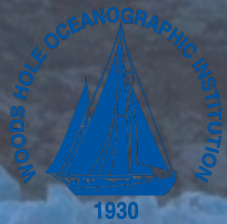




Massachusetts  
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# Seasonal and oceanic variability influences fjord circulation and submarine melting?

Seasonal variability of submarine melt rate and  
circulation in an East Greenland fjord

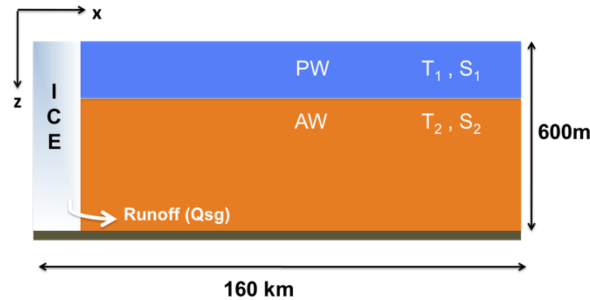
Roberta Sciascia, Patrick Heimbach – MIT  
Fiamma Straneo, Claudia Cenedese – WHOI

Ocean model with melt rate parameterization to explore the glacier (buoyancy) driven circulation and compare the results with line plume theory

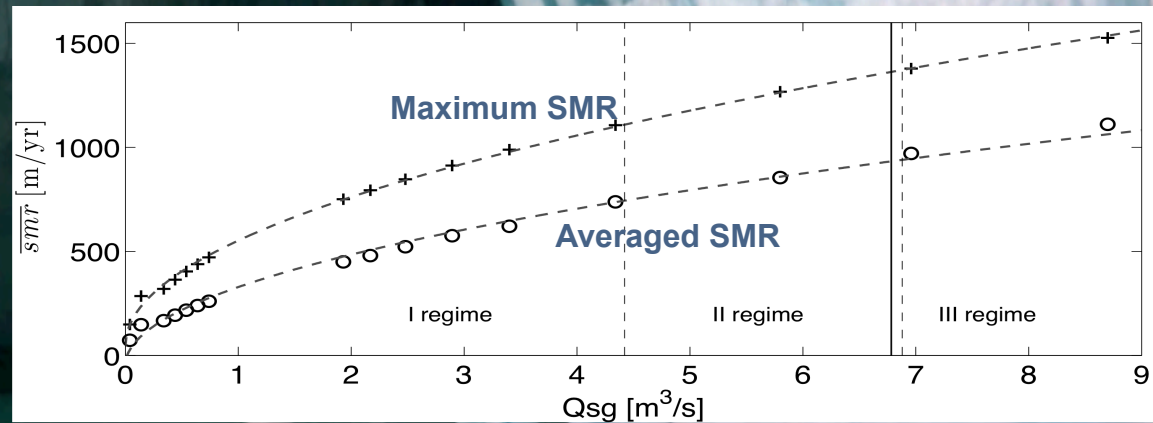
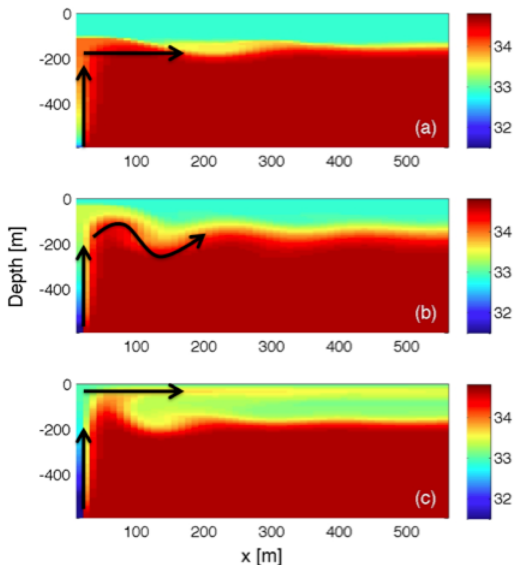
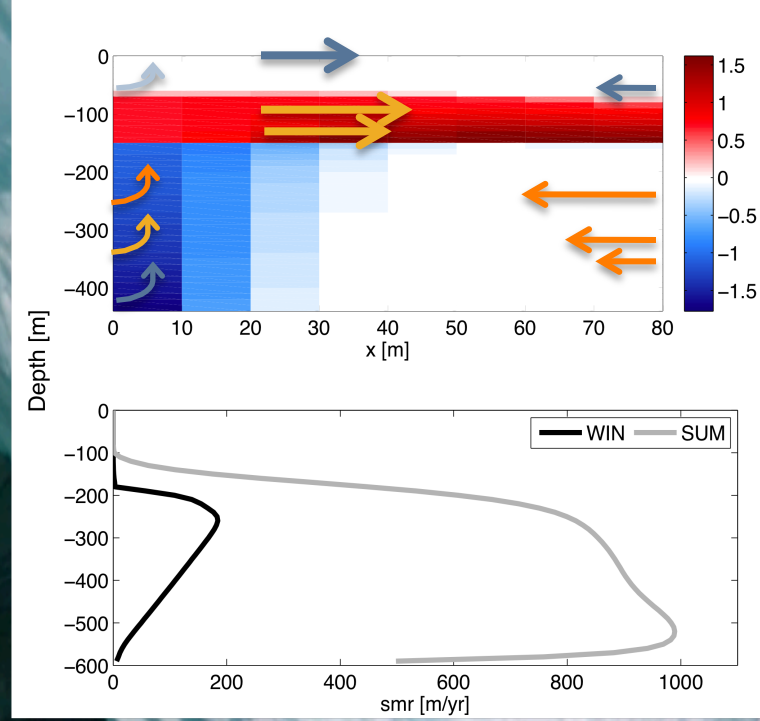
- Vary  $Q_{sg}$

- Vary AW properties

Large seasonal variability of  $\overline{SMR}$  driven by  $Q_{sg}$



Due to stratification, a double cell circulation is found year-round



$\overline{SMR}$  sensitive to AW thickness and temperature





**Subglacial discharge and fjord's stratification are the main drivers of fjord's circulation and submarine melting variability**

**GCM are useful tool to investigate the dynamics driving glacier melting**

**Better estimate of the crucial parameters (e.g.  $\gamma_{TS}$ ) to fully describe ice-ocean interaction**