

COORDINATES: 55°N, 134°W

TWITTER TIME

7:03 AM
My team and I just finished three long days of travel. First, we flew from Buffalo to Chicago. Then, we flew from Chicago to Seattle. Finally, we flew from Seattle to Sitka, Alaska, and Sitka to Baranof Island. We will be staying on the island for the next week.

7:09 AM
We flew on passenger planes, seaplanes, and even helicopters! We traveled 2,600 miles and had to carry 1,000 pounds of food, tents, and equipment. 🛩️ 🚁 🏕️

10:26 AM
Cooking is one of my favorite hobbies! I like to try making food in the field. I'm making field enchiladas for dinner tonight!

1:42 PM
The landscape is made of ice and rock, with ice above and rock below. My team and I explore the places where the ice and rock meet.

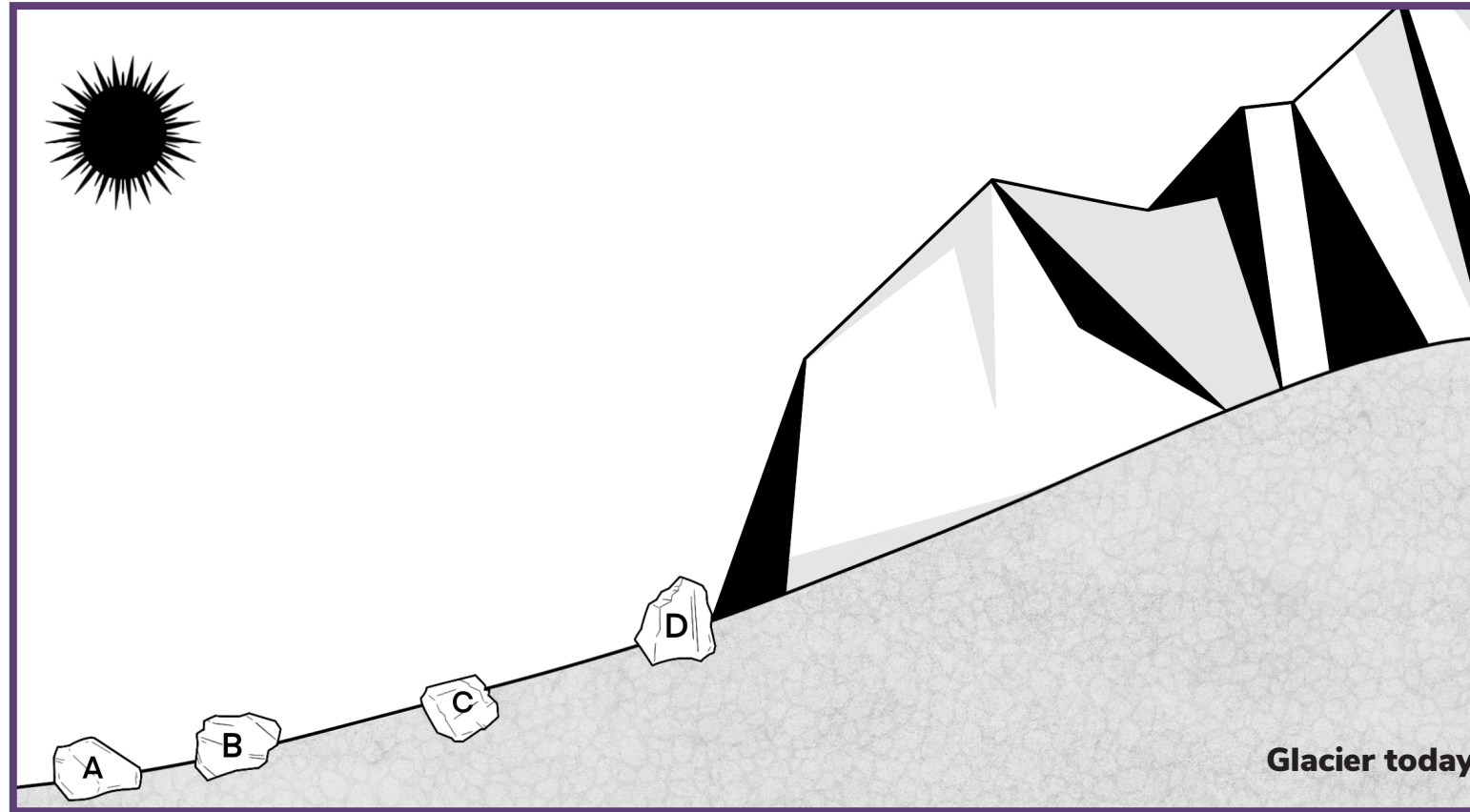
1:53 PM
The place where the ice and rock meet used to be at a much lower elevation. It has moved a lot because the glacier is melting. Rocks fall out of the glacier as it melts.

