This is the print version of the Skeptical Science article 'Greenland ice sheet won't collapse', which can be found at http://sks.to/icecollapse.

The past tells us Greenland's ice sheet is vulnerable to global warming

What The Science Says:
Satellite gravity measurements show Greenland is losing ice mass at an accelerated rate, increasing its contribution to rising sea levels.

Climate Myth: Greenland ice sheet won't collapse
"A July 6, 2007 study published in the journal Science about Greenland by an international team of scientists found DNA “evidence that suggests the frozen shield covering the immense island survived the Earth’s last period of global warming,” according to a Boston Globe Article. ... [T]he study indicates “Greenland’s ice may be less susceptible to the massive meltdown predicted by computer models of climate change, the main author ... said in an interview. ... The study found “Greenland really was green, before Ice Age glaciers enshrouded vast swaths of the Northern Hemisphere…somewhere between 450,000 and 800,000 years ago,” according to the article. (Marc Morano, discussing the views of Eske Willerslev)

Greenland's mass balance is measured by the Gravity Recovery and Climate Experiment (GRACE) satellite, measuring shifts in Earth’s gravity field. The GRACE data offers a complete picture of the entire ice sheet. Figure 1 shows the ice mass changes in Greenland from April 2002 to February 2009 (Velicogna 2009). The blue line/crosses show monthly values of ice mass. The red crosses have seasonal variability removed. The green line is the best fitting quadratic trend. The best fitting trend finds that Greenland ice loss is accelerating at a rate of 30 Gigatonnes/yr^2. Greenland's mass loss doubled over the 9 year period.

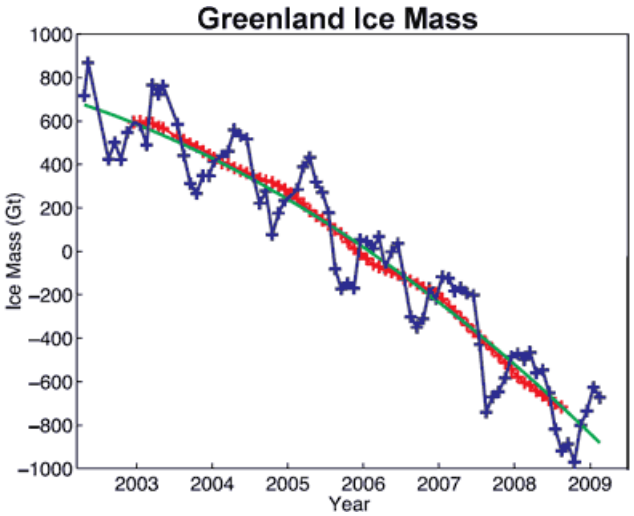

Figure 1: Time series of ice mass changes for the Greenland ice sheet estimated from GRACE monthly mass solutions for the period from April 2002 to February 2009. Unfiltered data are blue crosses. Data filtered for the seasonal dependence using a 13-month window are shown as red crosses. The best-fitting quadratic trend is shown (green line). (Velicogna 2009)

The long term trend since the 1970s is accelerating ice mass loss. This is confirmed by gravity satellite measurements over the past 9 years which find that the rate of ice mass loss has

doubled over the last 9 years. Greenland's ice sheet contribution to rising sea levels is continuously and rapidly growing.

Intermediate rebuttal written by John Cook

Update July 2015:

Here is a related lecture-video from Denial101x - Making Sense of Climate Science Denial

[*see video at* ***this link***.]

The Skeptical Science website by Skeptical Science is licensed under a Creative Commons Attribution 3.0 Unported License.

Skeptical Science explains the science of global warming and examines climate misinformation through the lens of peer-reviewed research. The website won the Australian Museum 2011 Eureka Prize for the Advancement of Climate Change Knowledge. Members of the Skeptical Science team have authored peer-reviewed papers, a college textbook on climate change and the book Climate Change Denial: Heads in the Sand. Skeptical Science content has been used in university courses, textbooks, government reports on climate change, television documentaries and numerous books.

The Skeptical Science website by Skeptical Science is licensed under a Creative CommonsAttribution 3.0 Unported License.