

Haline Convection due to Sea Ice Brine Rejection in the Northern Baltic Sea

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CÉLINE GIESSE

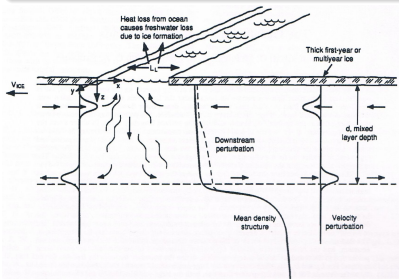
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Source: <http://nsidc.org>, photo by Patrick Kelley

Motivation

Brine rejection

The process of salt being pushed from forming sea ice into the surrounding seawater, creating saltier, denser brine.



Morison et al., J. Geophys. Res. 97, 1992

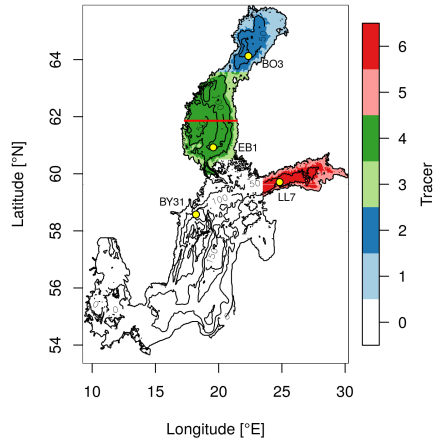


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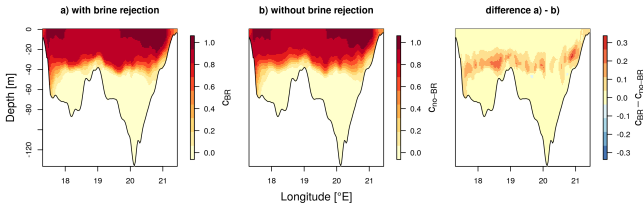
What is the role of brine rejection in the circulation and water properties of the Northern Baltic Sea?

Method

- Model: GETM (General Estuarine Transport Model)
- Brine rejection included via prescribed freshwater fluxes
- Passive tracers for tracking of water mass pathways



Key Findings



- Tracer sinks deeper in simulation with brine rejection, but no deep water formation
- Possible reasons: too strong stratification and large-scale convection
- Need for subgrid-scale brine rejection parameterization