

# Tracking Irminger Water Through Eastern Baffin Bay and Its Potential Impacts on Glacier Melt in Northwest Greenland and the Canadian Arctic Archipelago Sarah K. Howard (showard@ualberta.ca), Xianmin Hu, Nathan Grivault, Paul G. Myers (pmyers@ualberta.ca) Earth and Atmospheric Sciences, University of Alberta





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## **Discussion and Conclusions**

#### **Observations**

- It is possible to see how the location of the IW has changed over the past 100 years.

- Early 1900s: the IW is concentrated at the southern end of the Bay.
- Mid-1900s: IW can be seen well into Baffin Bay.
- Late 1900/2000s: IW can be seen in Nares Strait. The water penetration increases with depth.
- The Irminger Water could come into contact with glaciers on the islands of the Archipelago or mix to change the properties of the water that does.

#### - Water Volume

Allows us to see how much water is in the area over the entire depth range.

- The volume and location of the Irminger Water changes as time progresses.

- The volume at a given location fluctuates, though remaining reasonably consistent once IW is present, and the IW penetrates farther with time.

- The currents in the Bay are visible with the changes in water volume.

- IW can first be seen following the WGC.
- The BIC is visible in later years

#### Passive tracers

Acting as a dye, we are able to track where the water is coming from, not just the water properties. - Water that has  $T \ge 0^{\circ}C$  and  $S \ge 34.1$  that passes

through Davis Strait.

- It can be seen that the IW has moved into and throughout Baffin Bay, entering Nares Strait and other passages in the CAA, such as Parry Channel. The volume of the passive tracer has the general trend

of increasing through time.

- The volume in Nares Strait is more variable.

#### Conclusions

- Irminger Water can be found well into Baffin Bay and beginning to enter the CAA from observational data and numerical models.

The volume of IW is variable, indicating that water movement could influence its impact.

### **Recommended Further Research**

More analysis of the passage of the Irminger Water is needed, as well as an examination of the melting rates of glaciers in the CAA and the relationship with the Irminger Water.

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