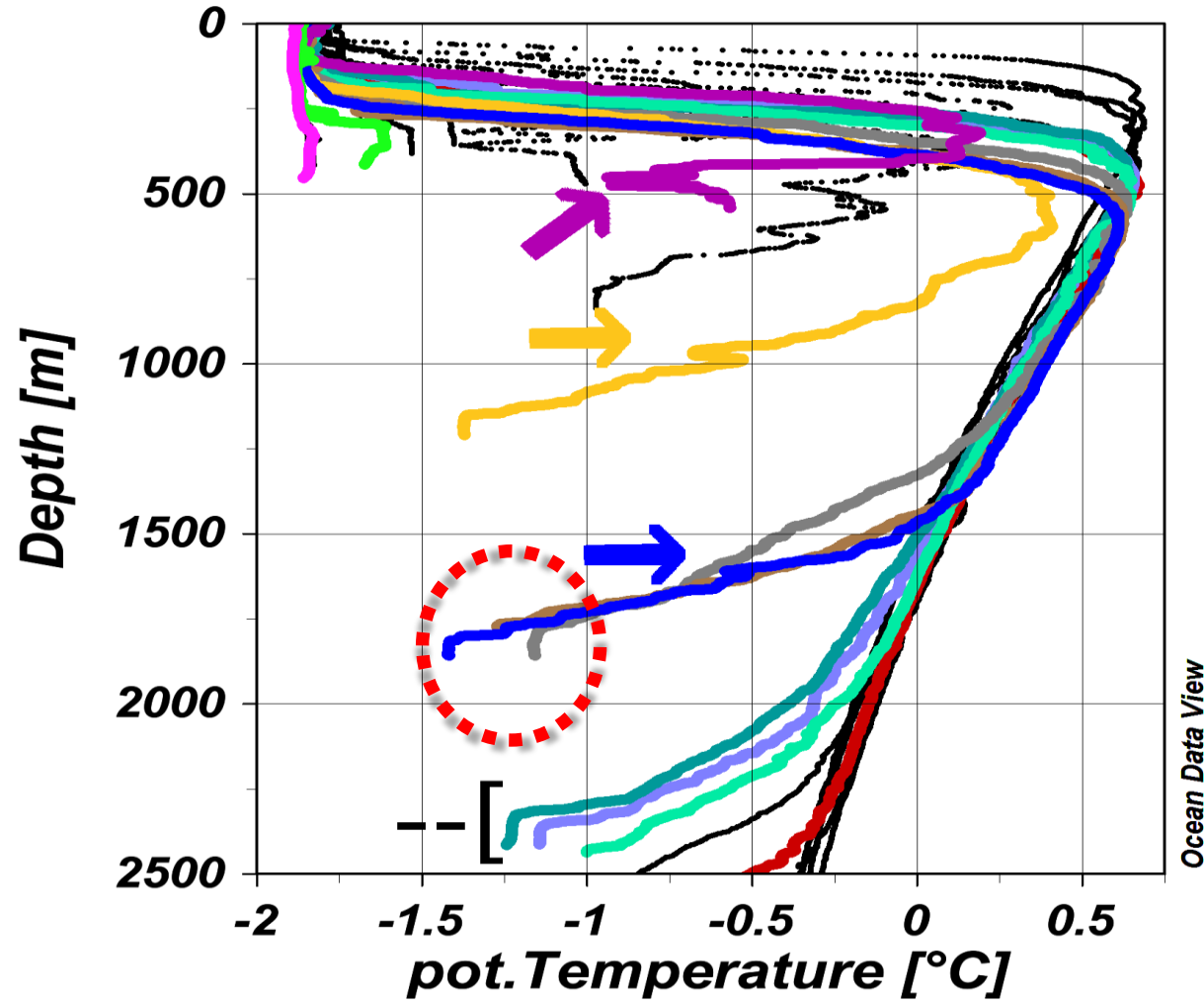
Hydrographic Data



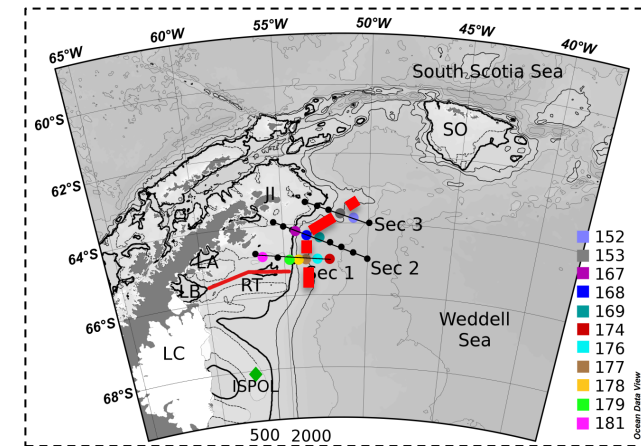
- Densest water



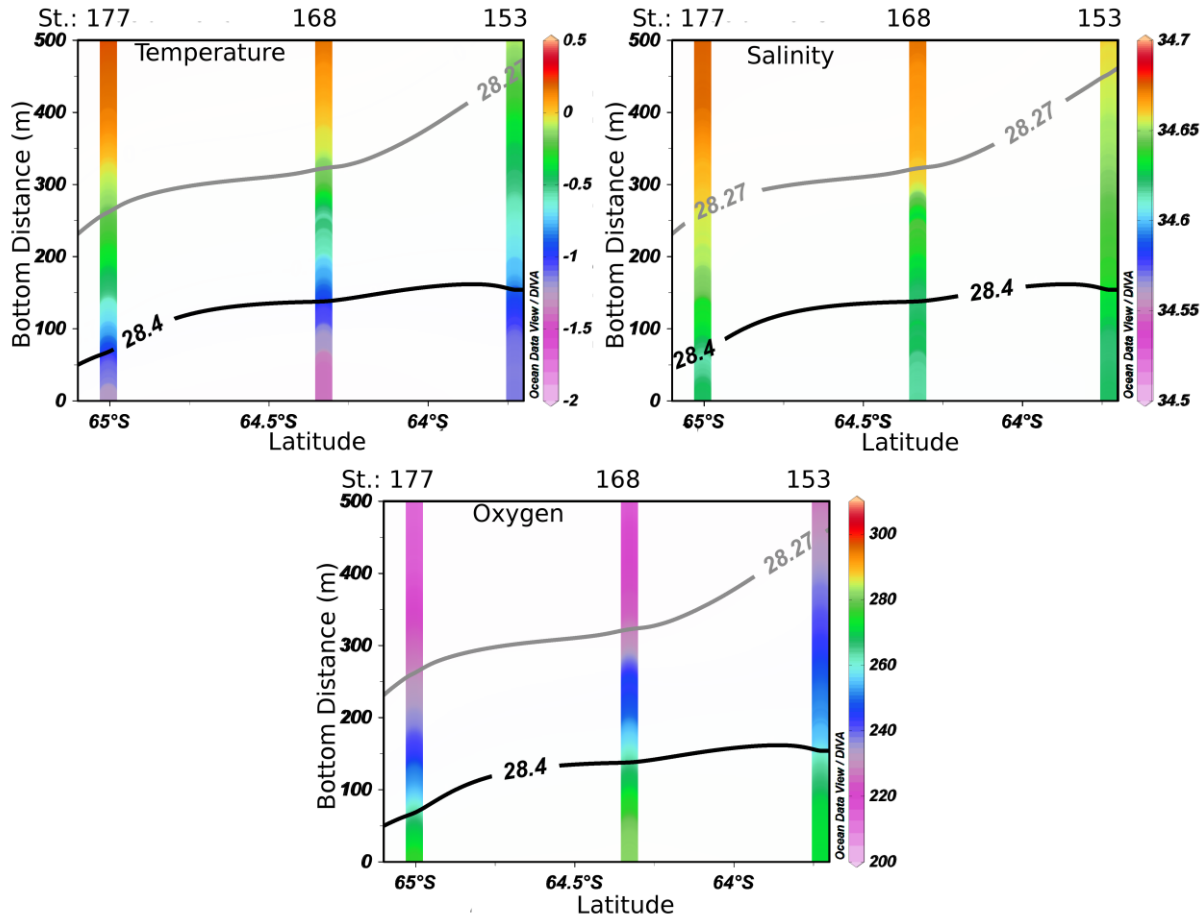
Hydrographic Data



