What is large and cold and can last for thousands of years? If you said a glacier, then you would be correct. However, this may not always be true. Scientists are seeing differences in the amount of ice on Earth’s surface and in how fast glaciers are shrinking.

Take Yakutat Glacier in Alaska as an example. Between 2010 and 2018, this glacier retreated 45 square kilometers (17 square miles). That is an area of ice loss equal to the area of 25,000 Olympic-sized ice skating rinks. Yakutat is one of the fastest retreating glaciers in the world.

In the past, Yakutat was a part of an ice field that has since separated into several smaller glaciers. Without this connection to a larger source of ice, it is harder for Yakutat to maintain its size.
Types of Glaciers

Glaciers are found on just about every continent on Earth. They can cover large areas or mountain and volcano peaks.

- Alpine glaciers flow down one or several mountain peaks.
- Tidewater glaciers flow down from mountains into lakes or oceans.
- Ice sheets, also called continental glaciers, can cover entire continents like Antarctica or Greenland.

Why is Yakutat Glacier shrinking?

With less ice flowing into it and not enough snow falling on it, Yakutat is no longer growing. But that’s not all: Air temperatures have also been rising.

From 1948 to 2000, average annual air temperatures in Yakutat rose by 1.38 degrees Celsius (2.48 degrees Fahrenheit). Between 2000 and 2010, they went up another 0.48°C (0.86°F).

Those few degrees may not seem like much, but small changes in average temperature can have a big impact on Earth. A cooling of just 1 or 2 degrees Celsius (2-3°F) in the 1600s and 1700s caused the Earth to experience the "Little Ice Age." Growing and melting are a part of a glacier's life cycle. However, higher temperatures are causing Yakutat and other glaciers to shrink much faster than they can grow.

That's a lot of ice!

8 million  Glacial ice forms in some of the coldest places on Earth and can last for a very long time. The oldest glacier in the world is more than 8 million years old.

100,000  Yakutat is one of about 100,000 glaciers in Alaska.

91%  Antarctica is home to most of the glacial ice on Earth – a whopping 91%.

3/4  About 75% (3/4) of the Earth’s fresh water is stored in glacial ice.
Ice moves downhill, thanks to gravity. And because of this, glaciers slowly flow from where they start. Glaciers flow about 0.3 to 1 meter (1-3 feet) each and every day. Lots of glaciers begin high up on a mountain and then flow down into a valley, lake, or ocean. As they flow, they carve the landscape and displace rocks and sediment along the way.

Make your own mountain glacier out of sand, cornstarch, and water and watch it flow.

**Try it:**

1. Build a mini-mountain out of wet sand and place it on the paper plate. Set aside.

2. In two separate cups, mix corn starch and water. The gooey mixture should be thick enough to form into solid balls. In one of the cups, dye the mixture blue with the food coloring.

3. Moving quickly, roll and lightly flatten balls out of the mixtures and place them on your mountain’s peak. Alternate between white and blue balls. (Use plastic gloves to avoid dying your hands blue.)

4. Keep adding balls and watch them weigh each other down and flow.
How Slow Can it Go?

Why not set up a slow motion camera and see how slow this glacier could flow. Also, let the glacier stand for a couple of days and you will see moraines form on the edges of the “glacier.” Cracking and calving may take place as well.

Vocabulary:

**moraine** – An accumulation of rocks or sediment that has been dropped or moved by a glacier.

**calving** – When a glacier breaks off into the water. A calved piece of glacier is called an iceberg.

Cool Blue

Glacial ice is somewhat different than the ice you find in your freezer. Glaciers are made of layers upon layers of snow. Over time, these layers press down on each other. They also melt and refreeze to create super-compacted ice that can be blue in color.