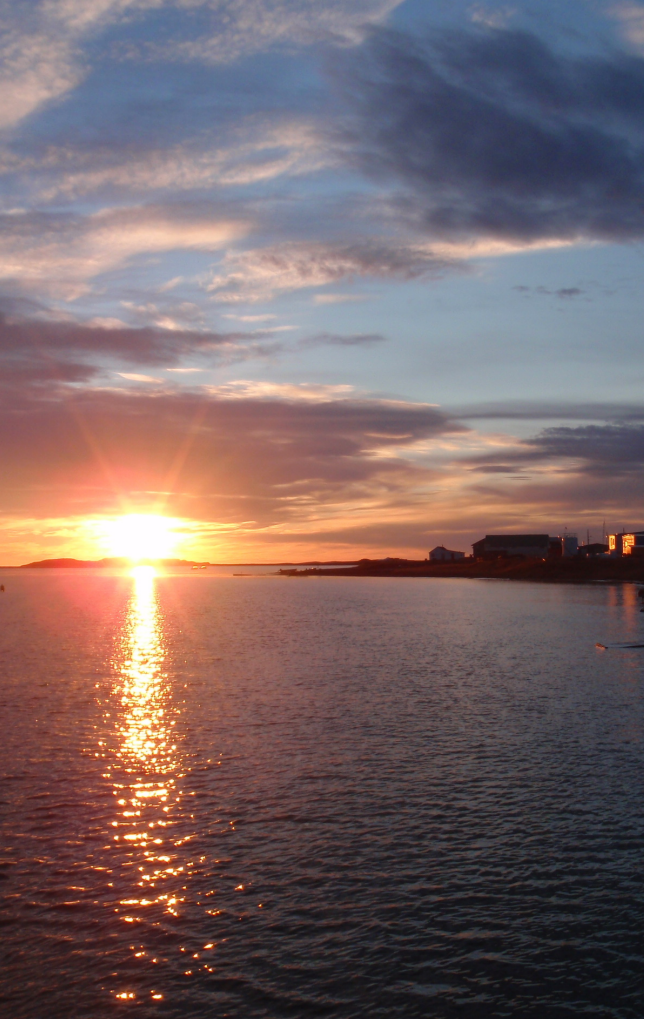
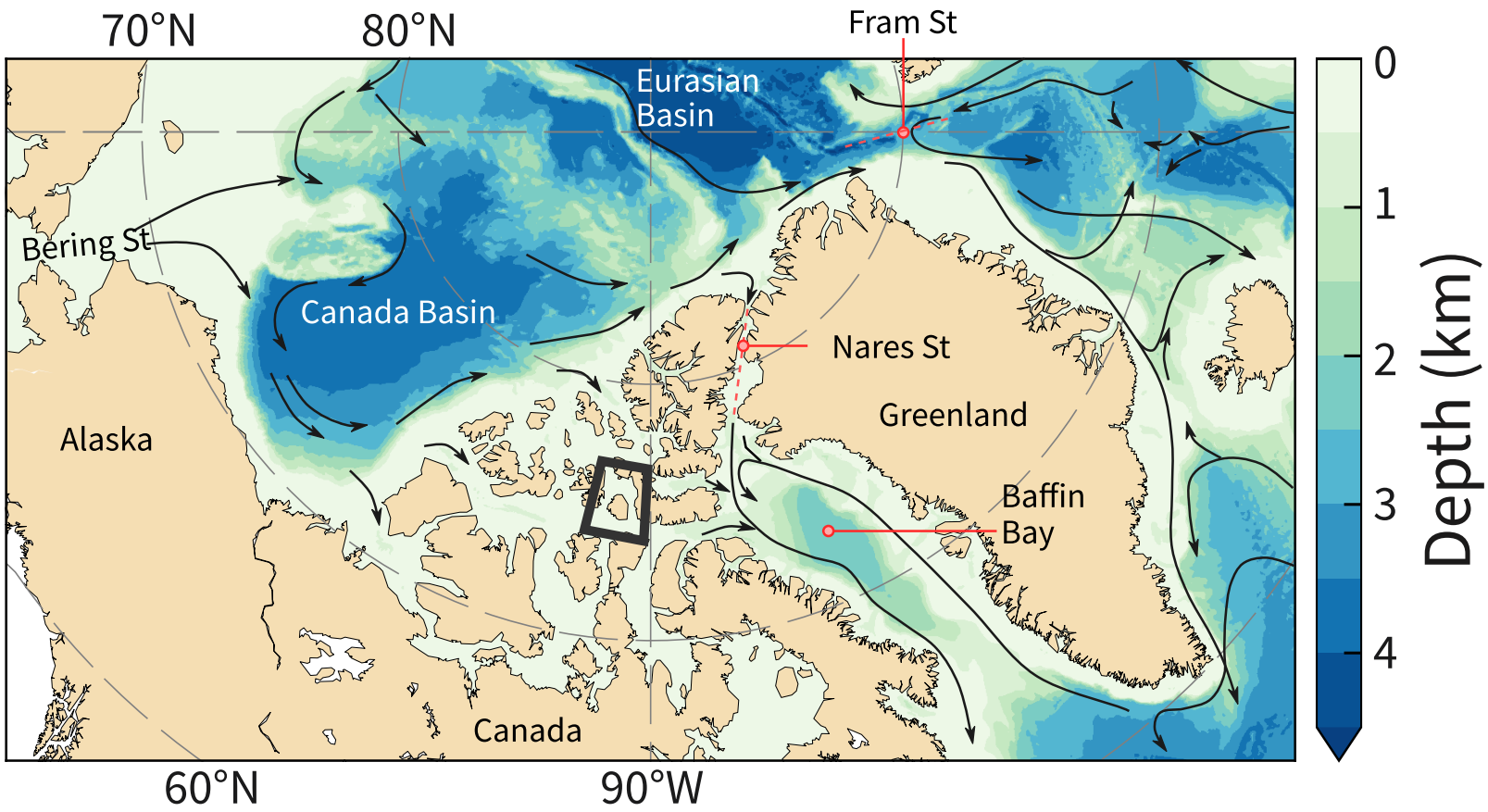