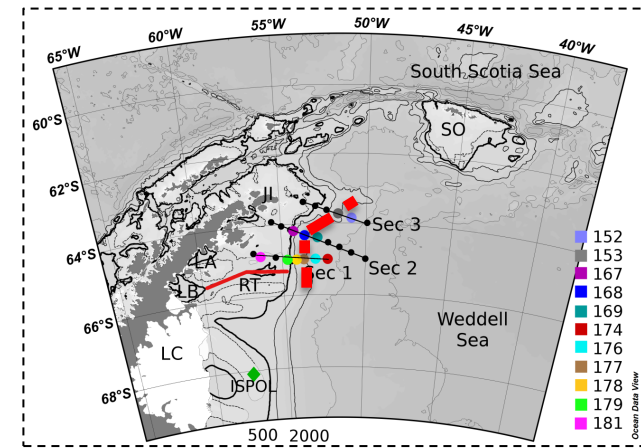
- along 1800m isobath



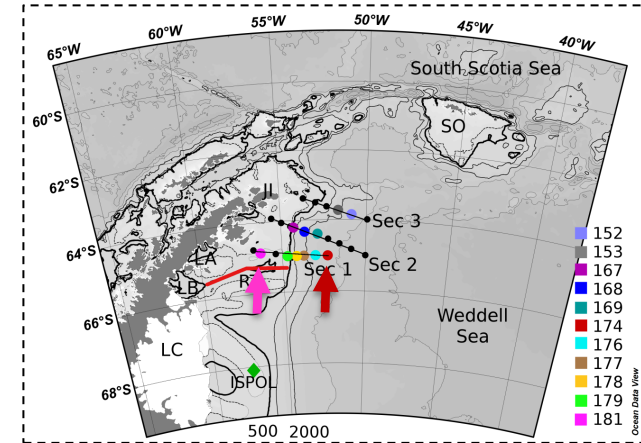
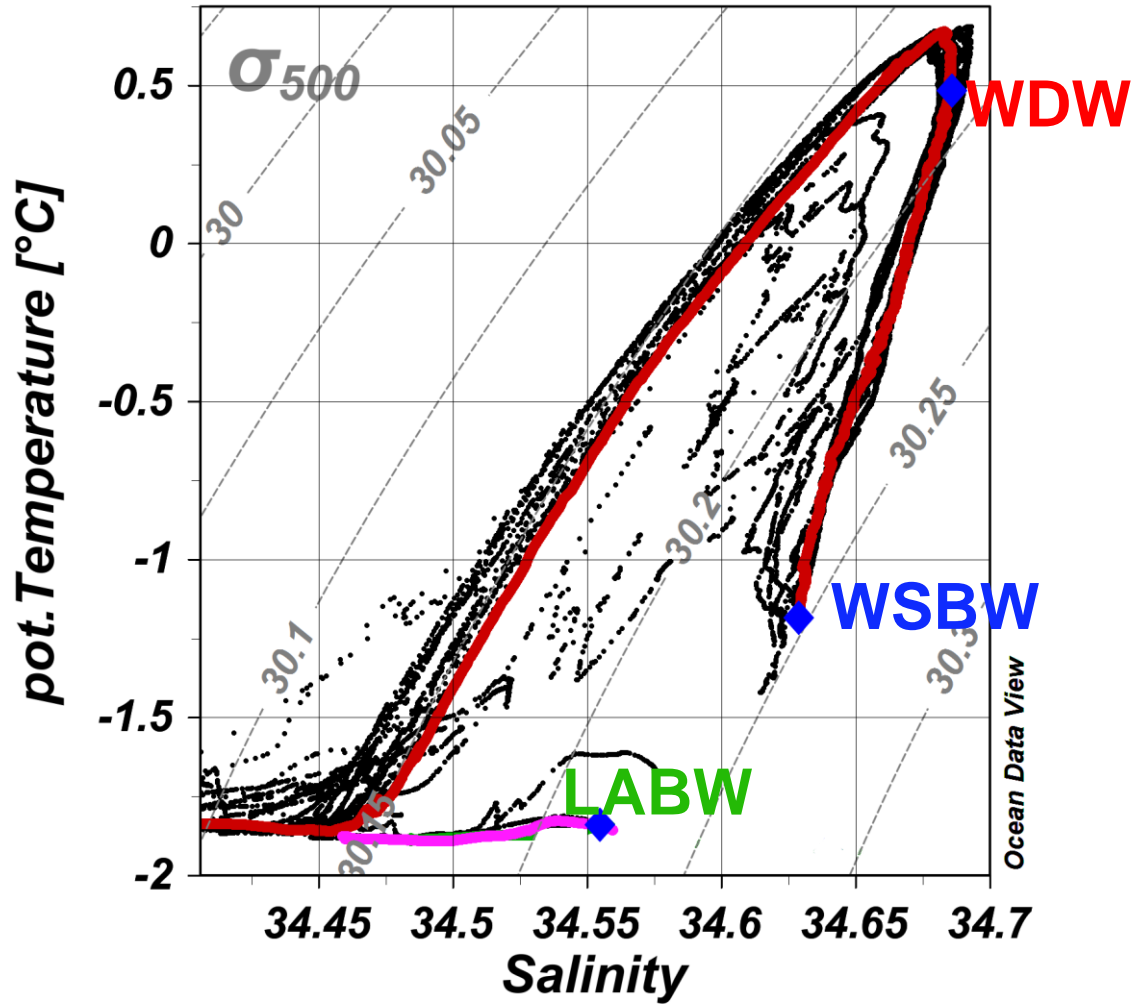
Hydrographic Data



