Frontal Transport of Tracers in the Southern Ocean

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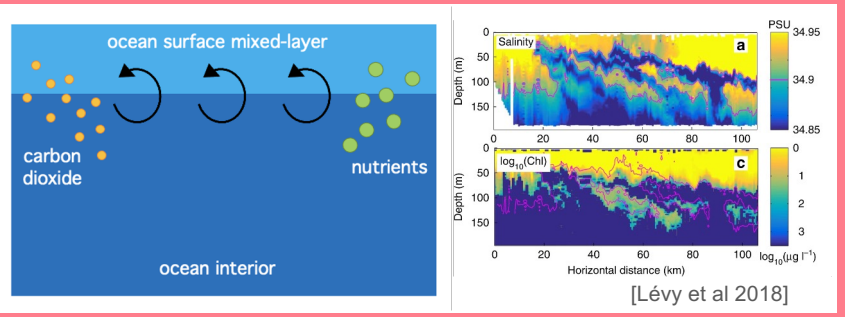
Exploration of the complexity of mixing processes in the ocean biogeochemistry in B-SOSE

FRONT

Motivation:



[Lévy et al 2018]

- Ocean mixing is important for the transport of tracers
- Small scale processes (e.g. the submesoscale) are not resolved in GCMs but they contribute to the vertical exchange of tracers in the upper ocean
- The Southern Ocean plays an important role for the global carbon uptake

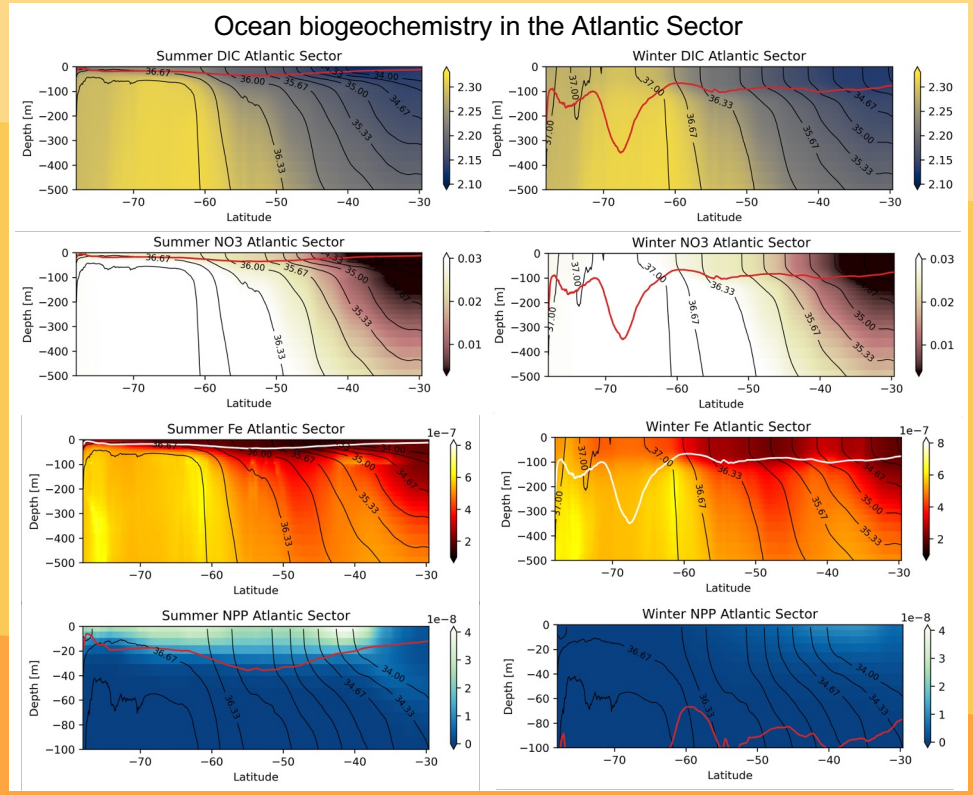
Goal:

- Use B-SOSE as a tool to investigate the role of mixing in the biogeochemistry of the Southern Ocean

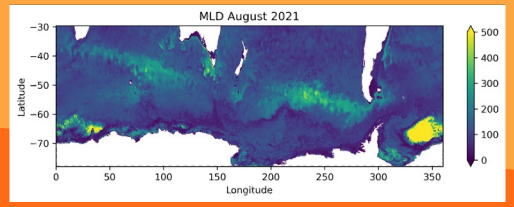
Method:

- Download B-SOSE data from 156 iteration at 1/6 degree
- Study the the seasonality of the biogeochemistry

Results:



- Less carbon in summer: biology takes up carbon
- More carbon in winter in the upper ocean: less biology and more mixing
- Nitrate and iron are upwelled in winter due to outcropping isopycnals



Big pool of deep MLD in the Weddell Sea associated with ventilation of the deep ocean

Conclusion:

- Mixing is important for carbon, nitrate, and iron
- Small scale processes at fronts, such as the submesoscale, should affect the vertical transport of tracers