SILL DYNAMICS IN THE CENTRAL CANADIAN ARCTIC ARCHIPELAGO

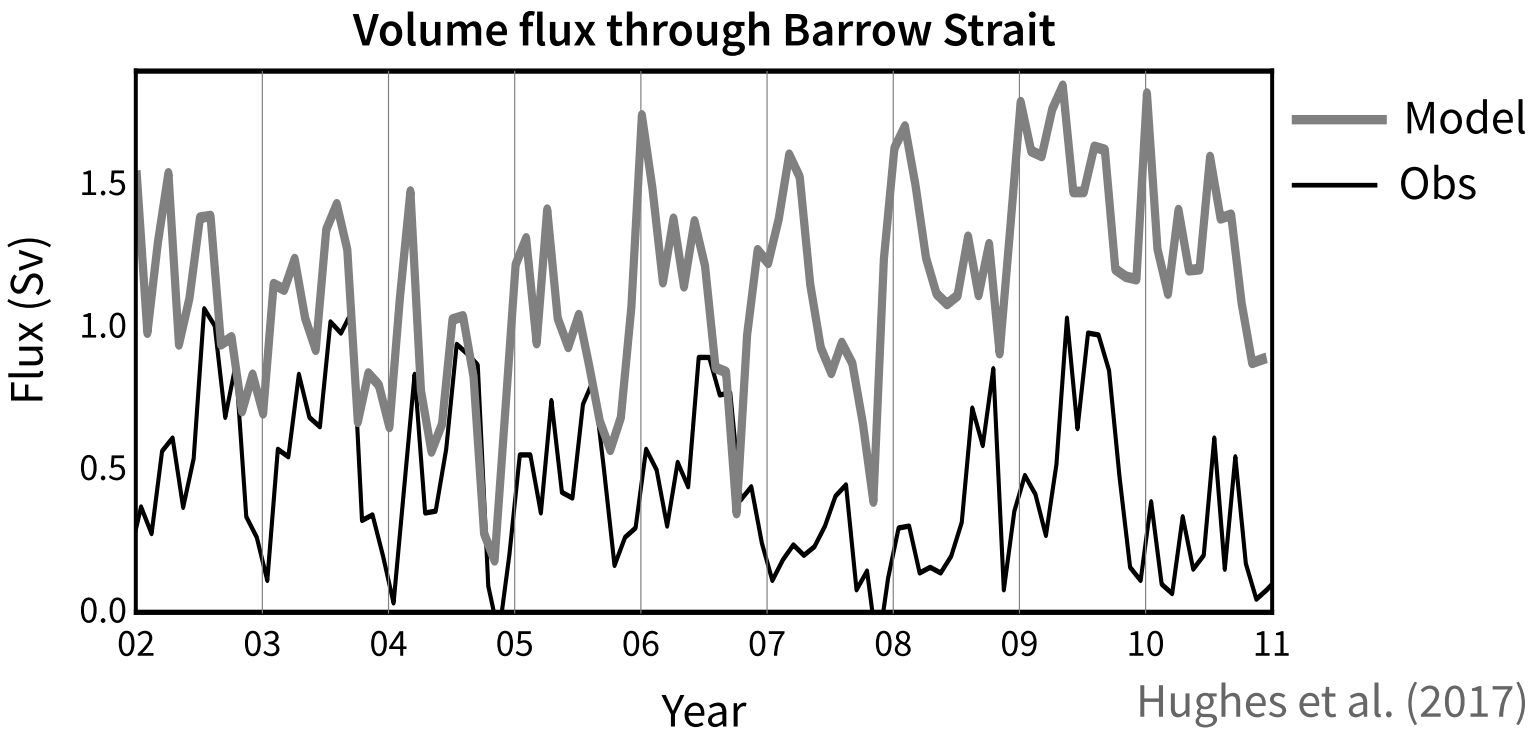
Ken Hughes, Jody Klymak

School of Earth and Ocean Sciences | University of Victoria

A conduit for Arctic water outflow

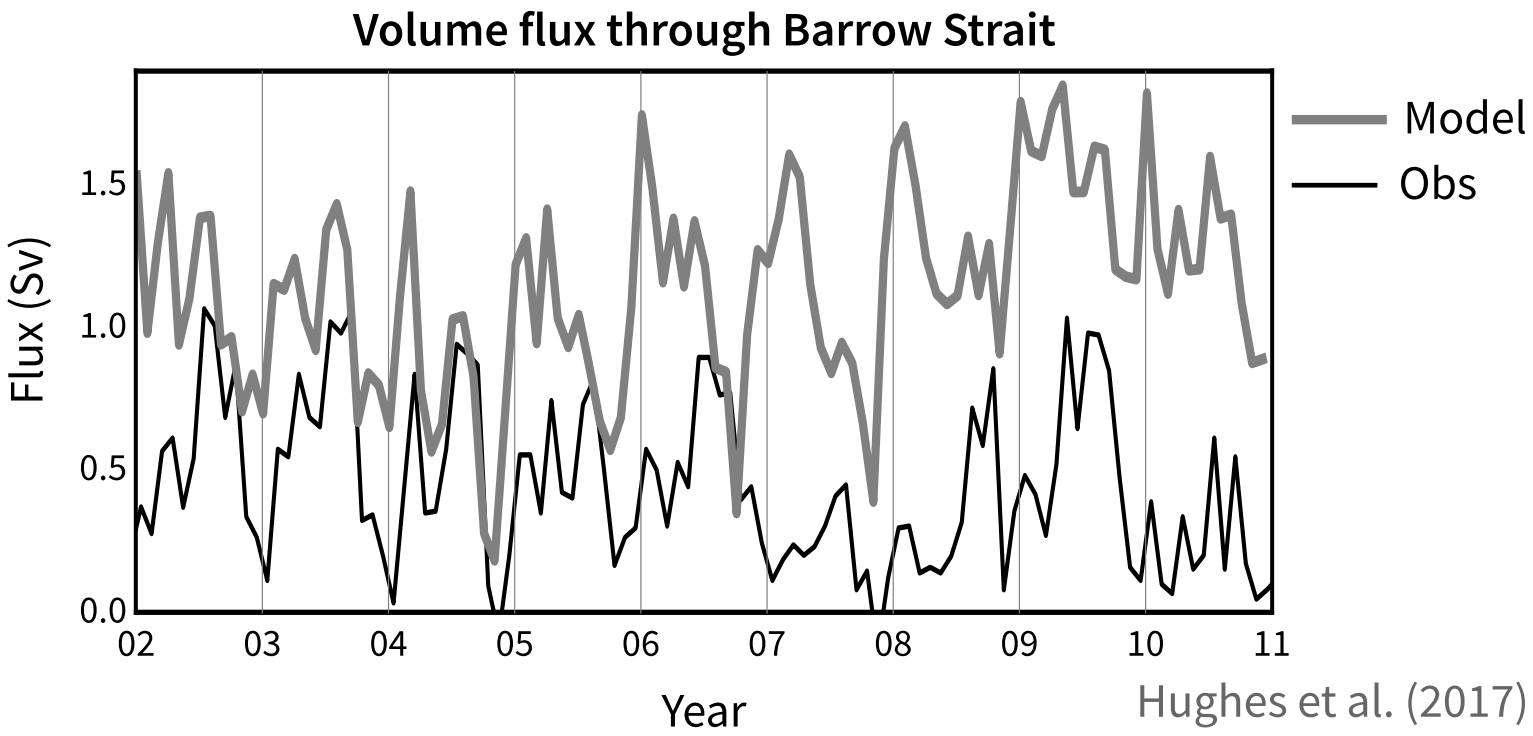


Large-scale flow estimates disagree

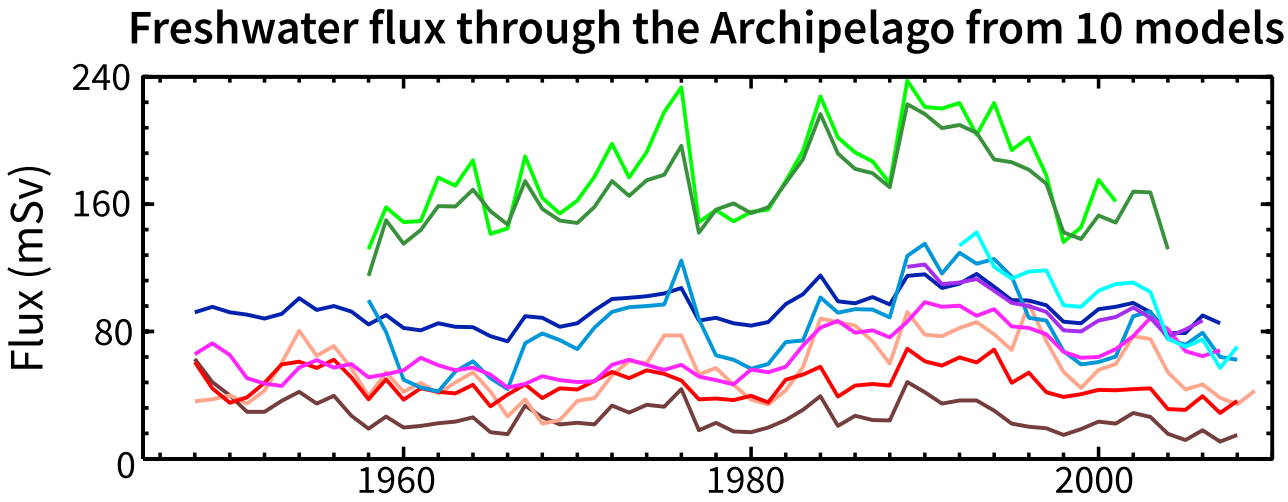


Hughes et al. (2017)

Large-scale flow estimates disagree



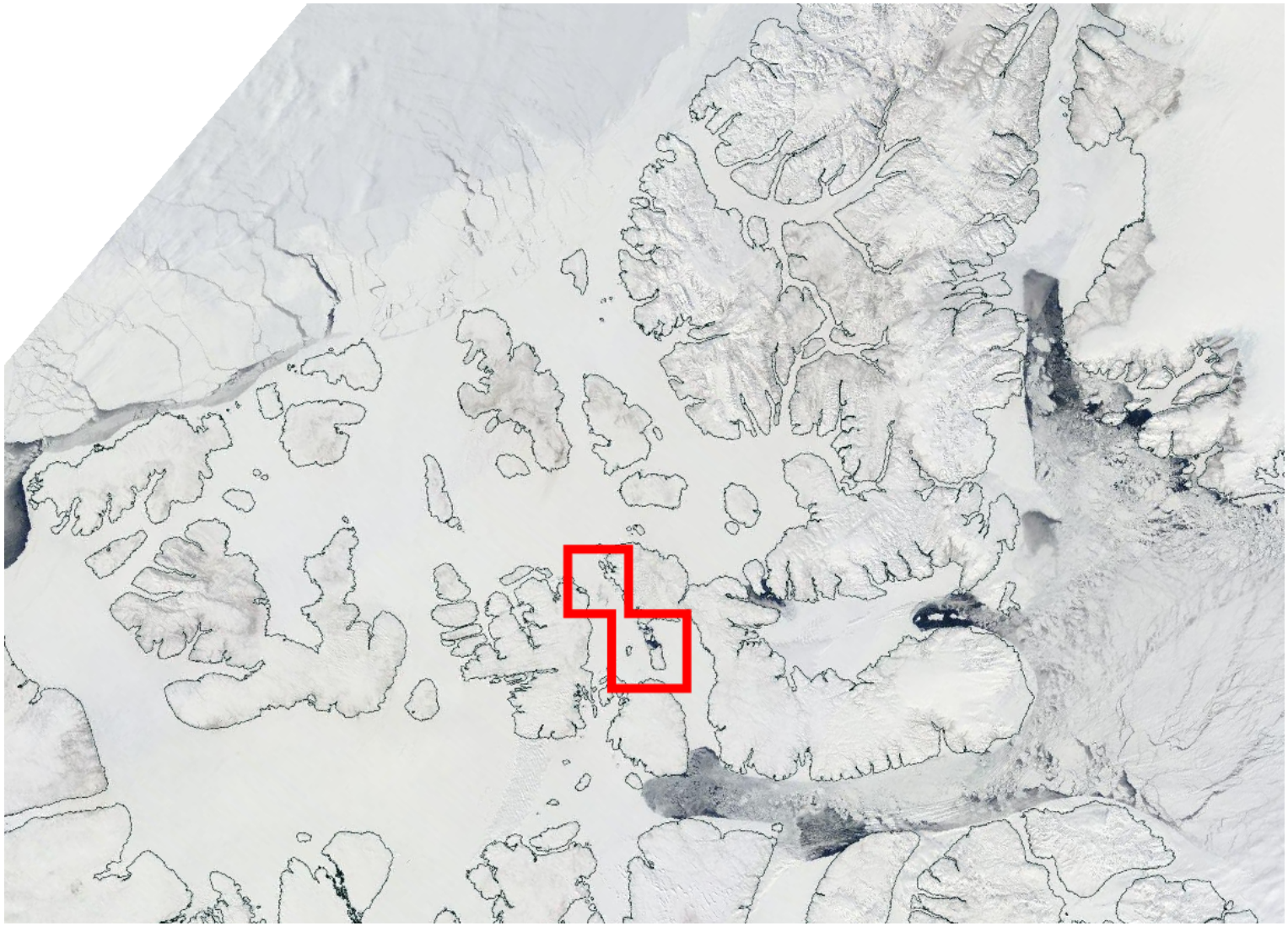
Hughes et al. (2017)



