

27 September 1999

End-Summer Project Activity Report.

V. Romanovsky

May 1999: Fieldwork (May 6 - May 8) on the CALM sites along the Dalton Highway. Investigator - V. Romanovsky. Measurements of the snow cover thickness and structure at the Galbraith Lake, Toolik Lake, Happy Valley, Franklin Bluffs, Deadhorse, and West Dock sites. In general, the snow cover thickness this year was slightly smaller compared to the thickness at the same time last year at the same sites, except for the West Dock site where snow cover thicknesses were larger than 1998 and were very similar to those in 1997.

July 1999: Fieldwork (July 19 - July 22) at the new ATLAS Council sites. Investigators - V. Romanovsky and A. Slater.

Installation of the data loggers and probes for the air, ground surface and soil temperature measurements and for the soil moisture measurements. Four sites were established at the locations of the flux measurement towers. At each site, the air temperature, ground (including ground surface and 10 to 11 depths down to 80 to 104 cm) temperatures and ground moisture at three depths will be recorded hourly during the entire year.

The ground temperatures were surprisingly warm. The warmest soil temperatures were at the "Shrub" site, where temperature at 1 m depth was $+2.7^{\circ}\text{C}$ on August 1. It seems there is no near-surface permafrost at this site. Also, very likely there is no near-surface permafrost at the "Forest" site, where temperature at 1 m depth was $+2.1^{\circ}\text{C}$ on August 1.

At the "Woodland" site, there was a frozen layer between 55 and 70 cm (the deepest thermistor). We need complete our entire year of measurements to answer the question if it is permafrost or just relic of the seasonally frozen layer. Temperature at 70 cm was -0.1°C on August 1.

Permafrost definitely exists at the "Tundra" site, where the active layer thickness was only 35 cm on August 1. However, the upper-permafrost temperatures were very high. At 1.06 m, the soil temperature was -0.15°C on August 1. Also, we could observe many early stage thermokarst features at this site.

August 1999: Fieldwork (August 4) at the ATLAS Iivotuk site. Investigators - V. Romanovsky, A. Slater and visiting Russian scientist G. Tipenko.

Downloading of the data from the loggers at four sites (air, ground surface and soil temperature, soil moisture at three depths). Four sites were established in 1998 at the locations of the flux measurement towers. At each site, the air temperature, ground (including ground surface and six to seven depths down to 60 to 80 cm) temperatures at two locations (six meters apart), and ground moisture at three depths were recorded hourly during the entire year of 1998-1999. Data from the profile of the ground surface temperature loggers (StowAway) were collected (nine locations between the "Non-acidic" and "Shrub" sites). This profile characterizes the transition in the ground temperatures from the non-shrub to the shrub covered areas.

Active layer depths measurements were completed on two 100x100 m CALM grids ("Moist Acidic Tundra" and "Moss" sites).

August-September 1999: Fieldwork (August 29 - September 2) on the recent and future CALM sites along the Elliot and Dalton Hws. Investigator - V. Romanovsky.

Active layer depths measurements were completed on seven 100x100 m CALM grids at the "West Dock", "Deadhorse", Franklin Bluffs", "Happy Valley", "Galbraith Lake", "Chandalar Shelf", and "Old Man" sites. Air, ground surface, and soil (down to 1 m depth) temperatures and soil moisture data were downloaded from the data loggers, technical service of the equipment was accomplished. Additional soil moisture probes (Vitels) were installed at the "Deadhorse", Franklin Bluffs", and "Galbraith Lake" sites. Active Layer thicknesses were slightly smaller compared to the last year, except for the "Deadhorse" site, where the AL thickness was the same. The profiles of the ground surface temperature measurements (six locations) were established at the "Deadhorse" and "Franklin Bluffs" sites.