Geophysical Research Abstracts, Vol. 9, 06356, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06356

GPS, GRACE, and Absolute Gravity in Greenland

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Greenland is one of the largest reservoirs of fresh water on Earth. Rapid changes in the Greenland ice sheet could impact global sea level and hold the potential of altering the North Atlantic ocean circulation as well as global climate. Its potential contribution to sea level rise is extremely variable. Better estimates of its present-day contributions would permit more accurate projections. The dramatic thinning observed in the 1990's at low elevations and the increased mass loss in more recent years make monitoring the ice sheet particularly timely.

In this presentation we compare estimates of the secular trend in Greenland mass during 2002-2006 using satellite time variable gravity measurements from GRACE combined with mass changes inferred from elastic crustal observations from the network of GPS sites surrounding the ice sheet. We will also incorporate absolute gravity trends into the results where the data are available.