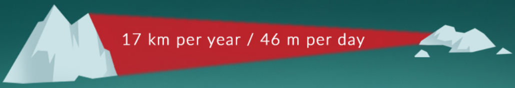
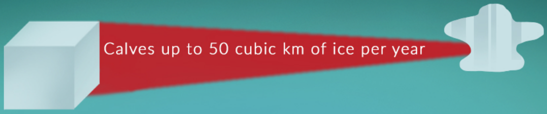
FROM SNOWFALL TO SEA: THE ICEBERG'S JOURNEY

ILULISSAT GLACIER:
THE FASTEST MOVING GLACIER IN THE WORLD

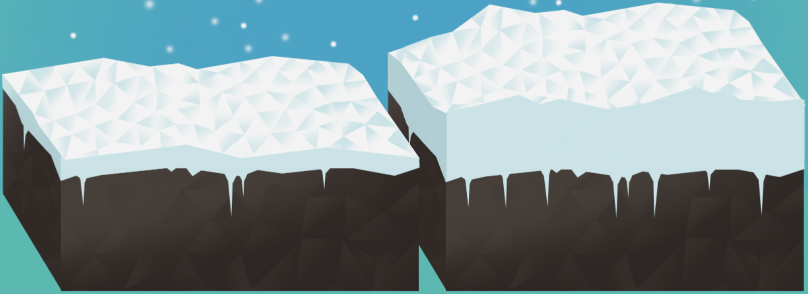
Ilulissat Glacier (Sermeq Kujalleq in Greenlandic), is located in west Greenland, near the town of Ilulissat. It moves ice from the Greenland ice sheet into the ocean at record speed.



17 km per year / 46 m per day



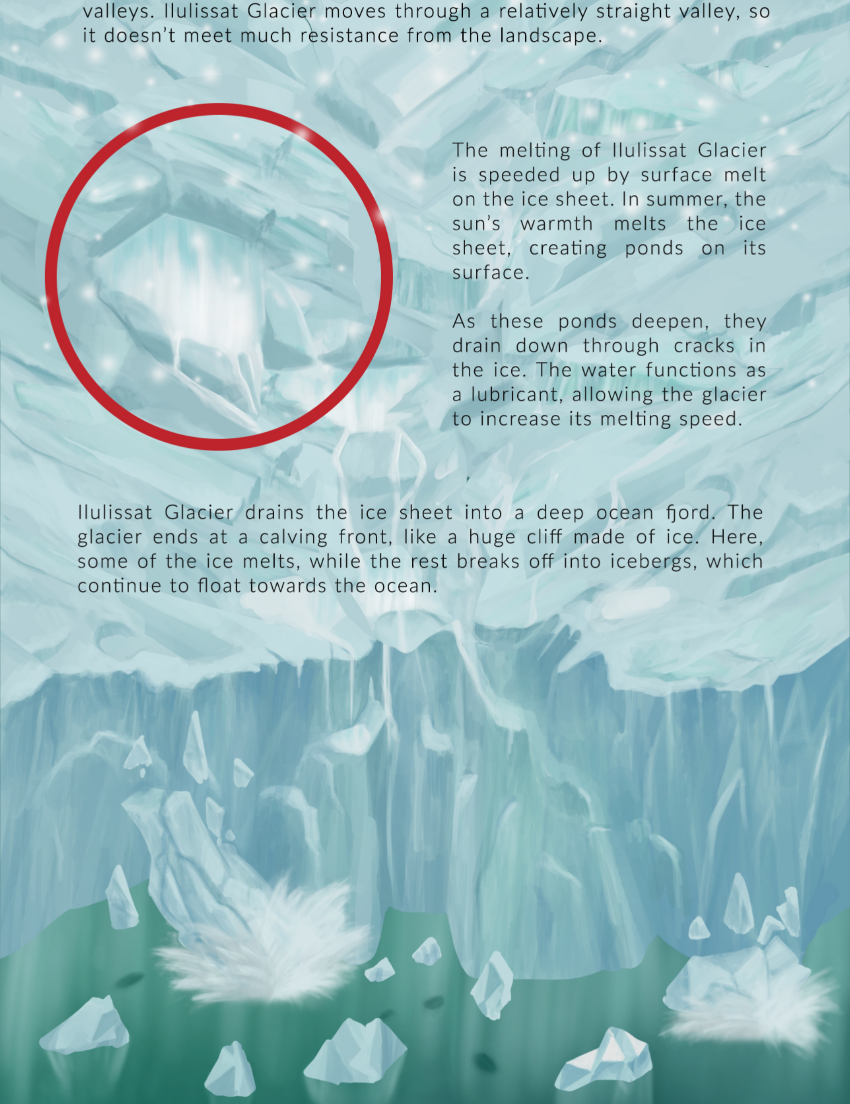
Calves up to 50 cubic km of ice per year



The glacier's ice begins its journey as snow that falls onto the ice sheet. When the amount of snowfall is bigger than the amount of snowmelt in summer, it piles up and gets compacted to form the ice sheet's ice.

