Coastal Circulation and Dynamics of Straits and Fjords of North Greenland

The Arctic Ocean is a rotating large estuary that discharges freshwater into the North-Atlantic Ocean. It transitions from a fully estuary at seasonal and interannual time scales. Summer ice cover may disappear within 5 years. Coastal physics dominate.

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Nares Strait Ocean Moorings 2003-09
1. Mean Volume Flux 1.0 Sv (20% in top 30-m)
2. Strong Vertical Shear top 150-m

Nares Strait Dynamics: 2003-2009
1. Along-channel Flow Almost Geostrophic
2. Along-channel Dynamics Almost Linear

Mean Flow

Salinity Variability:

Complex EOF

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Collaborators: Kelly Falkner, Helen Fricker, Helen Johnson, Humfrey Melling, Laurie Padman, Roger Samelson, Brett Rabe, Patricia Ryan.

Petermann Gletscher 2003-2012
1. Glacier Retreat: Released 18 Gt of ice in both 2010 and 2012
2. Deep Ocean Warming causes Glacier Thinning

Polar bear near Nares Strait mooring line as seen from aboard USCGC Healy, June 2012.

[Credit: Kirk McNeil, Labrador]