- along 1800m isobath

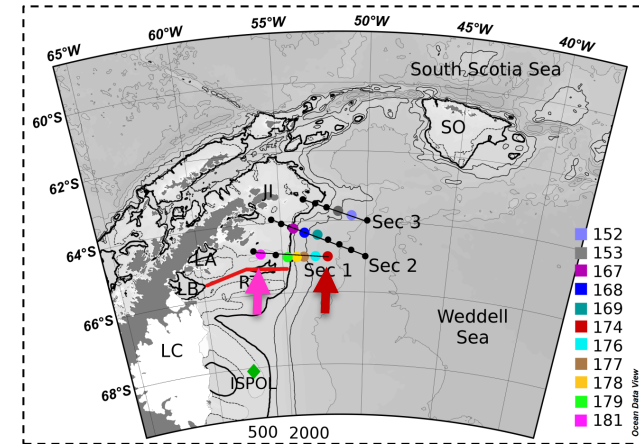
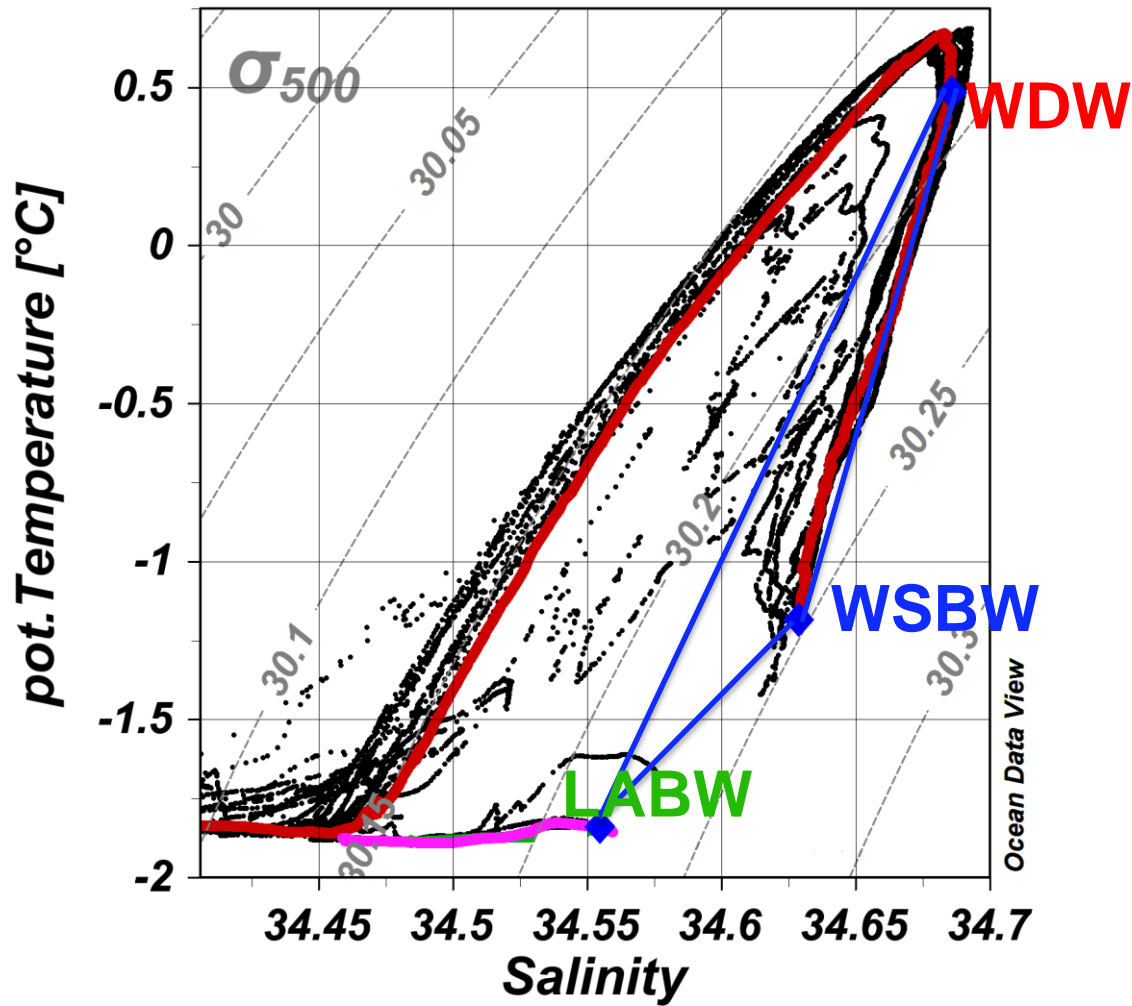


