

Scientists Say ‘Anomalously High’ Geothermal Heat Is Melting Greenland’s Ice Sheet

Michael Bastasch

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Greenland has been sitting over a particularly hot mantle of the Earth’s crust, which a new study says is melting the base of the world’s second-largest ice sheet.

Between 80 million and 35 million years ago, Greenland moved over an area of “anomalously high geothermal flux,” according to scientists at the German Research Centre for Geosciences. The study’s authors “suggest that this anomaly explains the observed melting of the ice sheet’s base, which drives the vigorous subglacial hydrology and controls the position of the head of the enigmatic 750-km-long northeastern Greenland ice stream.”

“The geothermal anomaly which resulted from the Icelandic mantle-plume tens of millions of years ago is an important motor for today’s hydrology under the ice sheet and for the high flow-rate of the ice,” geoscientist Irina Rogozhina, one of the study’s authors, said in a statement.

Rogozhina and her colleagues used “independent seismic, gravity and tectonic data” to show how Greenland moved over the “Iceland mantle plume” between 80 and 35 million years ago. Researchers contend their study adds to the debate surrounding Greenland’s future at a time when scientists are fretting that man-made global warming will cause massive amounts of ice melt.

“This, in turn, broadly influences the dynamic behavior of ice masses and must be included in studies of the future response to climate change,” Rogozhina said.

The study, linking melting at the base of Greenland’s ice sheet to geothermal activity, comes as scientists worry Greenland could melt faster than originally predicted. These worries were spurred by a recent study claiming Antarctica could melt faster than scientists thought — a report based on overheated climate models.

National Aeronautics and Space Administration (NASA) data shows Greenland loses about 287 billion metric tons of ice per year. That’s got some scientists worried, especially those who believe global warming will accelerate that ice loss.

But research shows Greenland has been able to retain lots of ice, even in higher temperatures. A Denmark scientist published research three years ago showing “for six thousand years (roughly from 122,000 to 128,000 years ago) summer temperatures in Northwest Greenland, where her ice core was extracted, averaged a whopping 11°F warmer than the 20th century average,” according to a recent blog post by Cato Institute climate scientists Patrick Michaels and Chip Knappenberger.

“Remarkably, she estimated that Greenland only lost 30 per cent of its ice after six millennia,” they wrote. “The integrated heat added to the ice over that span was roughly twenty times as much heat as humans could unload on it from greenhouse gases in 500 years, so the Greenland-driven apocalypse just isn’t going to happen.”