

**Collaborative research: Preliminary Investigation Of Paleoenvironment, Processes,
And Carbon Stocks Of Drained Thaw-Lake Basins, Arctic Coastal Plain, Alaska
NSF-OPP/ARCSS-9911122**

DATE: 7 May 2001
TO: LAII ATLAS Investigators, NSF
FROM: Wendy Eisner and Jim Bockheim
RE: April Field Activities

This report briefly describes our spring field season, which took place from April 17 to May 1, 2001. The eight-person field team consisted of Wendy Eisner, Ken Hinkel, graduate student Elizabeth Wolfe (University of Cincinnati), Jim Bockheim and post-doc Nick Balster (University of Wisconsin), Jim Doolittle and John Kimble (USDA-NRCS), and Fritz Nelson (University of Delaware). We conducted a program of intensive coring and a ground-penetrating radar (GPR) survey of drained thaw-lake basins near Barrow. This is part of our effort to determine the amount of carbon sequestered in drained basins, changes in carbon accumulation rates over time, and to understand the influence of climate on the geomorphological evolution of lake basins on the Arctic Coastal Plain.

We visited a total of twelve thaw lake basins within a 16 km radius of Barrow. The basins were selected based on their relative age, which was determined using Landsat 7+ imagery and the degree of basin polygonization. The classification scheme includes young (3 lakes sampled), medium (3), old (4) and ancient (2) basins. The GPR survey were conducted across each basin, and digital profiles of the upper 2 m were used to locate promising coring sites. The sites were accessed by snow machines, which were used to transport a Big Beaver drill mounted on a snow machine sled. We collected a total of 37 cores, which were transported to laboratory facilities at BASC/NARL where we described, photographed, and subsampled for pollen and radiocarbon. We then sectioned the cores into 10-cm segments, weighed them, and then oven-dried the samples for transport to the home institutes (University of Wisconsin and University of Cincinnati) where they will be analyzed for organic C and other key morphological and chemical properties.

As a preliminary finding, it appears that the young and medium lake basins have Typic Aquiturbels, the old basins have T. Aquiturbels or T. Histoturbels, and the ancient basins have Glacic or T. Aquiturbels and Terric Hemistels. GPR transects across basins appear to show increasing cryoturbation with basin age, as would be expected. Thus, it may be that the amounts of profile organic C and ground ice increase with time in the lake basins. The soil classification is preliminary as we will need organic carbon data to ascertain whether or not some of the samples are mineral or organic.

BASC personnel were extremely helpful in arranging logistical support.

Web page: <http://www.geography.uc.edu/~weisner/april01fotos/>