Optimum Multiparameter Analysis



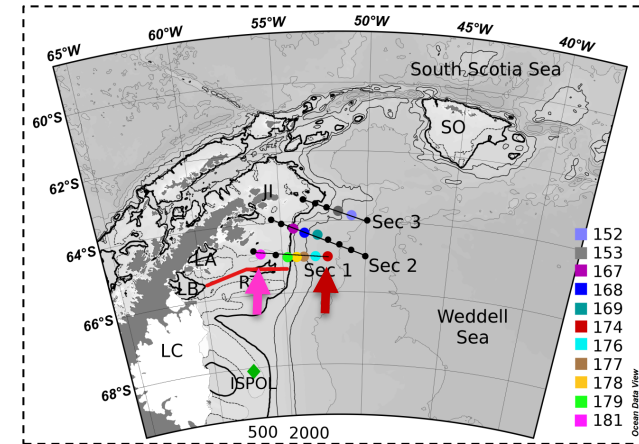
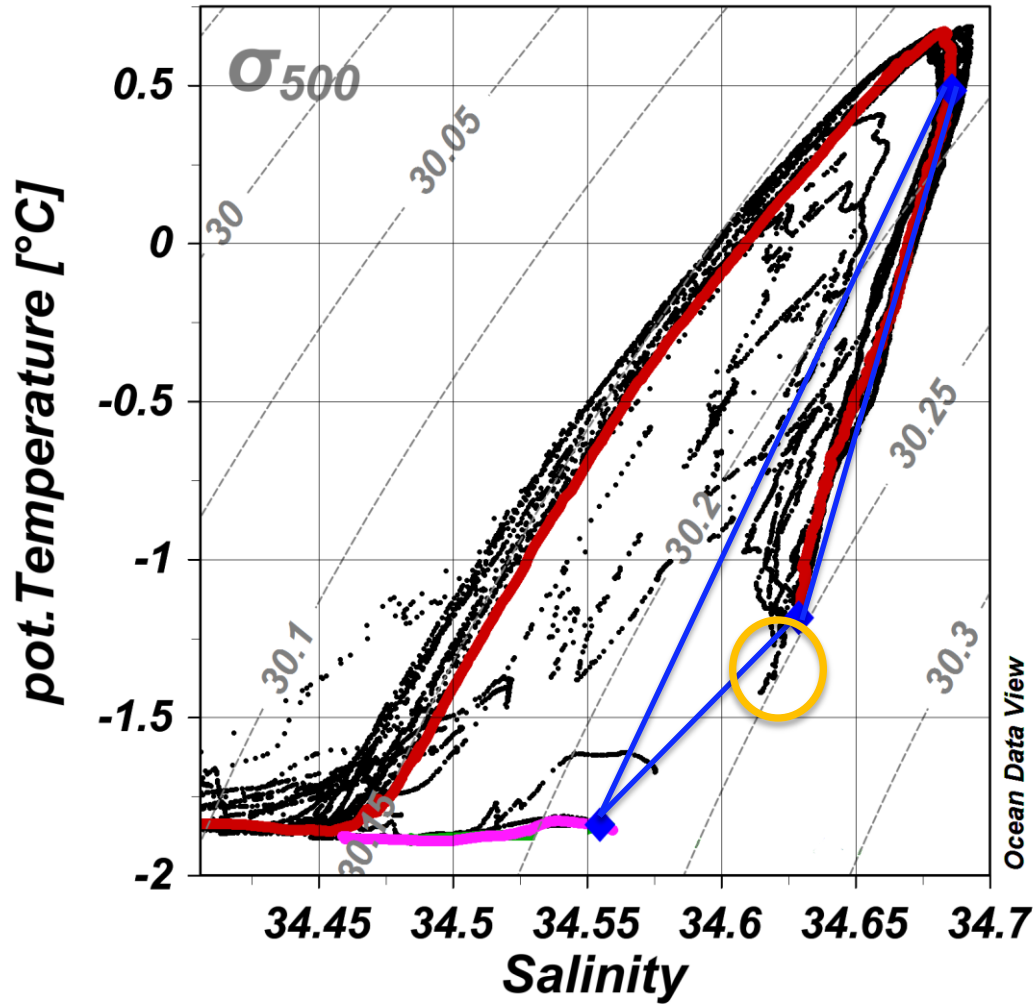
- Source water types:
 - WSBW
 - WDW
 - LABW

Optimum Multiparameter Analysis



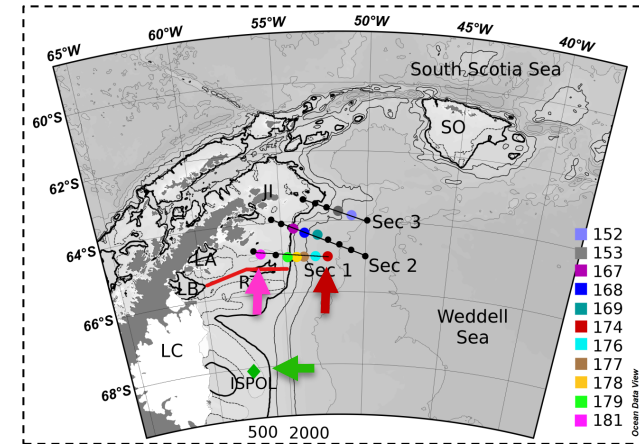
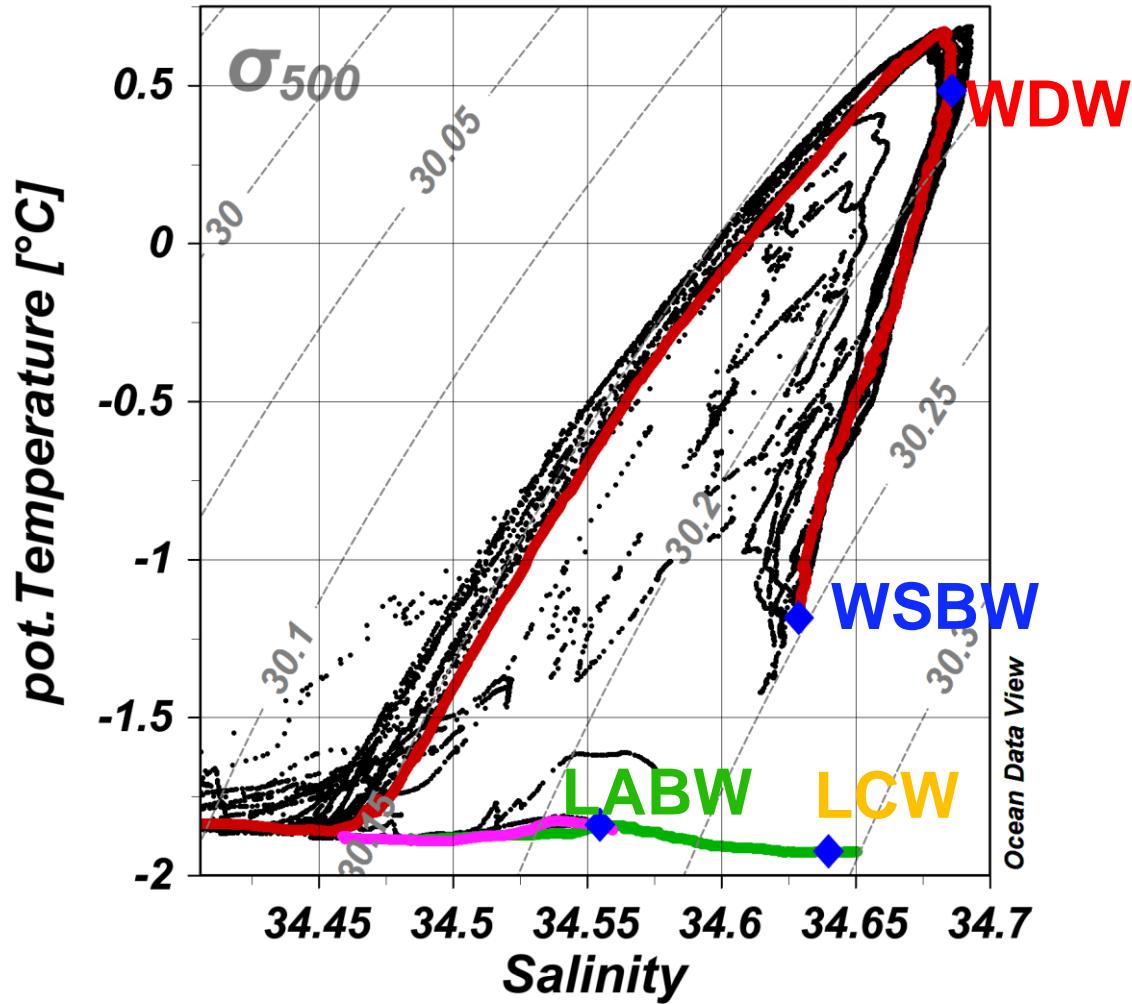
- Source water types:
 - WSBW
 - WDW
 - LABW