Jahn et al. (2012)

Ice conditions indicate strong mixing

May 3



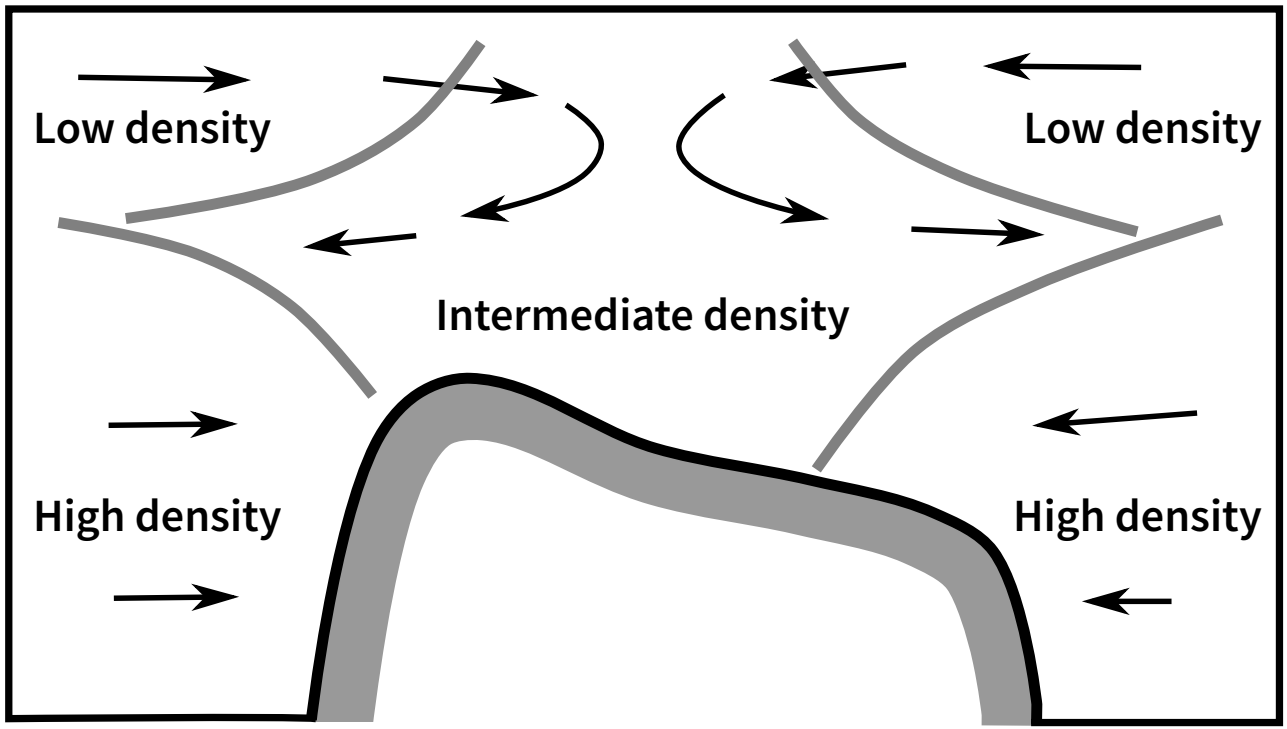
NASA Worldview

Ice conditions indicate strong mixing

June 3

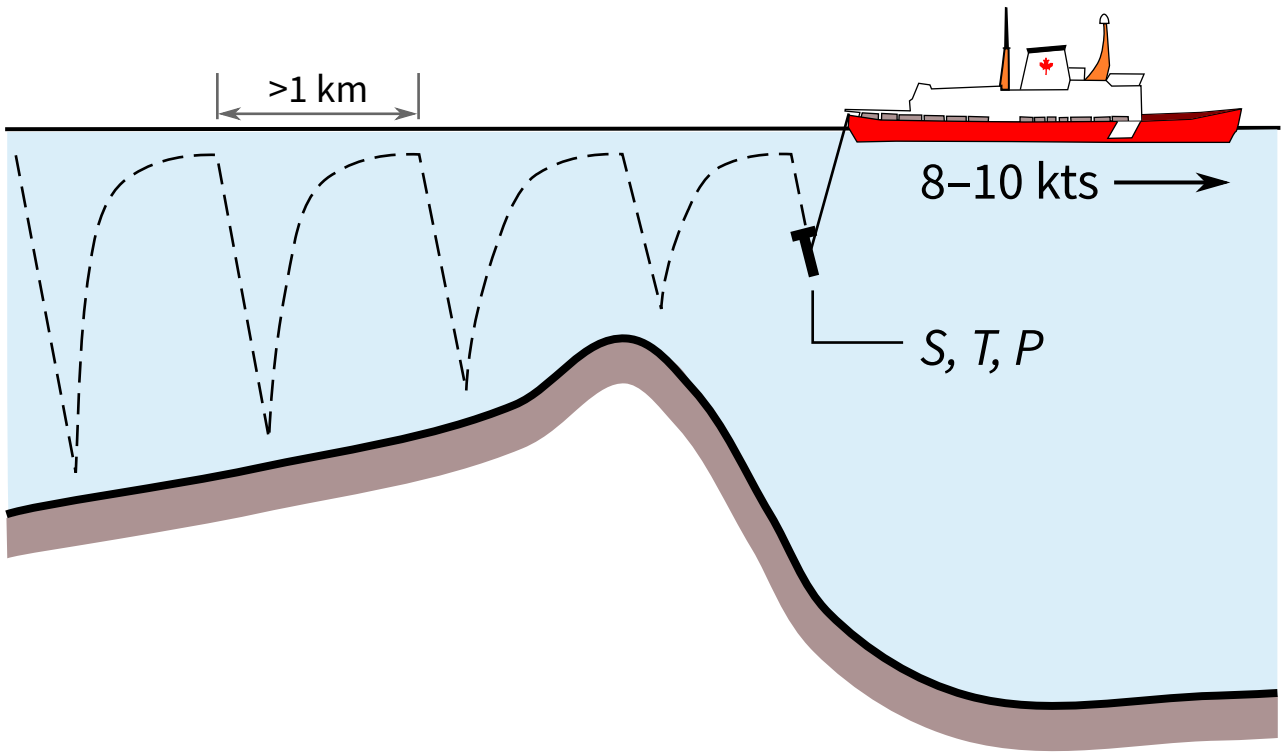
NASA Worldview

Mixing alters circulation

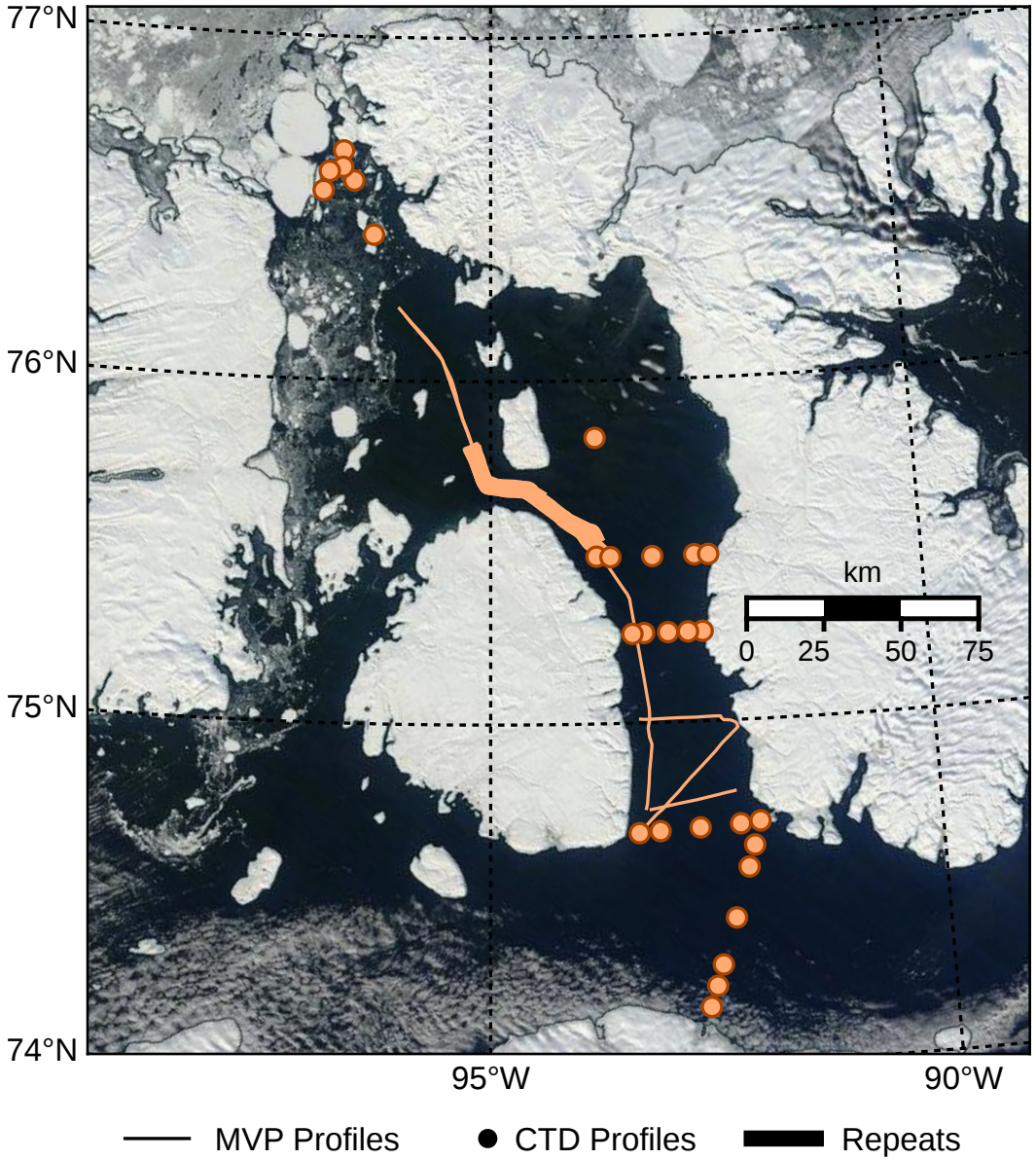


After Valle-Levinson et al. (2001)

