

**2001 Field Activities for NSF Projects:
OPP-9814984 "Arctic Climate Change, Substrate, and Vegetation", and OPP-
0120736 "Biocomplexity Associated with Biogeochemical Cycles in Arctic Frost-Boil
Ecosystems"**

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April 2001 (April 19-23): In April, our group measured snow depth, characterized snow temperature and layers, and drilled out ice/soil cores from frost boils at our West Dock, Deadhorse, Franklin Bluffs, Sagwon MNT, Sagwon MAT, and Happy Valley sites along the Dalton Highway on the North Slope. Snow depth measurements were taken at .5 meter intervals on 10x10 meter grids at each site, as well as along 50 meter transect lines (2). Snow depth was lowest at the West Dock site (17 cm) and greatest at Happy Valley (50 cm). Snow pits were dug and characterized directly adjacent to grids. Frost boil ice cores were taken at the Franklin Bluffs site. The coring showed some nice ice lens formation, encouraging us to follow this line of investigation in more detail in upcoming field seasons. Maps showing depositional differences in snow for each 10x10m grid at each site were also created.

June 2001 (June 24-30): In June, our group installed additional equipment at Happy Valley, measured thaw depths on the 10x10 meter grids, measured size and density of frost boils based on improved methodology, and took readings from frost heave measurement devices (Romanovsky equipment). Mean thaw depths (cm) within frost boils versus adjacent non-frost boil areas were 35/22, 34/21, 35/21, and 21/11 for Deadhorse, Franklin Bluffs, Sagwon MNT and Sagwon MAT, respectively. See Romanovsky report for observations from frost heave measurement devices.

July 2001 (July 15-23): In July, our group installed additional equipment at several sites, measured thaw depths on the grids, and began intensive vegetation releve surveys. Characterization of unique vegetation types, creation of detailed species lists, and vegetation mapping of frost boil and inter-frost boil areas was accomplished, as well as ground mapping of frost boils/vegetation types on the grids. Mean thaw depths (cm) within frost boils versus adjacent non-frost boil areas were 50/35, 47/36, 53/40, 32/18, and 40/16 for Deadhorse, Franklin Bluffs, Sagwon MNT, Sagwon MAT, and Happy Valley, respectively.

August 2001 (August 21-30): In August, we were finally able to establish our seventh site, on Howe Island. We had to wait out intense fog for several days, but finally had a small break and were able to get the helicopter out there and install a grid and transect lines, as well as perform some preliminary vegetation assessment. We were also able to take aerial photos of all of the sites on this trip, needed for site/grid vegetation mapping as well as for frost boil analyses. We installed five additional grids at Happy Valley (2), Franklin Bluffs (2), and Sagwon MNT (1) to facilitate characterization of key changes in soil moisture/vegetation across the site. We also measured thaw depths on all of the grids. Mean thaw depths (cm) within frost boils versus adjacent non-frost boil areas were 69/57,

68/59, 65/55, 42/32, and 52/38 for Deadhorse, Franklin Bluffs, Sagwon MNT, Sagwon MAT, and Happy Valley, respectively.

For more information/site photos on our Biocomplexity/Frost Boil project:

<http://www.geobotany.uaf.edu/cryoturbation/index.html>