Optimum Multiparameter Analysis



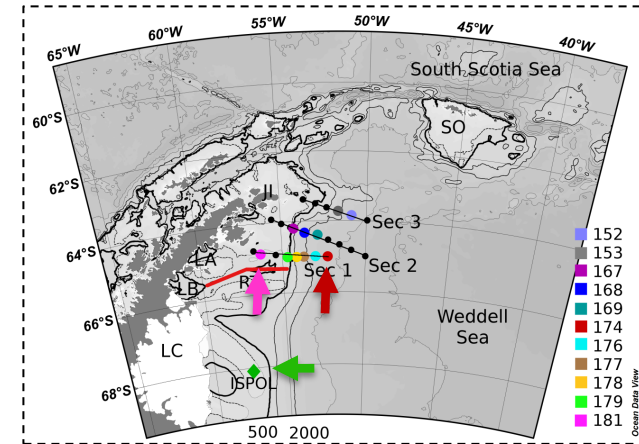
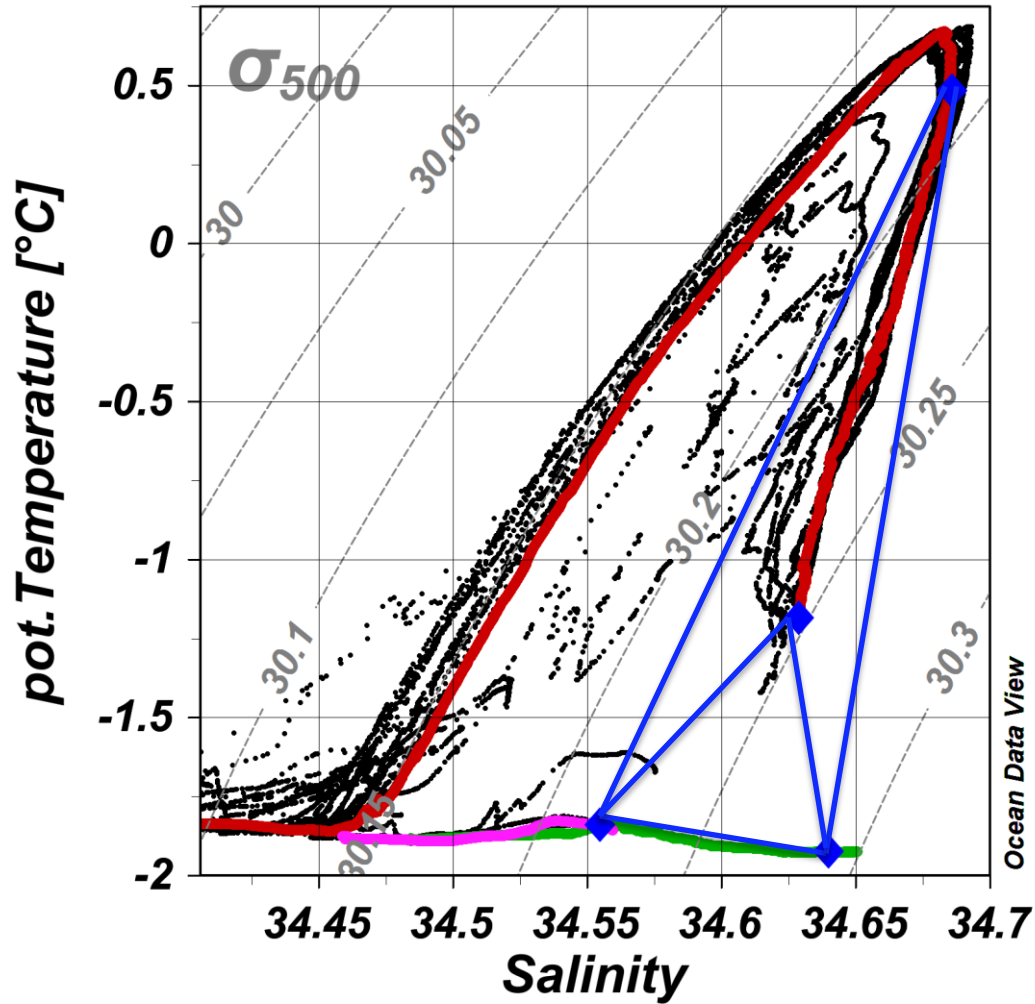
- Source water types:
 - WSBW
 - WDW
 - LABW