The MVP: moving vessel profiler

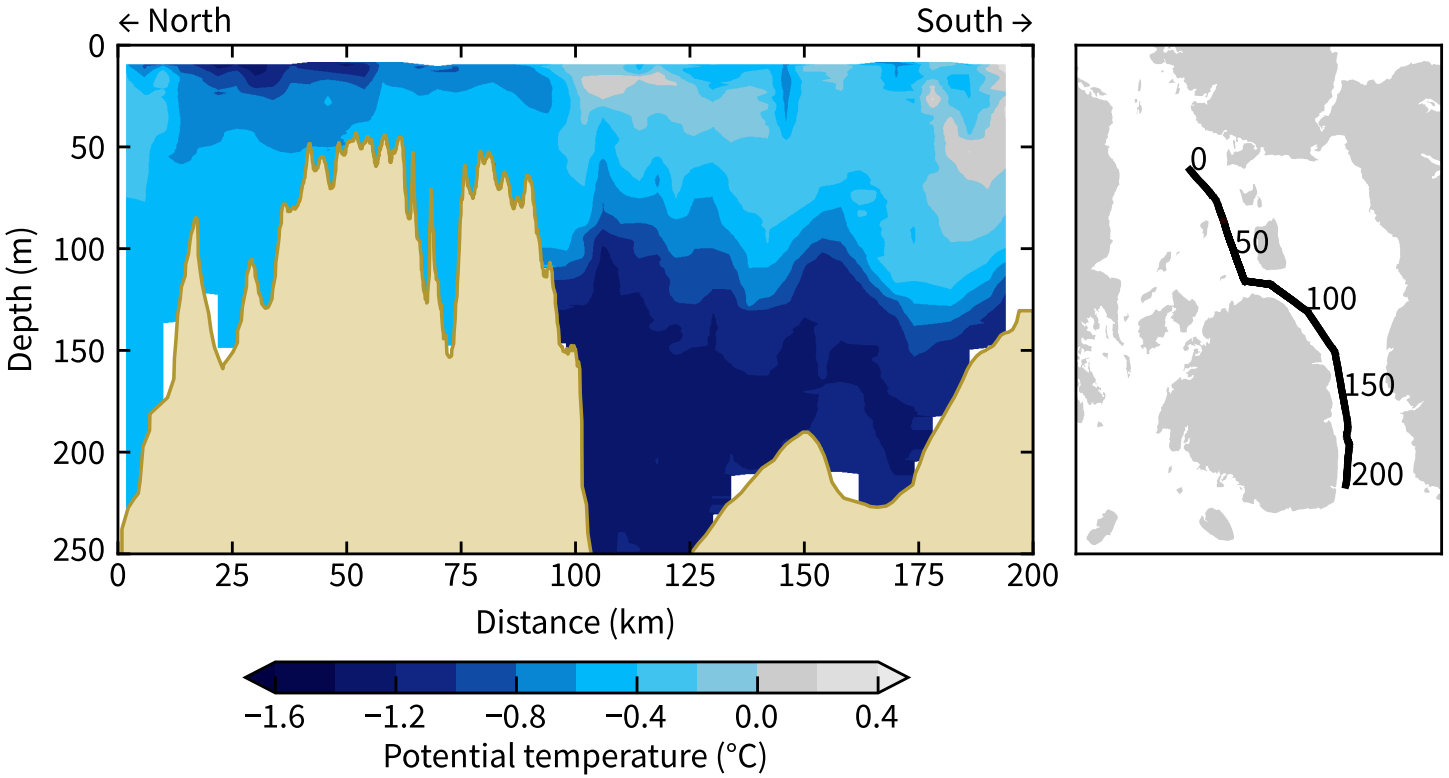


Four days, 1100 profiles

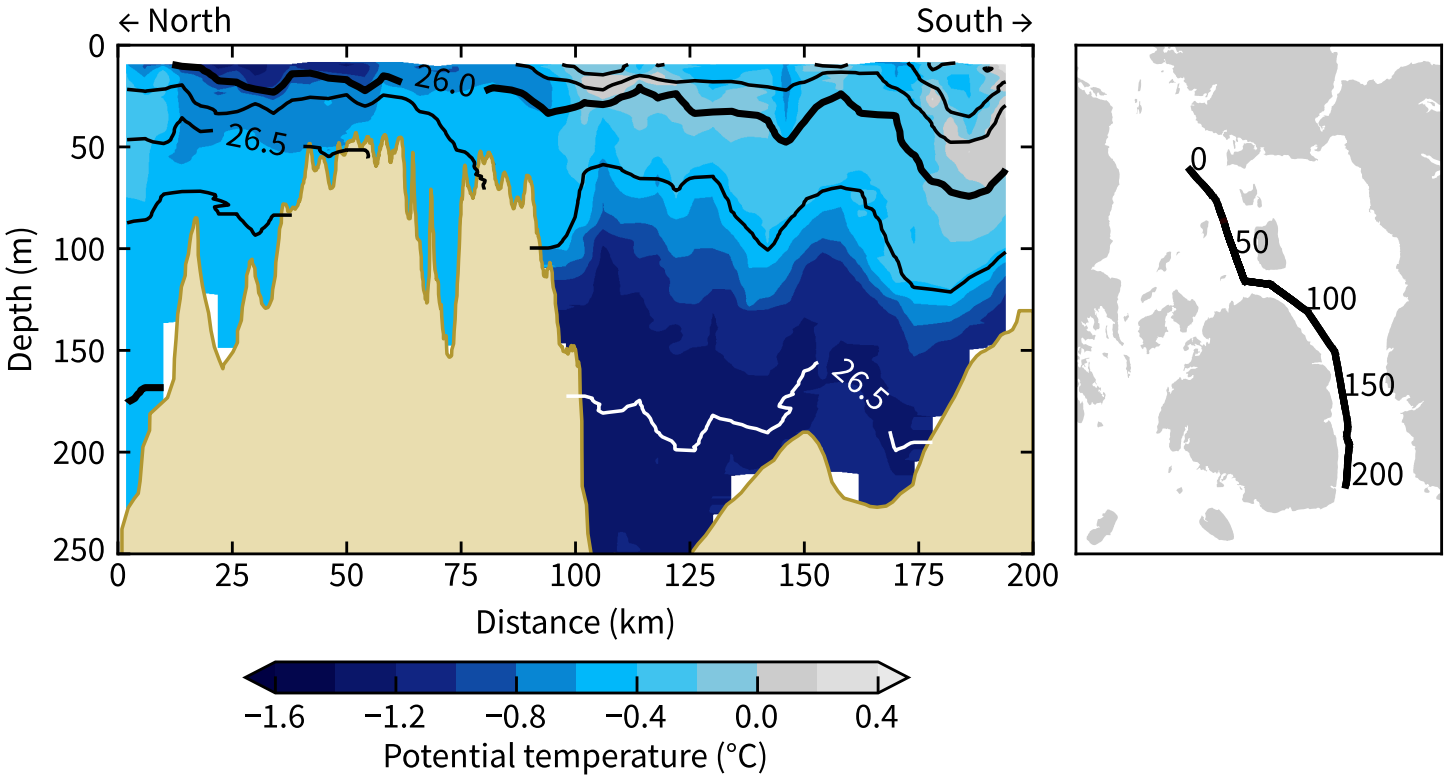


NASA Worldview

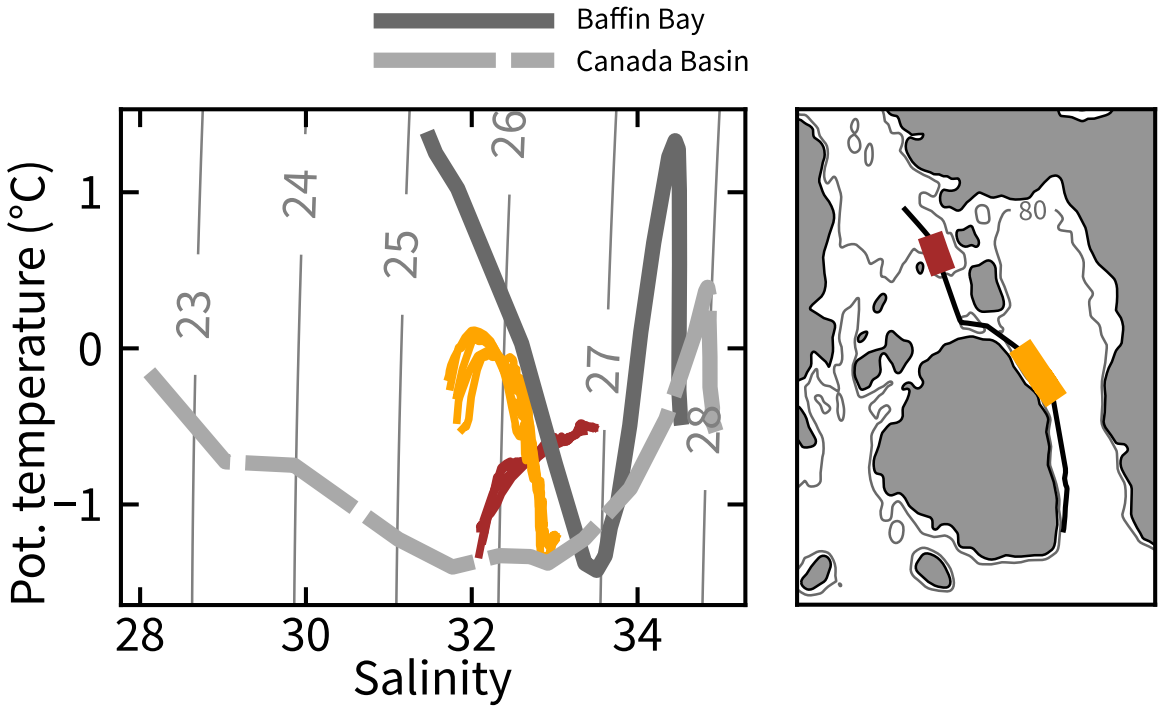
An abrupt transition in properties



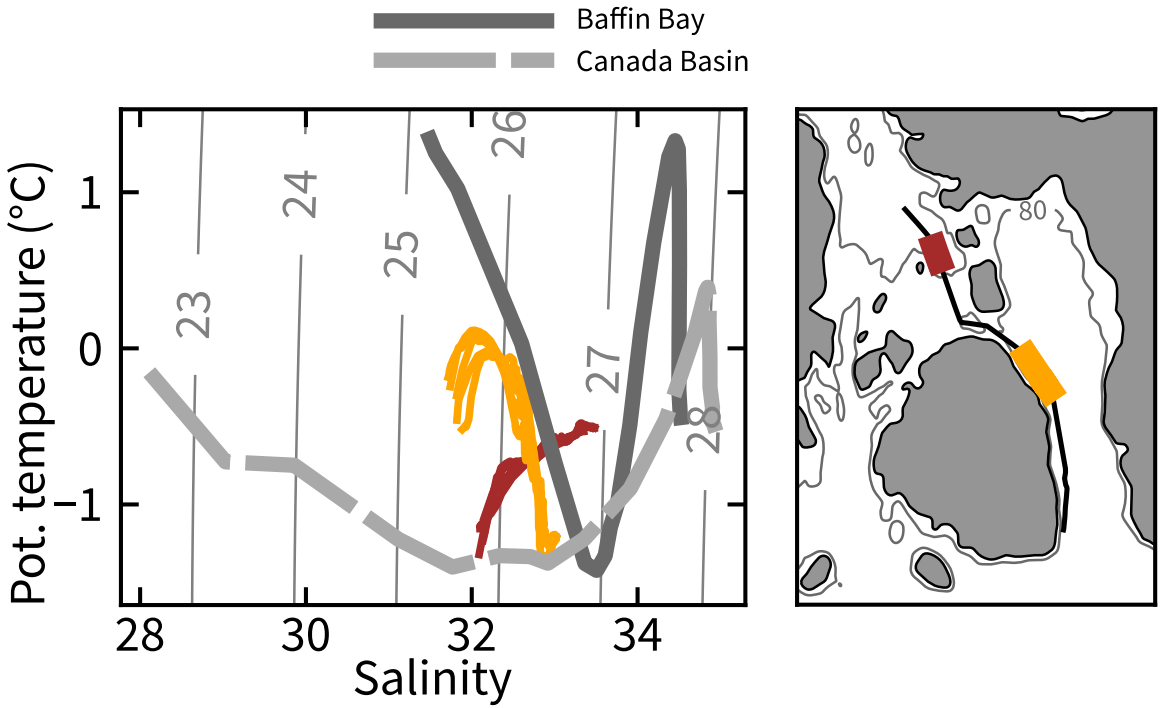