2:29 PM
Another hobby of mine is hiking. This is good because there is a lot of ground to cover to get to the rocks.

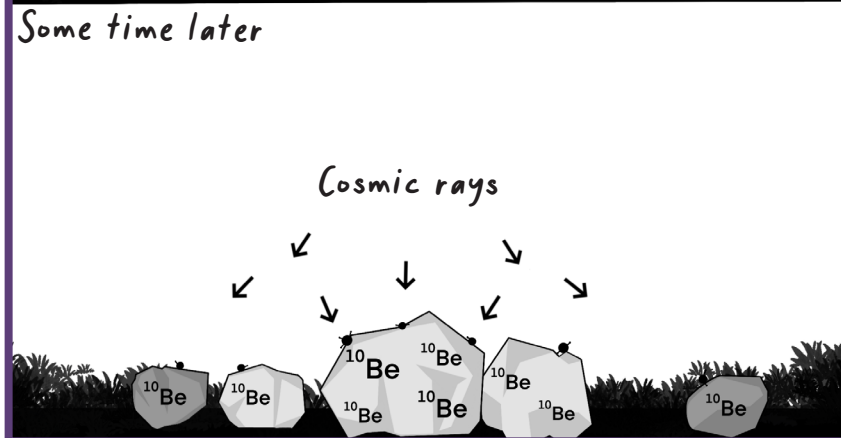
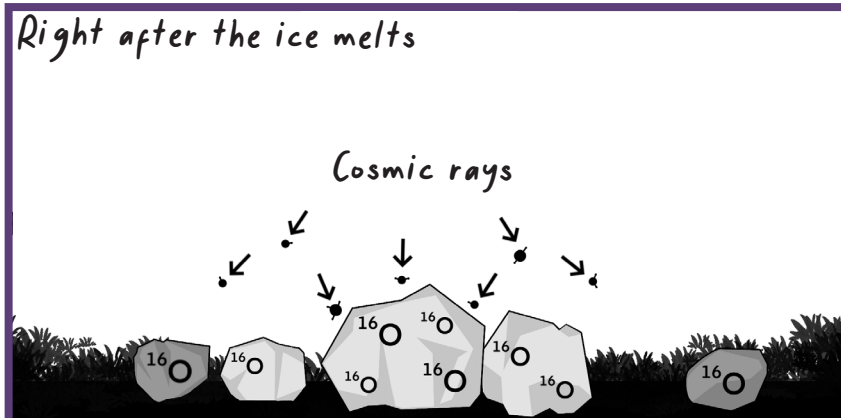
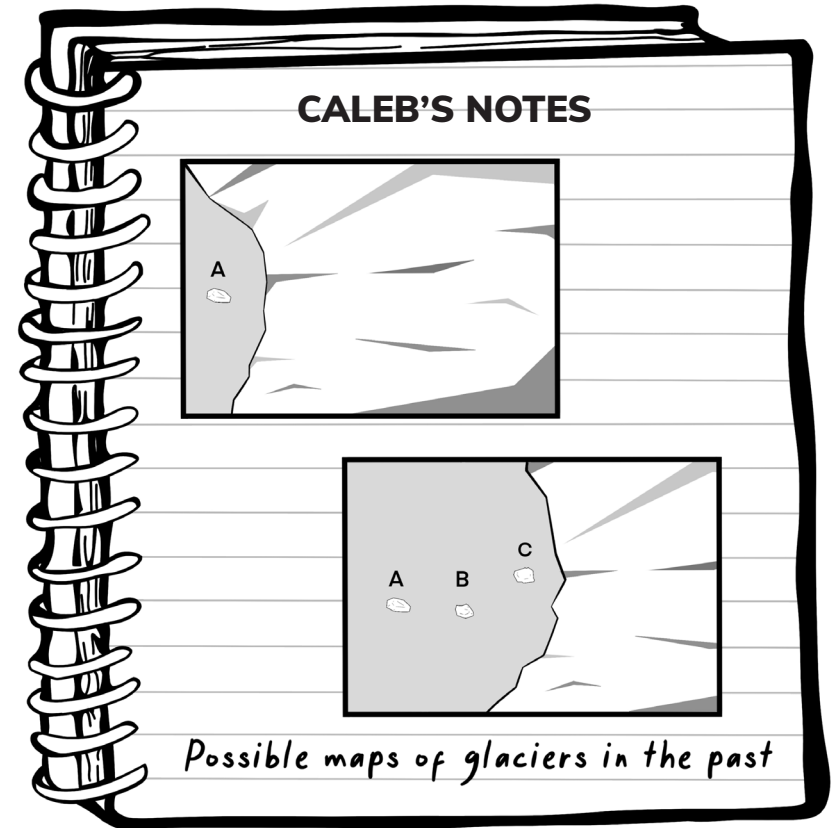
2:55 PM
We'll be collecting samples at four sites using rock hammers and drills. Then, the samples are brought back to the lab so we can count the atoms using large machines. The more beryllium atoms we find, the longer it's been since that rock was covered by glacier ice.

