

Glacier Response to Climate Change: The Juneau Icefield, Alaska

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ABSTRACT

Glacier volumes are indicators of climate change, linking accumulation and ablation to changing precipitation patterns and air temperature. The main goals of the proposed research for summer 2005 are to (1) survey 120 km of profiles across the Juneau Icefield, (2) complete Light Detection and Ranging (LIDAR) and Ground Penetrating Radar (GPR) mapping of several key glaciers (Taku, Lemon Creek, Matthes, Llewellyn, Demorest and Vaughan-Lewis Glaciers, and (3) record weather observation data every 6 hours. Survey data will allow us to calculate surface velocities, surface elevation changes and surface gradients. Meteorological records from this summer and the previous 60 years will provide local climate information. This will enable us to determine whether the glaciers are advancing or retreating, and what mechanisms are responsible for this advance/retreat. A combined collection of survey and meteorological data will improve our understanding of the glaciers' responses to climatic changes. I have been awarded a \$2000 NASA Earth Systems Field Research partial Scholarship by the Founder and Director of the Juneau Icefield Research Program (JIRP), and request the remaining needed funds from the Climate Center to enable me to conduct field research on the Icefield during summer 2005.