
Three scholars, J.L. Chen, C.R. Wilson, and B.D. Tapley from the University of Texas at Austin co-worked on the melting speed of Greenland ice sheet using satellite gravity measurement from the Gravity Recovery and Climate Experiment (GRACE).

Prior to this article, the fact was reported that melting of ice cap on Greenland was recognized. The rates of ice loss were $-80 \pm 12$ and $-224 \pm 41$ km$^3$/year from airborne laser altimetry measurements or satellite radar interferometry respectively. The huge difference can be verified by GRACE that measures minute gravity changes due to glaciers or polar ice caps.

Post Glacial Rebound (PGR) effects were assumed to be negligible based on ICE5G model since PGR effects were present for the same area with current deglaciation.

In this paper, 40 monthly GRACE gravity fields from Apr. 2002 to Nov. 2005 were used to calculate time series trend over ice sheet of the Greenland. GRACE detected ice mass loss in southeast Greenland aligned with the measurement with satellite interferometry. The estimate, $-239 \pm 23$ km$^3$/year agrees with an estimate of $-224 \pm 41$ km$^3$/year from satellite interferometry. The loss was due to separation of glaciers from the main Greenland which was located at latitudes above $80^\circ$N.

GRACE can show a rate change of ice melting and indicate 0.54mm/year to global sea level rise and contribute to in-depth analysis on ice mass change apart from geophysical signals like PGR.