3:13 PM
Cosmic rays hit the rock turning beryllium atoms to oxygen atoms. The rays can only hit the rock if there is no ice on top of the rock.

3:18 PM
This is a nuclear reaction, not a chemical reaction. The rock tells us the history of the ice! 🌌

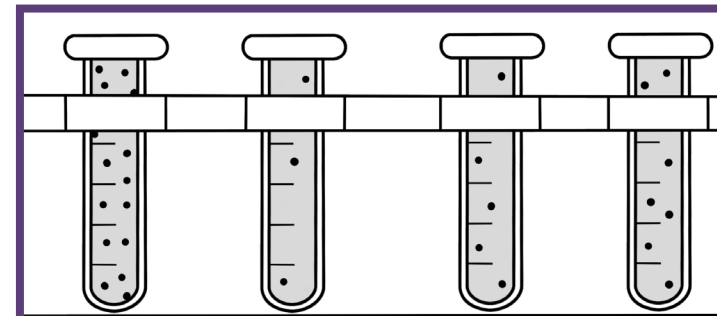


Glacier today

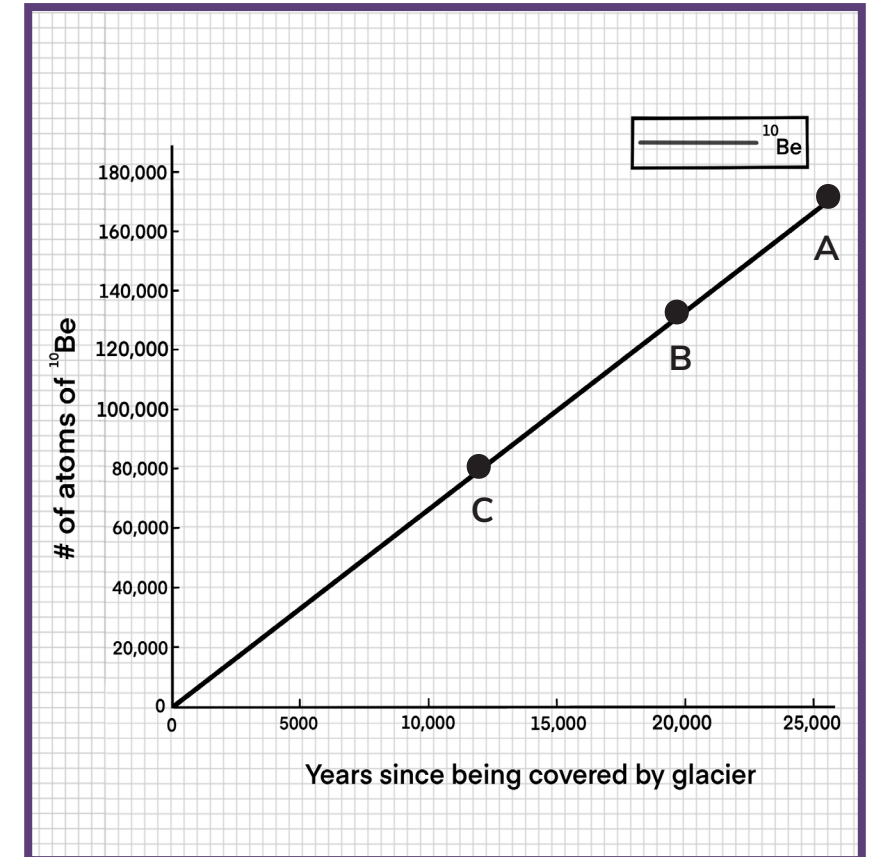


Sample	# of ¹⁰ Be	Years since being covered by glacier
A	170,000	25,000
B	140,000	20,000
C	80,000	12,000
D	20,000	

Need to figure this one out ↗️



Test tubes of ¹⁰Be from sample site rocks



Engagement Activity: Beady Looking



Activity How-To Video

Materials:

- 5 Beads
- Ruler
- Warm, Cool, and Room Temperature Water*
- 5 UV Beads
- Stopwatch
- Variety of Paper (cardboard, cardstock, printer, tissue)*
- String or Stretch Cord
- Light Sources (fluorescent, LED, incandescent)*

Directions:

1. Select 10 beads (5 of each type), slide them onto a string or stretch cord, and tie the two ends together.
2. Go outside. Take a few minutes to explore how the beads respond to their environment. List at least 5 observations of the beads below.
3. Share your observations with one another.
4. Draw a picture of how you could test how the beads act in different conditions. You can try with different temperatures, with different amounts of light, or with different types of light using the extra materials marked with an *.
5. Record your new observations and summarize what you found in one sentence.
6. Share your new observations and summary with one another.
7. OPTIONAL: Try a second experiment with another condition. Use the materials listed with an *.

Observations:

List at least 5 observations:

Draw how you will use the materials:

List at least 3 new observations and write a summary of what you found:

Questions:

