

ATS/CIRA Colloquium

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CIRES

Changes in the Arctic Ice Cover: Greenland Ice Sheet and Surrounding Oceans

November 8, 2007

ATS room 101; Discussion will begin at 3:30pm

Refreshments will be served at 3:00pm in the coffee lounge

Air temperatures on the Greenland ice sheet have increased by 4 deg. C since 1991. The ice sheet melt area increased by 30% for the western part between 1979-2006. The increasing trend in the total area of melting bare ice is unmistakable at 13% per year, significant at a probability of 0.99. Hence, the bare ice region, the wet snow region, and the equilibrium line altitude have moved further inland and resulting in increased melt water flux towards the coast. Increase in ice velocity in the ablation region and the concurrent increase in melt water suggests that water penetrates to great depth through moulins and cracks, lubricating the bottom of the ice sheet. New insight was gained of subsurface hydrologic channels and cavities using new instrumentation and a video system during the melt peak in August 2007. These new results will be discussed in view of the rapid increase in melt area and mass loss of the Greenland ice sheet due to increasing air temperatures.