An abrupt transition in properties

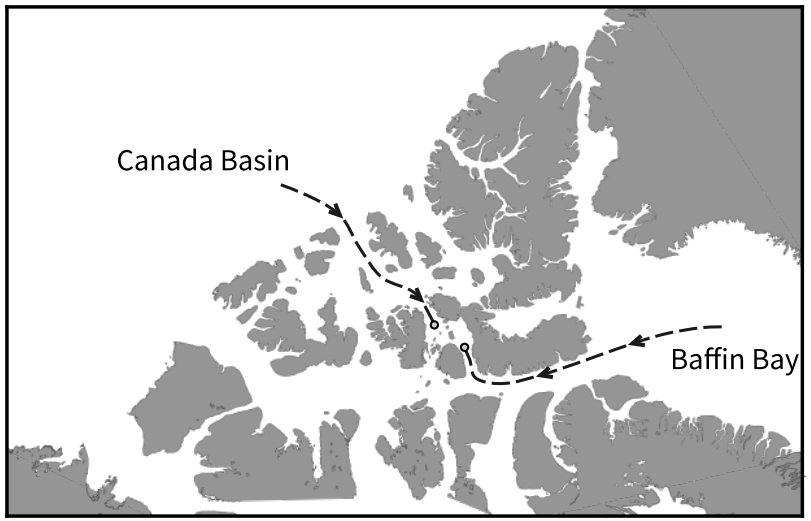


An abrupt transition in properties



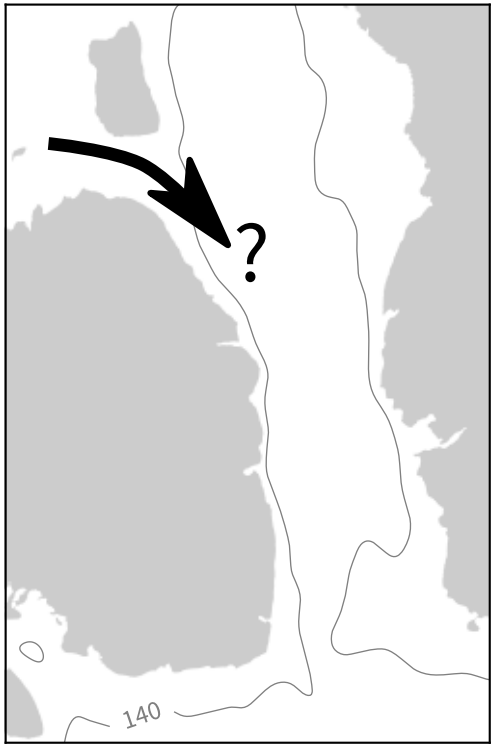
An abrupt transition in properties





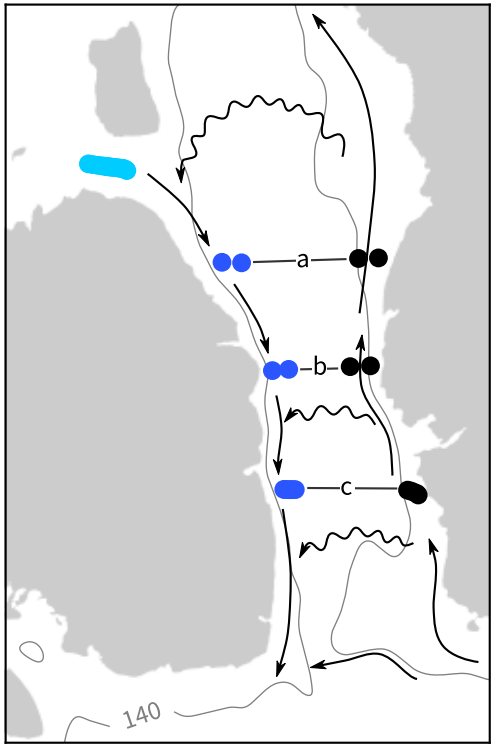
How much influence do northern waters have?