Optimum Multiparameter Analysis



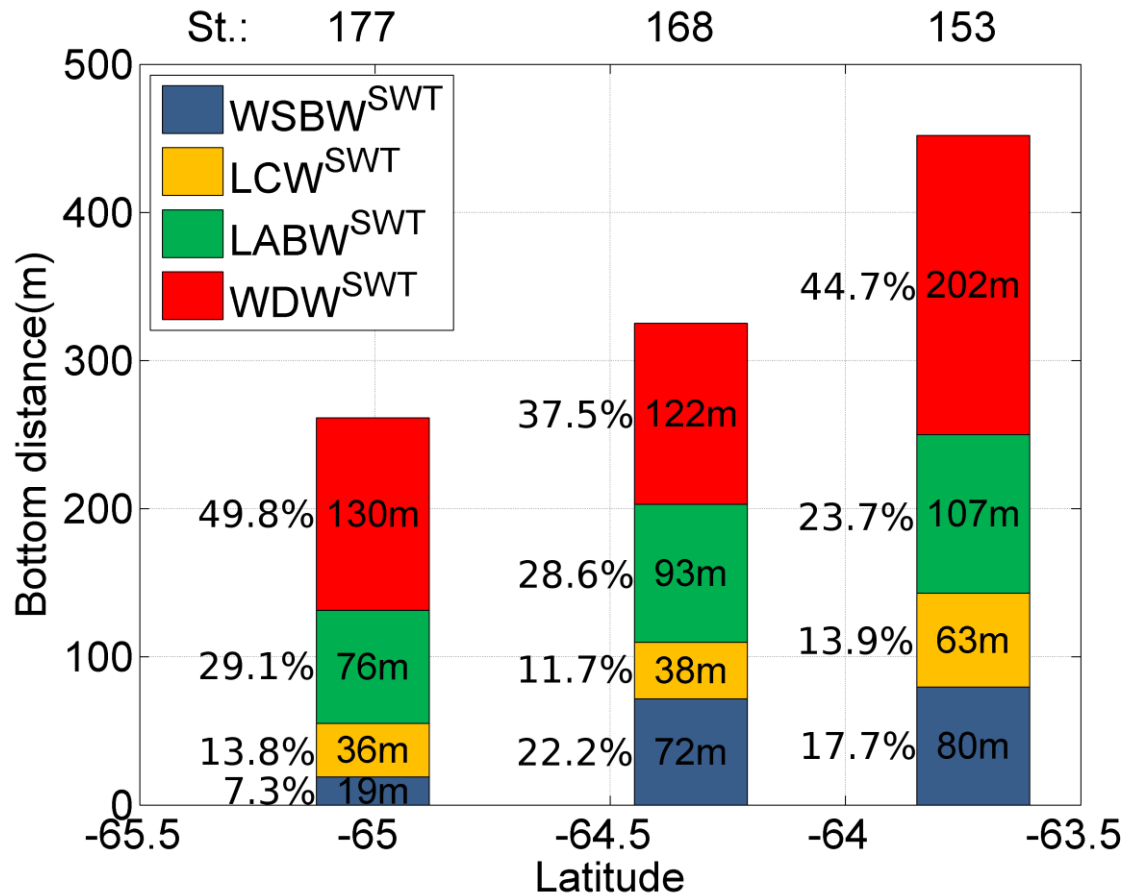
- Source water types:
 - WSBW
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 - LCW

