

August 1, 2000

SKIP WALKER, FIELD REPORT, SUMMER 2000

This report contains a brief summary of field activities on the Seward Peninsula and northern Alaska during 26 Jun to 29 Jul.

**26 June - 2 July, Arctic Slope: LAI, Biomass, and Climate relationships** (Casey Dunn, Erika Edwards, Julie Knudson, Amber Moody, Skip Walker)

The objective of this portion of the work was to establish a series of sites along the climate gradient from the Arctic Coast to the Foothills and to collect biomass, LAI, and NDVI data to examine the relationships between summer temperature, and biophysical variables in moist nonacidic tundra. These sites are parallel to the transect in acidic tundra that was established between Barrow and Ivotuk in 1998 and 1999. The data will be used by Howie Epstein and Skip Walker to examine the spatial patterns of NDVI in relationship to climate and vegetation. We selected a total of twelve 50-m transects. The sites at West Dock, Deadhorse, and Franklin Bluffs were located in proximity to Tom Osterkamp's and Vladimir Romanovsky's permafrost grids. We selected moist homogeneous sites to represent the transitions in zonal vegetation along the climate gradient.

West Dock:

Transect #1: N70 22.440, W148 33.180

Transect #2: N70 22.846, W148 33.707

Deadhorse:

Transect #1: N70 09.667, W148 28.083

Transect #2: N70 09.584, W148 28.282 (?)

Pipeline Crossing:

Transect #1: N70 00.156 W148 41.103

Transect #2: N70 00.241, W148 41.288

Franklin Bluffs:

Transect #1: N69 40.421, W148 43.390

Transect #2: N69 40.302, W148 43.598

Pump Station 2:

Transect #1: N69 27.626, W148 35.120

Transect #2: N69 27.727, W148 35.785

Sagwon Upland:

Transect #1: N69 25.505, W148 41.843

Transect #2: N69 25.904, W148 40.462

We clipped 3 20x50 cm quadrats along each transect. These harvests are currently being sorted according to plant functional types. LAI measurements were also made along each transect.

**10-29 July, Seward Peninsula: (Amber Moody, Tako Raynolds, Chris Thayer-Snyder, Skip Walker, Dave Wirth)**

Council and Quartz Creek: characterization of 100x100-m flux grids

This work was in collaboration with Cath Copass to characterize sites for Terry Chapin and Jason Beringer's flux measurements at Council, and with Larry Hinzman, Walt Oechel and Steve Hastings at Quartz Creek. Gary Michaelson is characterizing the soils at these sites. We made releve analyses (complete species and cover-abundance),

characterized the sites (landforms, surficial geology, surficial geomorphology, microsites, site moisture, soil moisture, glacial geology, topographic position, soil unit, exposure to wind, estimated duration, animal and human disturbance, and stability). At each grid point we recorded the vegetation type, and the microsite, At every other point we recorded the moss thickness, height of the vegetation, and microrelief height. We also made a brief soil description, and determined the thickness of the organic horizons and collected soils at 10 random points in the grids. LAI was measured at 10 random points in each grid. Biomass harvests were made at the three Quartz Creek grids. A total of 31 releves were collected from the grids and other sites.

*Characterization of stand structure at the forest site in comparison with old growth forest at Glacier Creek, REU project: Dave Wirth.*

The forests around Council were logged in the early 1900's. We wondered if the replacement forest is comparable to that which existed prior to logging. Dave Wirth used a point centered quarter method to examine the density and basal area of the existing forest and compared it to the forest represented by tree stumps on the forest grid. In addition, he used the same method in an old growth forest in Glacier Creek, which is about 20 km from Council. He is also examining the understory structure and species diversity at the two sites. The analysis from this project are currently in progress.

**Landcover map of the Council and Quartz Creek vicinities, REU project: Chris Thayer-Snyder,**

A 1650 km<sup>2</sup> area at Council encloses the Ophir Creek, Melsing Creek, and Guy Rowe watersheds and Larry Hinzman's 1-km<sup>2</sup> grids. Another 150 km<sup>2</sup> area surrounding Quartz Creek encloses the Mauze Creek, and Niagra Creek watersheds. Chris Thayer-Snyder is developing an unsupervised MSS-derived land-cover classification of these two areas. To aid in the interpretation we collected ground reference data from 150 sites along the Council and Quartz Creek roads, and an additional 154 remote sites using a helicopter. We plan to make these two maps and then extend the information to the entire Seward Peninsula with the aid of observations collected in 1998 from fixed wing aircraft. Early indications are that it will be difficult to develop a detailed map because of a great deal of spectral confusion between land-cover types, so a simple classification, possibly a 10 unit system comparable to that used on the Arctic Slope, will be used.