Influence of northern waters

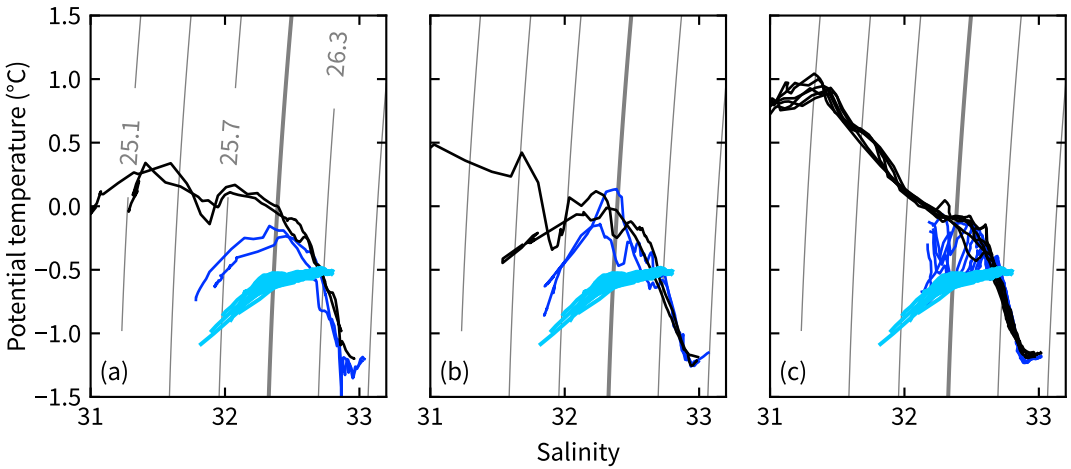


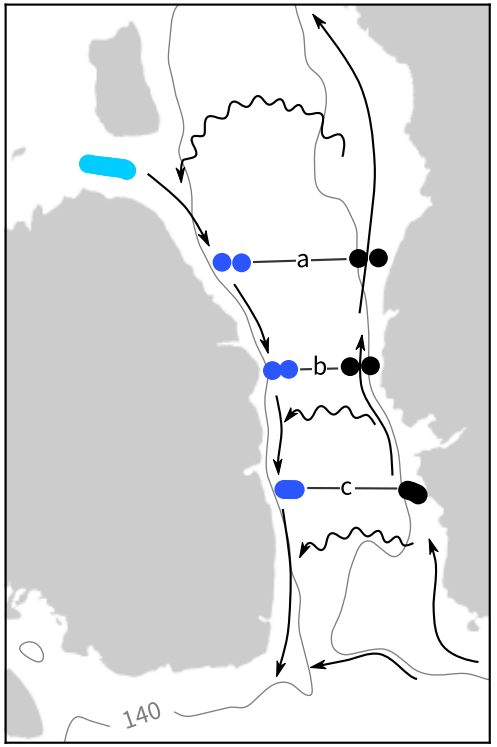
Influence of northern waters

Influence of northern waters

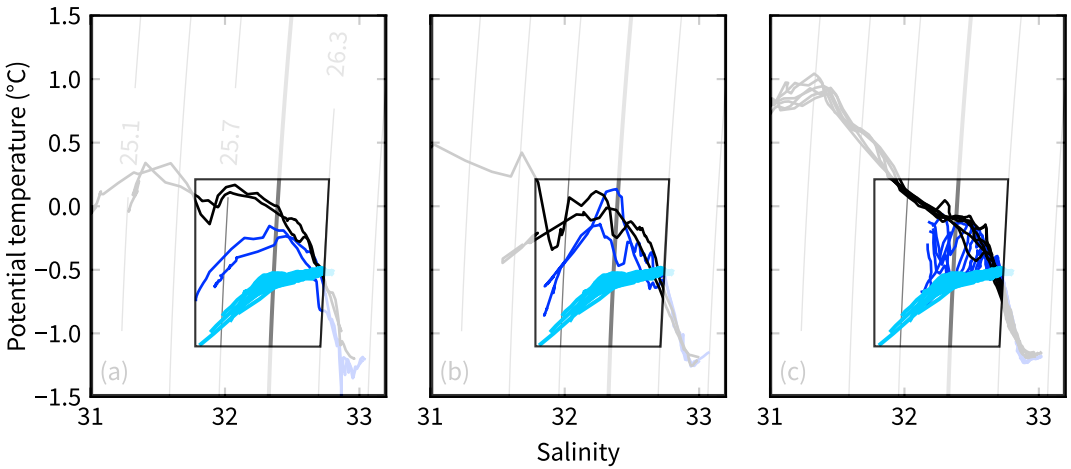


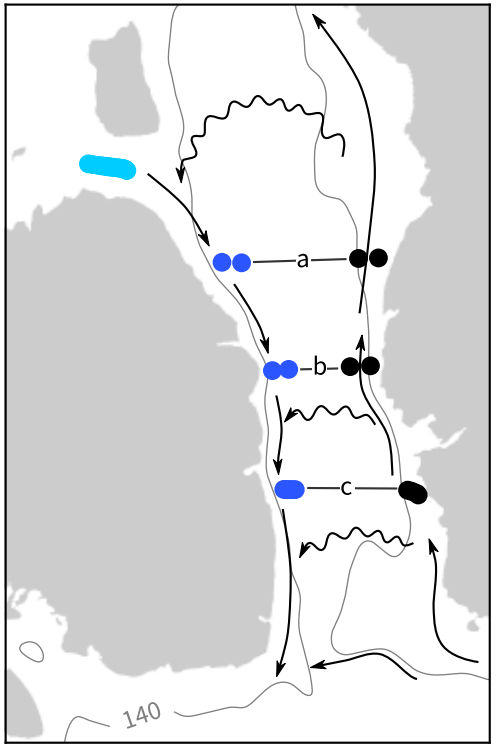