Optimum Multiparameter Analysis

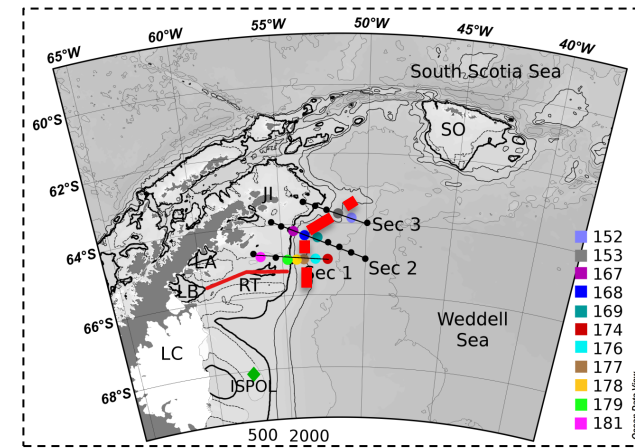


- Source water types:
 - WSBW
 - WDW
 - LABW
 - LCW

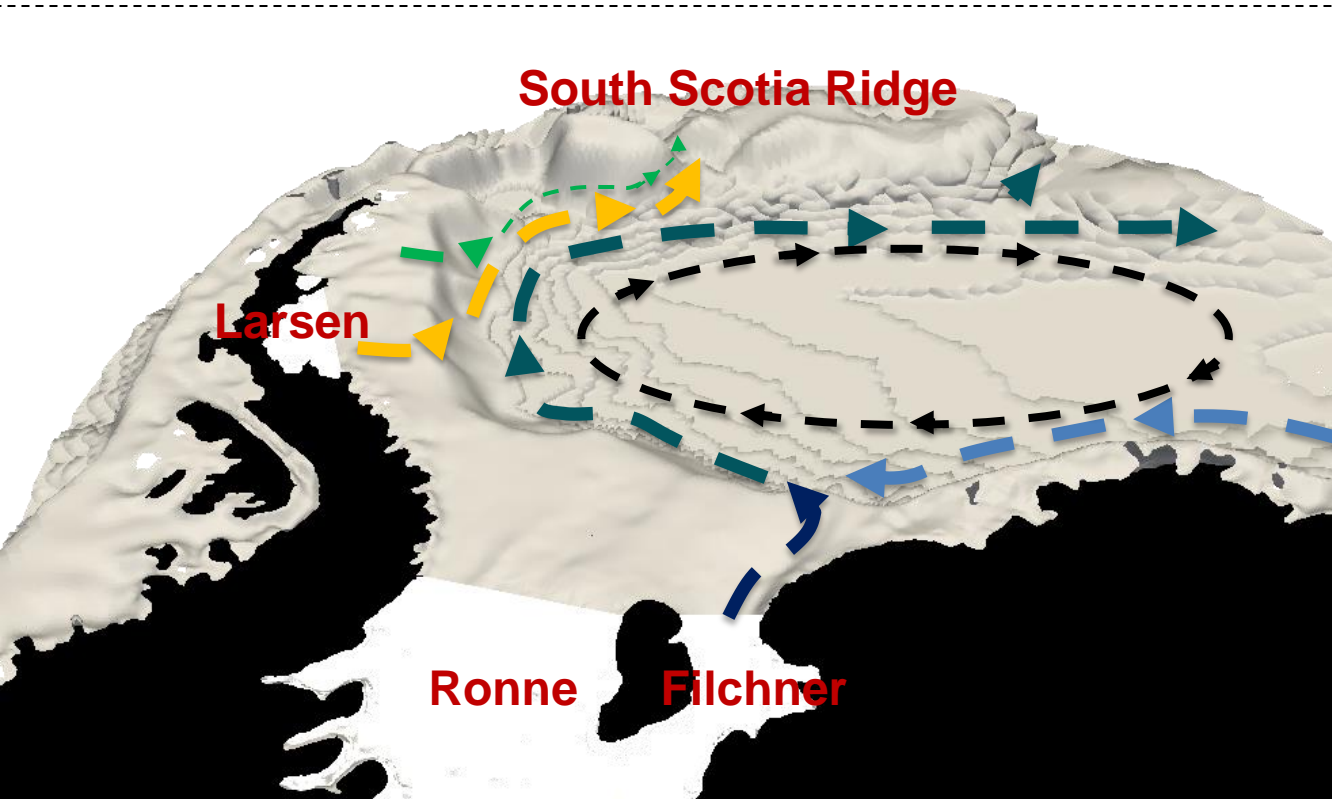
Optimum Multiparameter Analysis



- along 1800m isobath



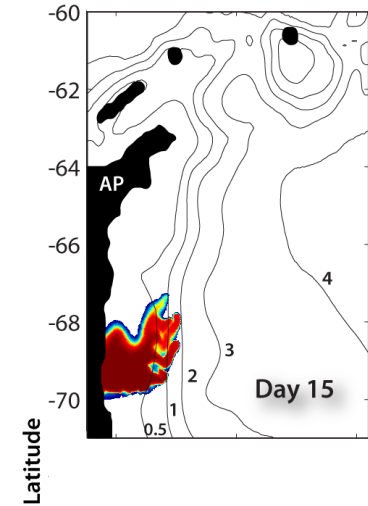
Larsen: AABW source



- Increased thickness of AABW layer
- More AABW can leave the Weddell Sea

Model experiment, FEOM

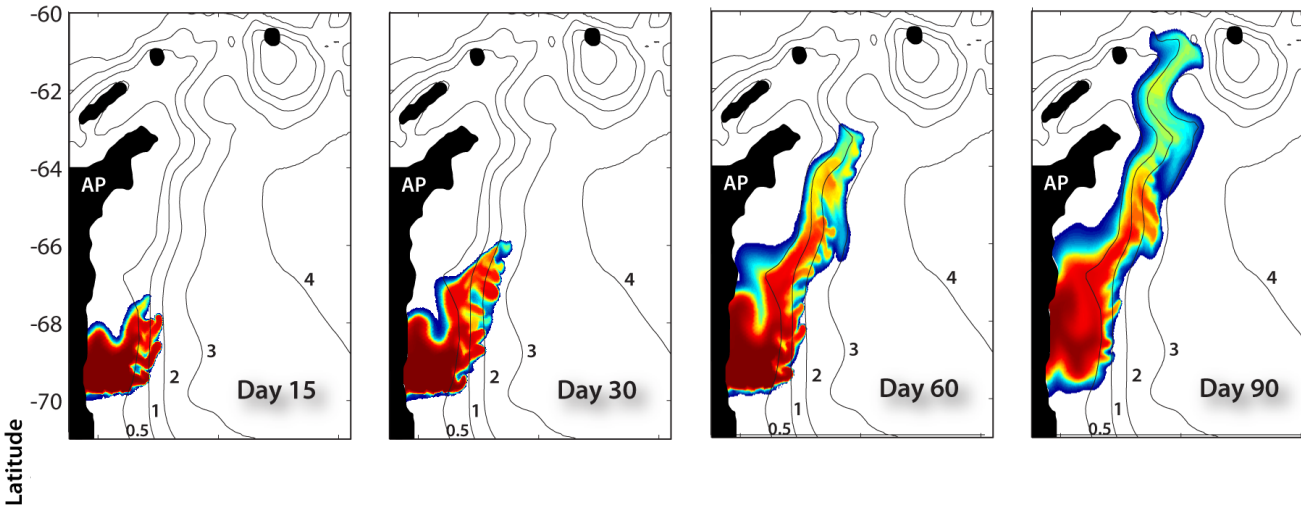
- Larsen Water Plume



Plume Water Tracer



Model experiment, FEOM

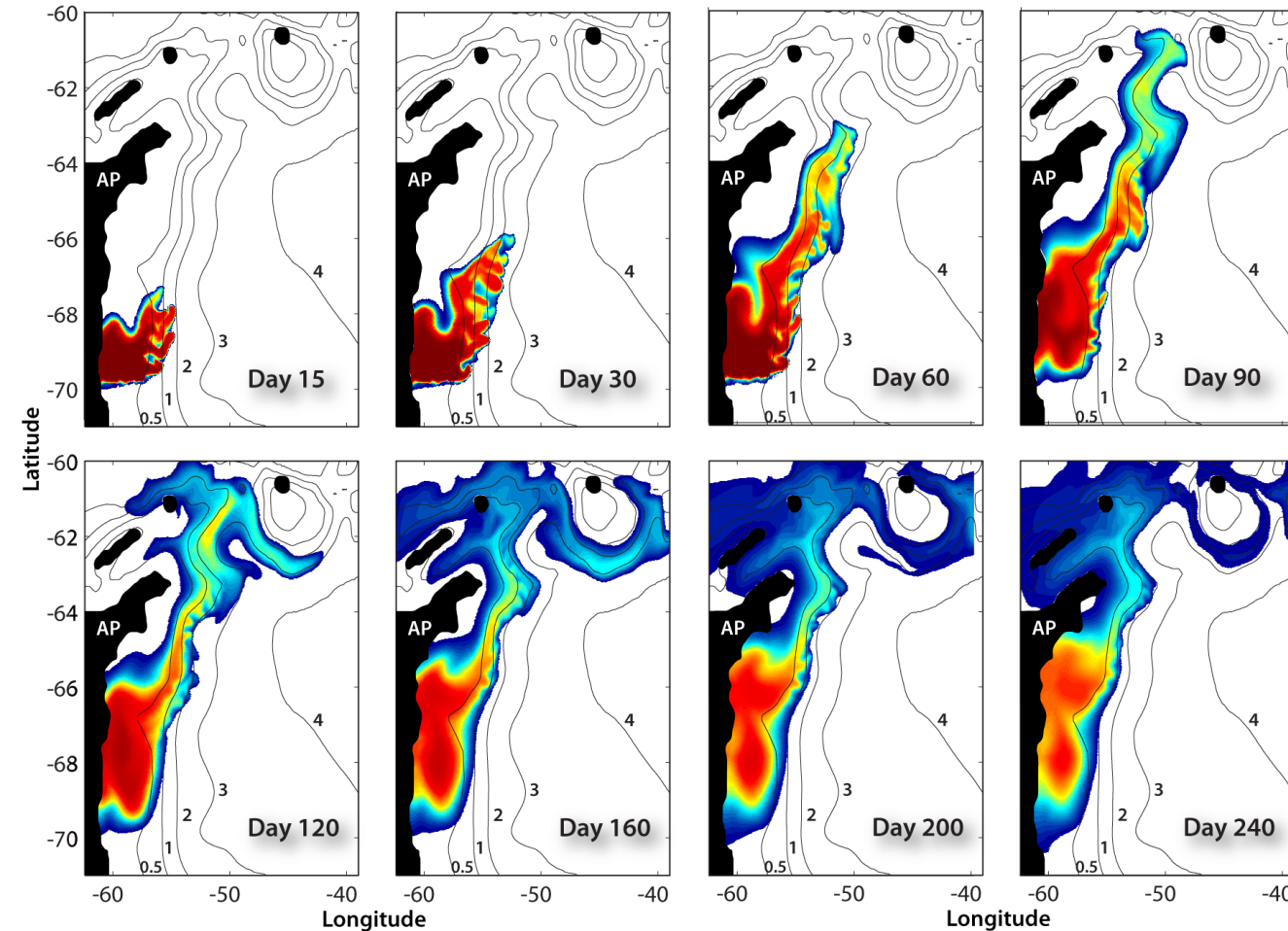


- Larsen Plume
- flows down in LIS-C

Plume Water Tracer



Model experiment, FEOM



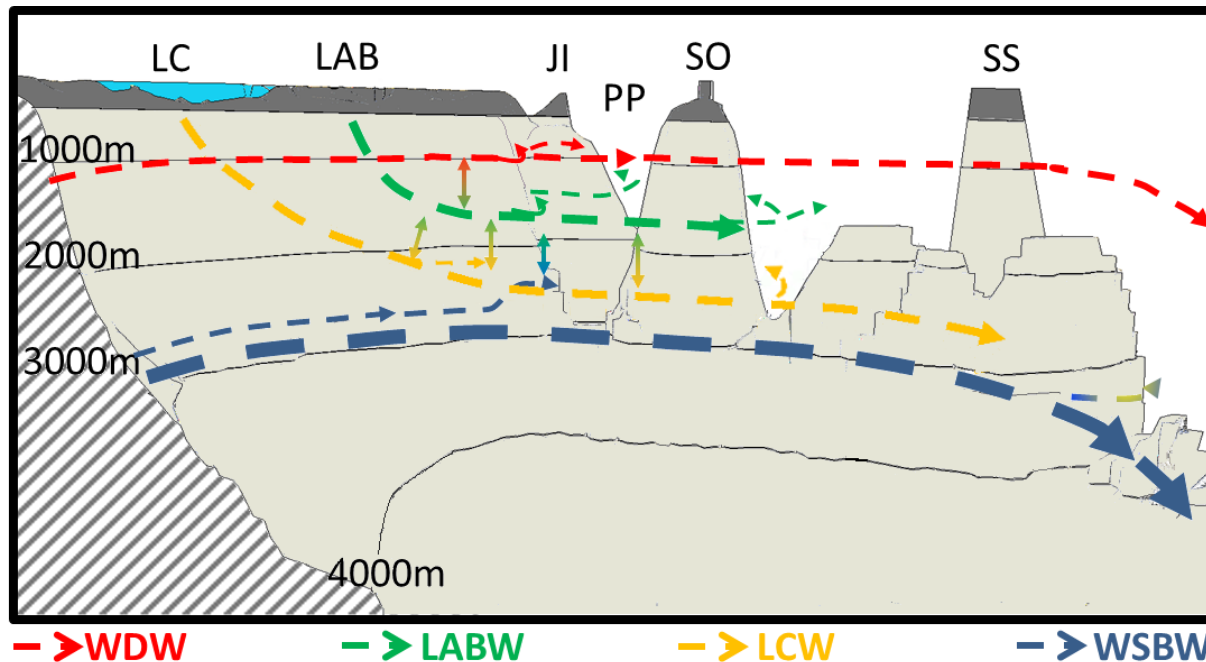
- Larsen Plume
- flows down in LIS-C
- flows down in RT