1. Which of your five senses did you use to observe the changes in beads?
2. How could these beads be useful for people working or playing outside in the summer?
3. Did you use any of the measuring tools (ruler or stopwatch)? How did you use it?
4. Did the beads always return to their original look or did they seem to be permanently changed?

Glaciers change size very slowly based on their environment. If temperatures are cooling or more snow falls, they grow. If temperatures are warming or less snow falls, they shrink. We like to know how glaciers changed in the past, but no one was watching and taking measurements until recently. Fortunately, rays from events in space, like supernovas, help us. These rays are invisible to our eyes. The rays pass through Earth's atmosphere and hit uncovered rock. The atoms in the rock have their center changed. If the rock is covered by a glacier, the rays cannot strike the rock. By looking at how much the atoms in the rock have changed, we can see if the rock has been covered by the glacier for a long time, a short time, or never. The beads you use today also change when hit by rays that are invisible to our eyes. These rays are called UV light and come from the sun. They change the outer mark of the atom and make the color change.

Beat a Retreat

A glacier is huge chunk of ice larger than the size of a city block.

Appearing to remain unchanged as days roll on the clock.

Small changes add up as years, decades, and centuries pass. Either growing or shrinking on the slope is the icy mass.

No one sits and watches the glacier's long, slow life pass by. But rays from space write the story in rocks nearby.



Making notes in the field.



Large sample (with a book for scale).



Caleb Walcott



Edge of the glacier!



Exploring a nearby forest.