Influence of northern waters



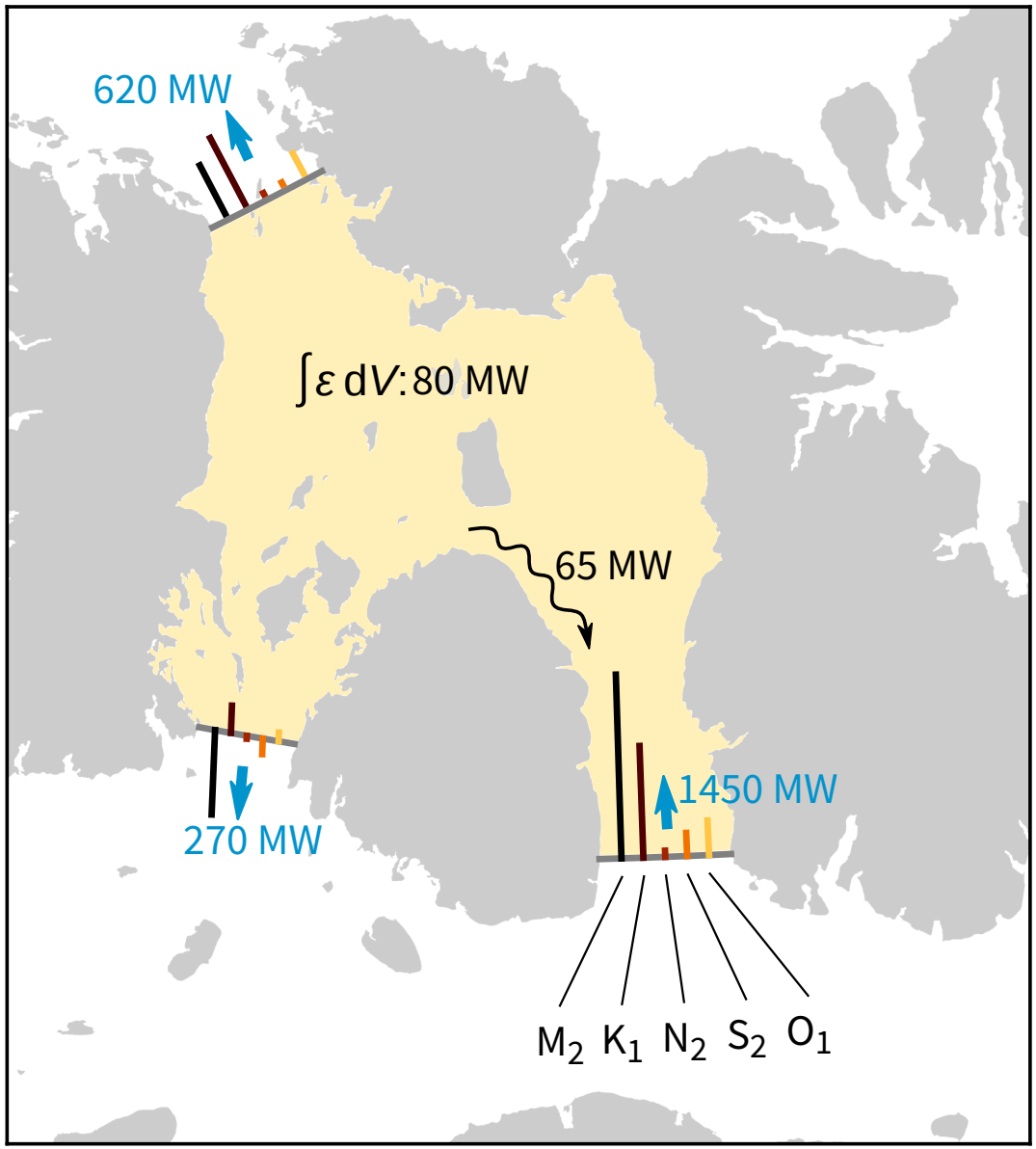


Influence of northern waters

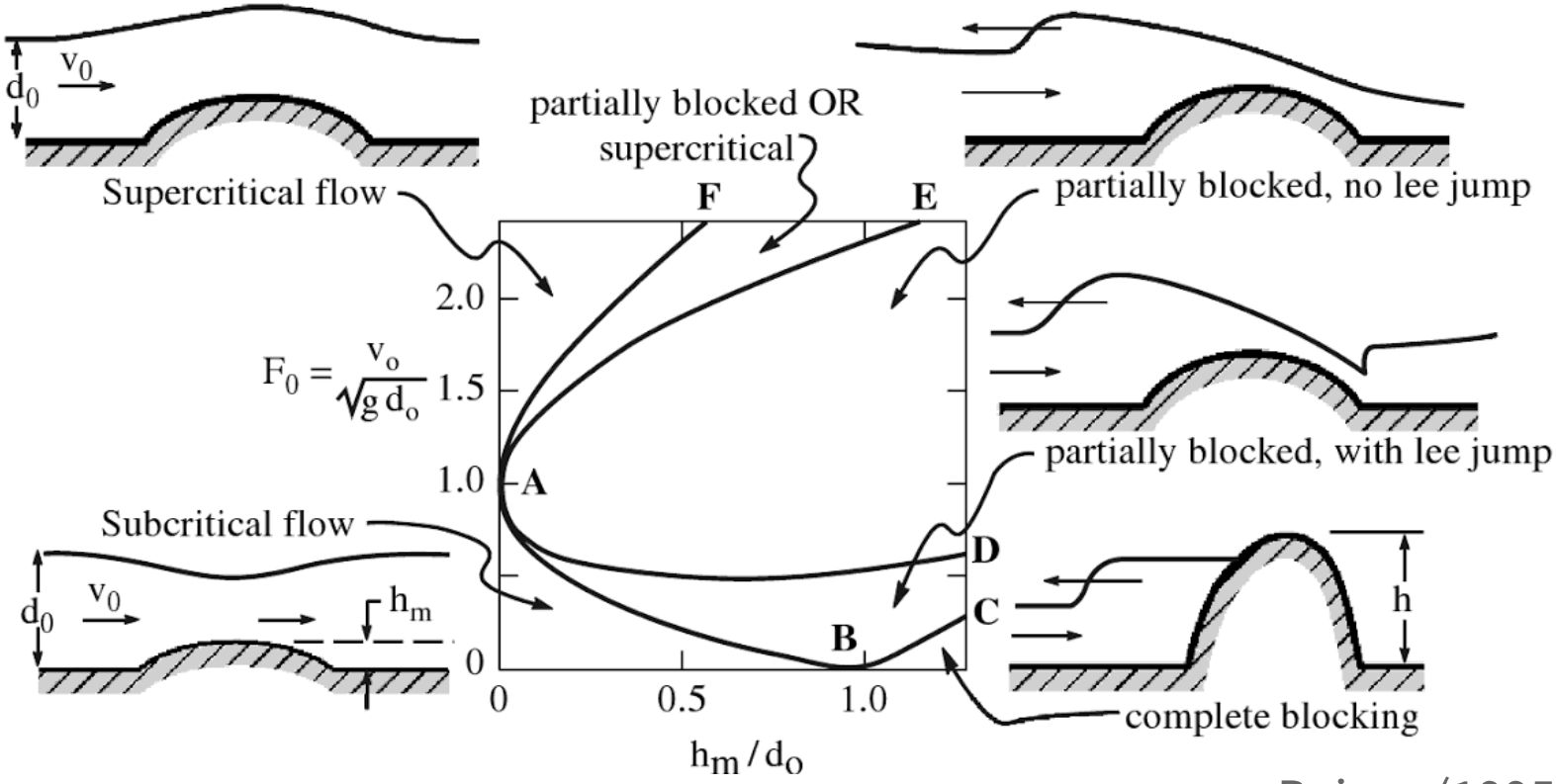




Can we explain the tidal dissipation?

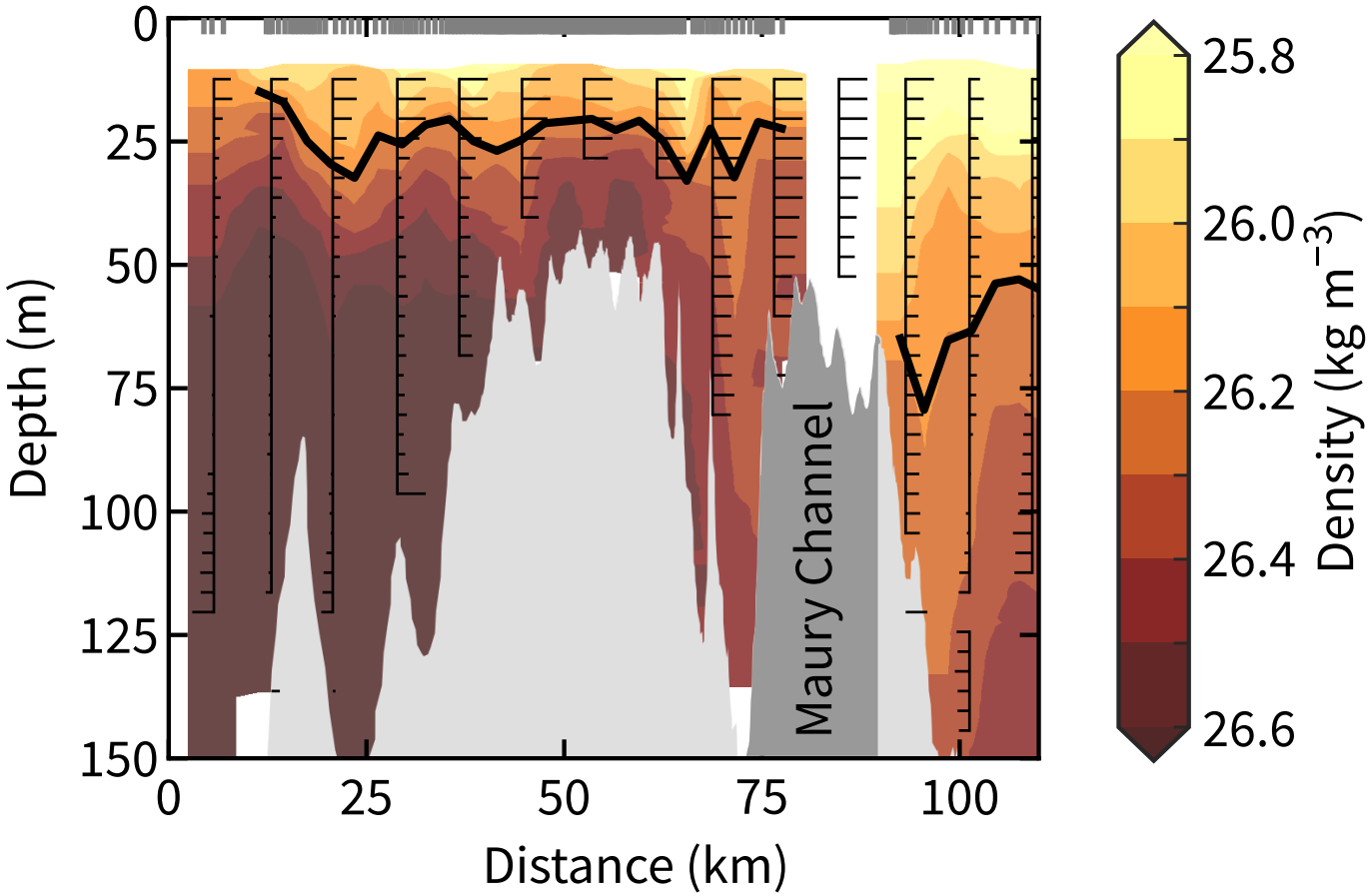


Flow state depends on the Froude number



Baines (1995)