Plume Water Tracer



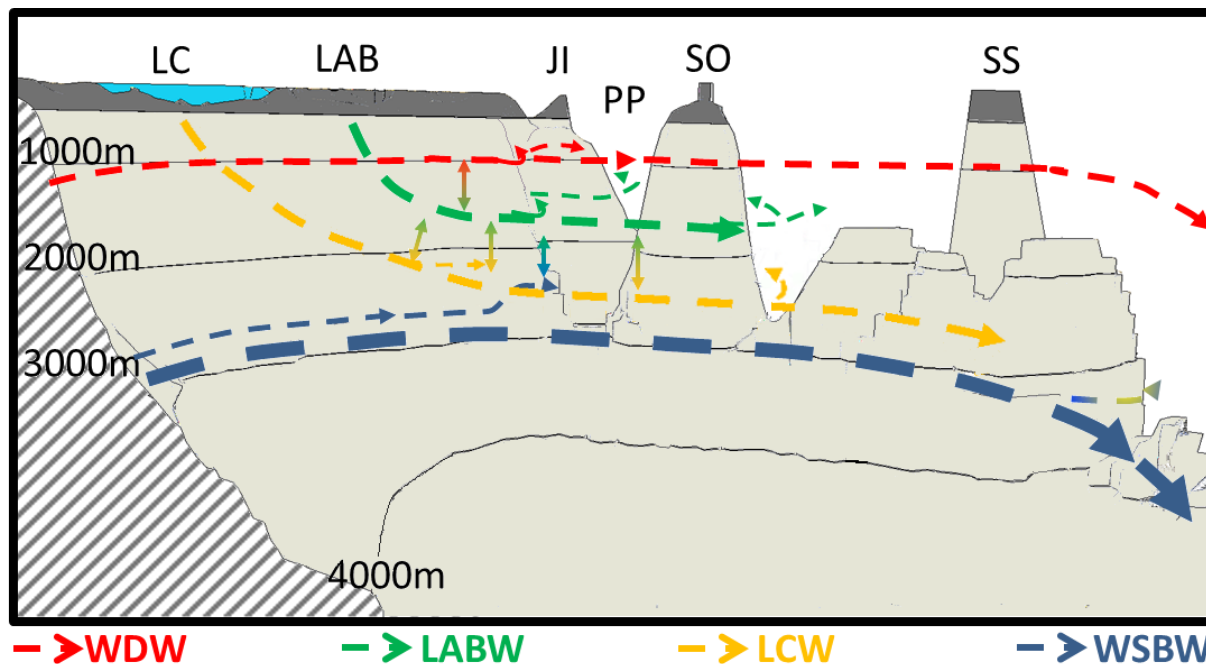
Summary

the continental shelf off **Larsen** is important for **Antarctic Bottom Water** formation



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the continental shelf off **Larsen** is important for **Antarctic Bottom Water** formation



van Caspel, et al, 2015

The flow of dense water plumes in the western Weddell Sea simulated with the Finite Element Ocean Model (FEOM).

in: Towards an Interdisciplinary Approach in Earth System Science. Springer, pp. 125-129.

van Caspel et al, 2015

Precursors of Antarctic Bottom Water formed on the continental shelf off Larsen ice shelf.

Deep Sea Research Part I: Oceanographic Research Papers 99, 1-9.