

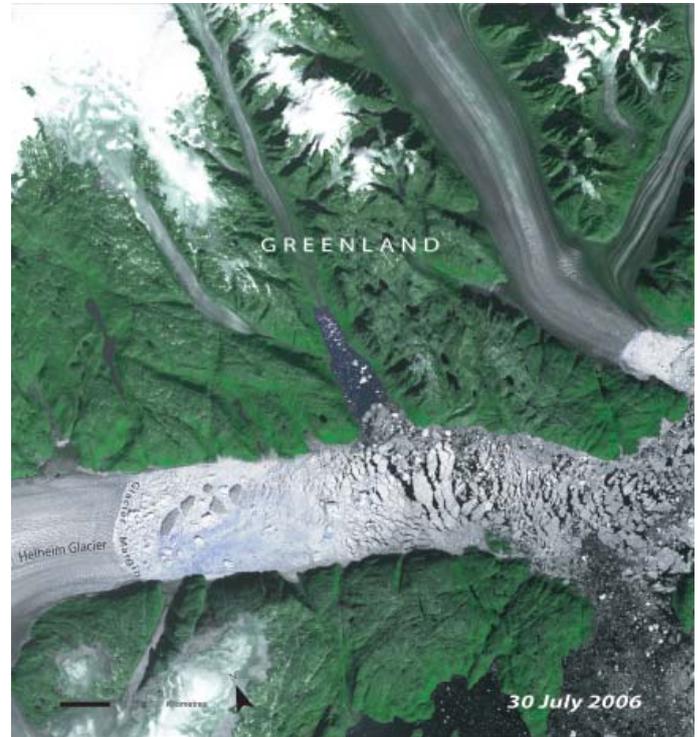


ONE PLANET, MANY PEOPLE

Atlas of Our Changing Environment

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Helheim Glacier, Greenland



After years of moving at a relatively stable speed, Helheim Glacier in southern Greenland has dramatically accelerated. According to a University of California-Santa Cruz study, the glacier's peak rate of flow has increased

from 8 km per year in 2000 to 11 km per year in 2005. In addition to flowing more rapidly the glacier thinned by 40 meters between 2001 and 2003. The calving front of the glacier – the area where the ice breaks away and falls into the ocean – has retreated by approximately 5 km. These images show the retreat of Helheim Glacier's calving front between September of 1986 (Landsat) and July of 2006 (ASTER).

According to one of the authors of the study, the likely underlying cause of these changes is higher air and

water temperatures in the area of Southern Greenland. However, the study also identifies a relationship between the retreating front of outlet glaciers such as Helheim and an increase in the rate of flow (as the front of the glacier retreats it offers less resistance to the glacier's movement). The dynamic interactions of temperature, glacier flow rates, and ice thickness complicate the modeling of future changes in the Greenland ice sheet. These processes are likely to continue to accelerate under prevailing climate change scenarios.

The overall Greenland ice sheet contains approximately 10 percent of the world's freshwater and is up to two miles thick. If the entire Greenland ice sheet were to melt it would raise sea level by 20 feet. Howat believes that if the processes which are accelerating the thinning and retreat of Helheim Glacier are occurring at other glaciers throughout Greenland, the time it will take for the Greenland ice sheet to disappear could be cut in half.