A jump during strong tidal flow



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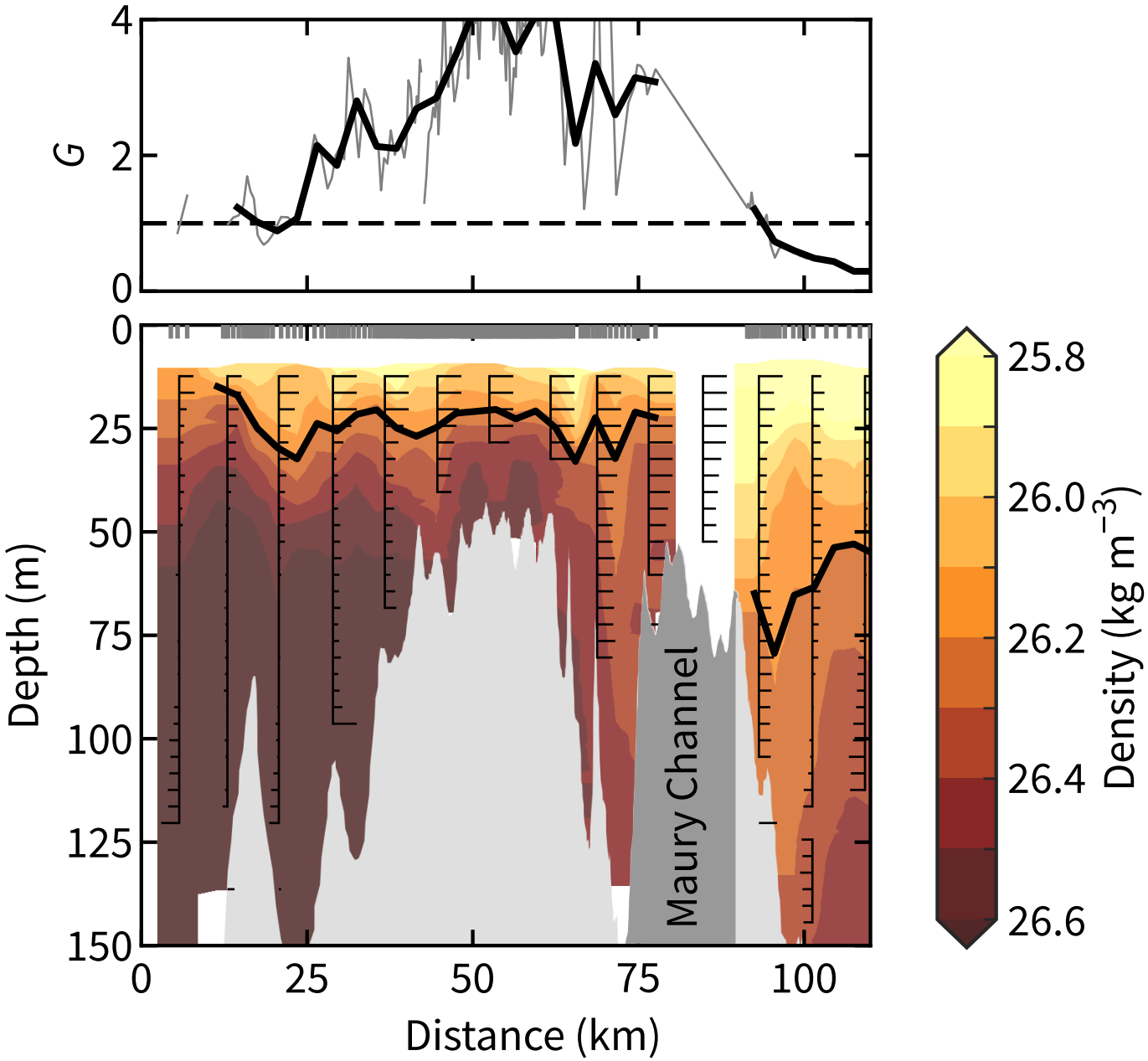
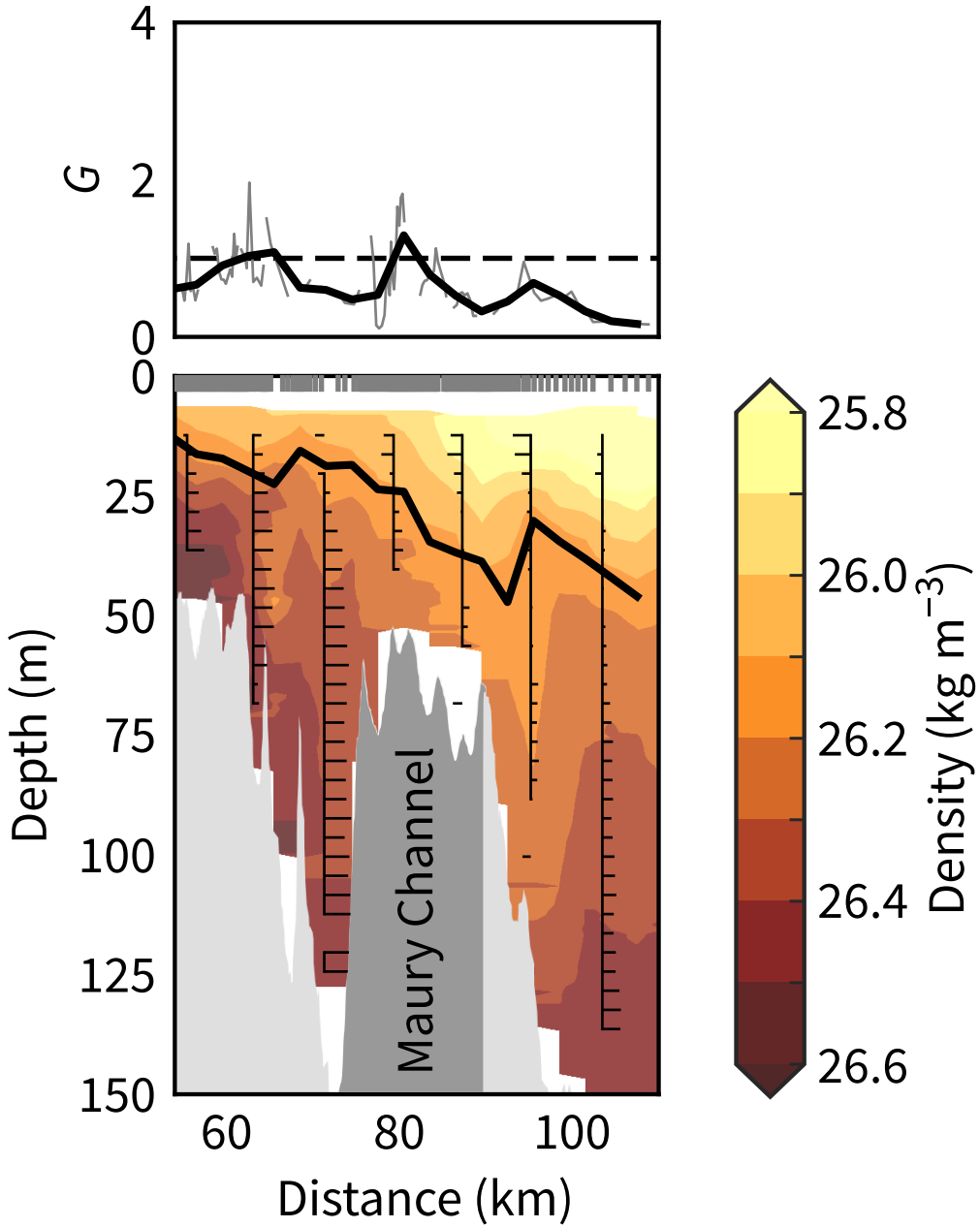


No transition later in the tidal cycle



Open questions

- Tidally averaged behaviour
- Eddy generation
- Critical latitude

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