



Submitted/Kees Van der Veen

Kees Van der Veen, associate professor of geography and researcher with the Center for Remote Sensing of Ice Sheets, stands on dry land near the Greenland Ice Sheet. Van der Veen has found that the thickness of the earth below the glacier is contributing to its melting.

## Hot Crust

### Researcher finds ground below glacier plays part in melting

A KU researcher has discovered that the thickness of the Earth's crust, not just global warming, is contributing to the melting of glaciers in Greenland.

Kees van der Veen, associate professor of geography, and his collaborators presented their findings recently at the American Geophysical Society in San Francisco. In the northeast part of Greenland's ice sheet is an "ice stream," a fast-moving channel carrying ice from as far as 400 miles inland to sea.

Van der Veen and Center for Remote Sensing of Ice Sheets colleagues used airborne radar, coupled with gravity measurements taken by a Naval research laboratory, to determine the thickness of the Earth's crust below the glacier. They found that the thickness of the crust varied, sometimes widely, across the large island.

Below the ice stream, the crust was thinner than throughout the rest of the Greenland glacier. The layer below the crust, the mantle, contains liquid magma, which warms the crust enough in the thin areas to heat the basal ice to the melting point, creating a lubricating effect, allowing the ice to slip out to sea quicker than other areas.

Working with Ralph Von Frese, professor of earth sciences at Ohio State University, and Timothy Leftwich, a postdoctoral researcher at CReSIS, Van der Veen estimated the geothermal heat was 20 percent higher at the top of the thin area of the crust than in other regions.

The researchers will continue to research the thickness of the Earth's crust below other parts of the Greenland Ice Sheet to determine the extent to which the variations are causing the ice to melt. They then plan to move on to Antarctica to see if similar fluctuations are contributing to melting of the icy continent.

"We know that in Antarctica there are a dozen or so ice streams that have nothing to do with global warming. These are naturally occurring phenomena. But we want to find out what is causing them," Van der Veen said.

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The melting, whether caused by sub-glacial temperatures or global warming, presents a potential problem for humanity. When the glaciers melt, ocean levels rise, which could eventually put many inhabited coastal areas under water.

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## RESEARCH MATTERS

KU architects and their students are designing relief for New Orleans neighborhood ravaged by Hurricane. Nils Gore, associate professor, and Rob Corser, assistant professor of architecture and urban planning, are working with students to design structures for the city's Ninth Ward, one of the hardest hit areas. Structures have included a tool shed, a shade pavilion, a mobile stage and an outdoor classroom. For more, or to listen to the original broadcast, visit [www.researchmatters.ku.edu](http://www.researchmatters.ku.edu).

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University Relations  
The University of Kansas  
Lawrence, Kansas 66045  
(785) 864-3256

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