The balance between snowfall and surface melt has been shifting in recent years. Although snowfall rates have been increasing in many parts of Greenland, surface melting rates have been increasing even faster, causing more of the ice sheet to drain through glaciers.

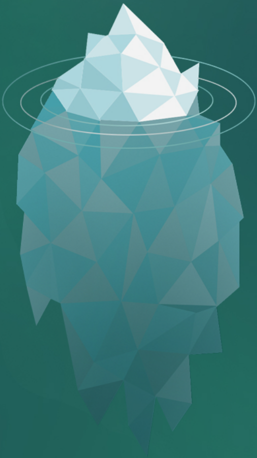
The ice sheet drains through glaciers, which are formed as the weight and pressure of the ice sheet pushes ice through valleys towards the sea. Glaciers move slowly in twisting valleys, and faster in straight valleys. Ilulissat Glacier moves through a relatively straight valley, so it doesn't meet much resistance from the landscape.



The melting of Ilulissat Glacier is speeded up by surface melt on the ice sheet. In summer, the sun's warmth melts the ice sheet, creating ponds on its surface.

As these ponds deepen, they drain down through cracks in the ice. The water functions as a lubricant, allowing the glacier to increase its melting speed.

Ilulissat Glacier drains the ice sheet into a deep ocean fjord. The glacier ends at a calving front, like a huge cliff made of ice. Here, some of the ice melts, while the rest breaks off into icebergs, which continue to float towards the ocean.

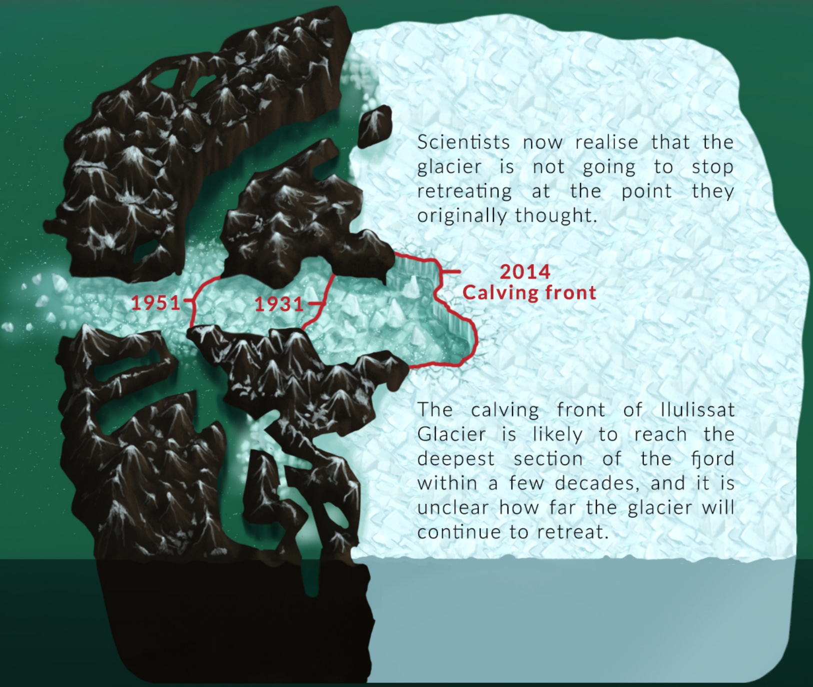


Icebergs break off in all shapes and sizes. Typically, about 80–90% of an iceberg is below sea level - even the big ones are much bigger in their entirety. They float with ocean currents and continue to melt and break into smaller pieces as they come into contact with warmer waters.

The calving front of Ilulissat Glacier is retreating very rapidly in comparison to other glaciers in Greenland and the world. This is due to the increased rate of melting of the glacier.

But as the calving front has retreated, this has also affected the rate of melting. The calving front of the glacier is now located in a deeper area of the fjord, which scientists say explains the record speeds it has achieved.

The deeper the water below the glacier, the more susceptible the glacier is to being eroded and melted by warmer and saltier waters from the Atlantic Ocean.



Scientists now realise that the glacier is not going to stop retreating at the point they originally thought.

The calving front of Ilulissat Glacier is likely to reach the deepest section of the fjord within a few decades, and it is unclear how far the glacier will continue to retreat.

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