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Recent ice sheet and glacier elevation changes in Greenland, Canada, and Alaska from aircraft laser altimetry

W. Krabill (1), R. Thomas(2), M. Demuth(3), C. Lingle(4)

(1) NASA/GSFC, Cryospheric Sciences Branch, Wallops Island, VA

23337, William.B.Krabill@nasa.gov.

(2) EG&G, Inc, Wallops Island, VA, 23337

(3) Geological Survey of Canada, Northern Division, Glaciology, Ottawa, K1A 0E8

(4) Univ. of Alaska, Fairbanks, AK 99775-7320

The Arctic Ice Mapping group (Project AIM) at the NASA Goddard Space Flight Center Wallops Flight Facility has been conducting systematic topographic surveys of the Greenland Ice Sheet (GIS) since 1993, using scanning airborne laser altimeters combined with Global Positioning System (GPS) technology. Earlier surveys showed the ice sheet above 2000-m elevation to be in balance, but with localized regions of thickening or thinning. Thinning predominates at lower elevations and thinning rates have recently increased, resulting in a negative mass balance for the entire ice sheet. In May 2005 critical segments of near-coastal flight lines in Greenland were re-surveyed, along with flight lines in Arctic Canada in a joint project with the Geological Survey of Canada. Results from the new data will be presented, showing substantial accelerated thinning in several SE Greenland glaciers.

In a joint project with the USArmy CoE and the Univ. of Alaska, the AIM Team re-surveyed several glaciers in Alaska in August of 2005. Change analysis, comparing to the historic Univ. of Alaska database, will also be presented.