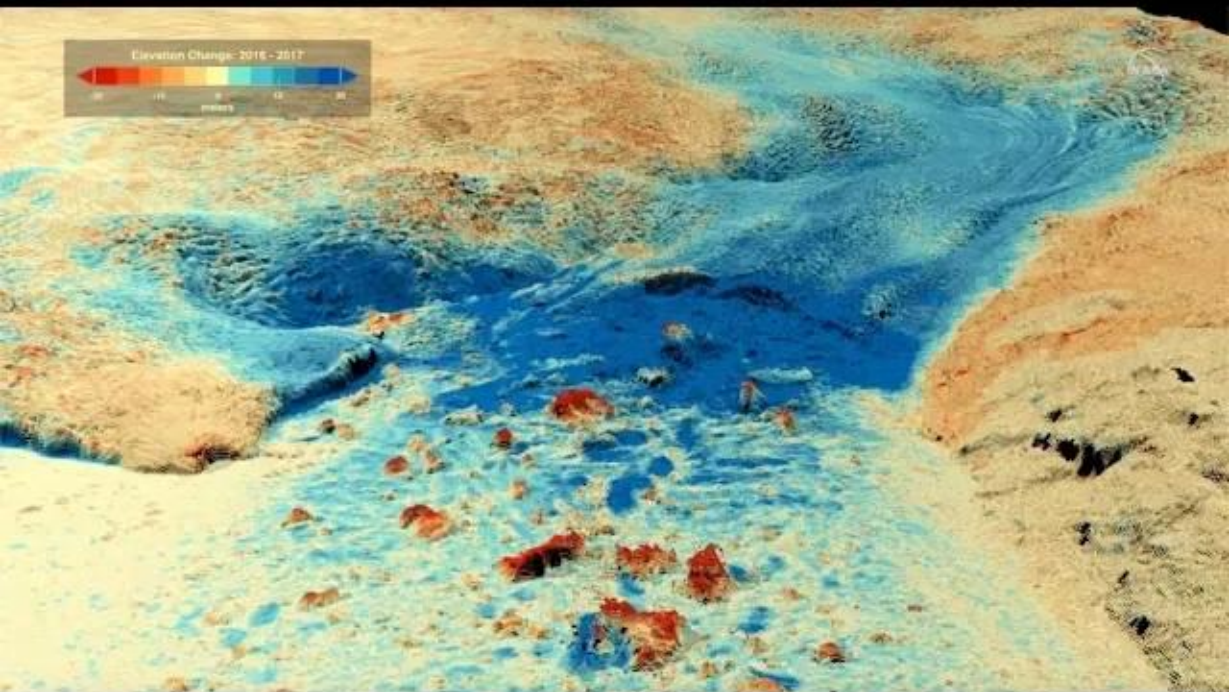


Elevation Change- 2016 - 2017



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Generally speaking, as the climate

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warms, ice around the planet melts. But how fast it melts and

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where it melts is complicated by factors like how the

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climate's changing and local weather patterns.

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Here at NASA, we use satellites, airplanes and research ships to take a closer

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look at the regional causes of melting and what's driving them.

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NASA's mission Ocean Melting Greenland, or OMG for short, is

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designed to figure out how much of Greenland's ice loss is being caused

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by the oceans.

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Sometimes the oceans affected Greenland's ice in surprising ways.

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This year, we figured out for the first time in almost 20 years,

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Greenland's biggest glacier, Jakobshavn, stopped retreating

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and got thicker. The big question: Why?

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After looking at dozens of potential causes,

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we figured out that Jakobshavn's slowdown was caused by

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cold water that flowed in from offshore.

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Where Jakobshavn meets the ocean, it sits in water that's almost

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2,400 feet deep — that's like eight football fields —

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and this water can affect the glacier very far inland.

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Water in Disko Bay, shown here, flows into the canyon,

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or fjord that holds Jakobshavn, sometimes the

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water is warm, speeding up the melt of the glacier, and sometimes,

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it slows it down. In 2016, the water in Disko Bay

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got cold, reaching temperatures that were lower than at any time

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since the late 1980s.

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Natural cycles cool and then warm the

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far north Atlantic Ocean about once every 20 years. This cold water

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from 2016 arrived just as the Atlantic was shifting to its

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next cold period.

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Watch as the deep water temperatures warm up slowly

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through the years, until 2016, then get cold again.

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These waters are brought into Disko Bay by the currents of the North Atlantic,

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which flow around the southern tip of Greenland, carrying water

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northward up its west coast.

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The cold water in Disko Bay caused a dramatic change

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in Jakobshavn, making it grow taller by 100 feet,

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or 30 meters, between 2016 and 2017.

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What does this mean for Greenland? It means that the oceans play a key role in

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Greenland's melt, and we have to watch the water just as closely as the ice

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if we want to know what the future holds. Here at NASA,

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we're hard at work in the field, and the lab, to better understand

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how the ocean affects Greenland's melting and how that will continue