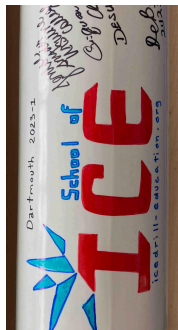


Fresh from the Ice Live Data for Your Classroom

Below you will find US Ice Drilling related programs that provide live data from ongoing research projects to classrooms.



Close-up of SOI SIMB



2023 School of Ice participants with the SOI SIMB



Deploying the SIMB

Winter-2023-2024

Background: In September of 2019, the [MOSAIC](#) expedition froze an icebreaker into the sea ice cover in the Arctic Ocean for a year-long data gathering drift experiment. Fast forward to the August and September of 2023 and Dartmouth College is now embedding SIMB's (Sea Ice Mass Balance Buoys) into the Arctic sea ice cover to autonomously collect data.

In the summer of 2023, the School of Ice participants met with Ian Raphael and Don Perovich to learn about the August-September ArctWatch expedition. In August 2023, the German icebreaker Polarstern sailed into the Arctic pack ice and deployed several SIMBs. These buoys are made of ABS plumbing pipe. Each buoy is 14' tall, 6" in diameter and packed with instruments. The Dartmouth 2023 #1 SIMB was signed by School of Ice participants and has been deployed. (See Ian top right!) Hopefully it will be sending out live data throughout the winter. Visit the [New York Times website](#) to learn more about the project and life on the ice.

Live Data:

Live data from the School of Ice Dartmouth 2023 #1 SIMB [can be found at the SIMB3 2023E website](#). Data your students can track throughout the winter include:

- Ice and Snow Thickness (scroll across Ice/Snow Thickness graphic to get specific data on snow depth, ice depth and surface melt.)
- Air Temperature
- Water Temperature
- Barometric Pressure
- Latitude and Longitude
- Bottom Distance (Distance to the bottom of the ice.)

(Click the "add chart" button to add the data above to the display. Scroll across the display to get specific data on any given date.)

Louise Huffman-Director Educational Outreach, USIDP. Louise.T.Huffman@dartmouth.org

Bill Grosser-Educational Outreach, USIDP. William.F.Grosser@dartmouth.org

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Resources:

- Latitude-Longitude North Pole [Tracking Map](#)
- [Distance Calculator](#) (using latitude and longitude)
- [Temperature conversion tool](#): Fahrenheit, Celsius, and Kelvin

Classroom Ideas and Investigations:

1. Predict the location of the SIMB at New Years, Spring Break, and the end of the school year. Track using the map above or create your own project on Google Earth and add your own locations throughout the year.
2. How does the time of the year affect the air and water temperatures?
3. How does the time of the year affect the thickness of the ice?
4. How does the time of the year affect the thickness of the snow?
5. How far does the SIMB travel each week? Each month? During the mission? (Distances can be calculated using the NOAA [Latitude and Longitude distance calculator](#).)
6. Is there a relationship between the barometric pressure and the air temperature?
7. How does the air temperature compare to the water temperature during the mission?
8. What is the maximum, minimum and range of the water temperature during the mission?
9. What is the maximum, minimum and range of the air temperature during the mission?
10. Which changes more during the mission, the thickness of the snow, or the thickness of the ice?
11. How does the % of snow contributing to the total snow-ice thickness change throughout the season?
12. How does the % of ice contributing to the total snow-ice thickness change throughout the season?
13. Pin the tail on the SIMB: Who can come closest to predicting the location of the SIMB on the fall equinox, the winter solstice, the spring equinox?
14. What is the relationship between the number of days on the ice (operational days) and the voltage of the battery?
15. How many days would you predict the battery on the SIMB will last?
16. Predict the date when the sea ice will reach maximum thickness. (Collect data throughout the expedition to test the accuracy your prediction.)

[Share your ideas and classroom activities here.](#)