

Field Report - Webber *et al.* Michigan State University (MSU).

The Arctic Ecology Laboratory under the leadership of Patrick Webber is currently working on two separate yet interacting awards from the NSF/OPP ARCSS Program:

- **Response of Arctic Tundra to Variation in Temperature** - this project is part of ITEX and performs manipulative warming experiments in wet meadow and dry heath communities at both Barrow and Atqasuk.
- **Forecasting Arctic Vegetation (FAV)** - this project is investigating the interaction between land cover change, climate change, and surface disturbance.

ITEX at Barrow and Atqasuk:

This summer was the 7th and 5th consecutive years of ITEX research at Barrow and Atqasuk respectively. Within the passively warmed chambers and control plots at each site we monitor plant canopy temperature, active layer dynamics, plant phenology, plant growth, and plant species composition data. This summer we were assisted in the field by 6 undergraduates from Michigan State University partially funded by supplemental NSF REU funds. A major exercise in the 2000 field season was the re-sampling of community compositional change in our plots using the point-frame method. This data will contribute to the ITEX community change synthesis meeting February 15-19 in Boulder that is being lead by Marilyn Walker. We also collaborated with Steve Oberbauer measuring CO₂ flux at our sites and conducted a pilot study with John Gammon acquiring hyperspectral imagery of our plots. Our future focus on this project will be a major analysis and write up, which will constitute Bob Hollister's PhD dissertation. As we analyze the data we are exploring the most fruitful ways to reduce the data collection while maximizing our ability to understand the dynamics of the system. We plan to continue the experiment at a greatly reduced intensity of data collection. We are also exploring collaborations with other projects that can utilize the detailed information gathered at the sites. It is our hope that by minimizing the amount of data collection and maximizing collaborations that we will be able to maintain the sites for many future years. Graduate students Bob Hollister and Steven Rewa are intimately involved in the day to day operation of the MSU ITEX program.

FAV

This summer was a preliminary field season for the FAV project. With the assistance of Olga Sumina from St Petersburg State University we completed re-sampling marked plots established in 1972 during the IBP at Barrow and in 1975 during the RATE program at Atqasuk. The re-sampling followed the same protocols as those used to originally sample the plots and included measures of species presence and abundance and various environmental parameters. Our analyses will focus on vegetation change in the absence of surface disturbance. The summers of 2001 and 2002 we are planning to re-sample marked plots established in the late 1970's and early 1980's in disturbed areas at Fish Creek and East Oumalik Test Wells as well as ground truth a variety of remotely sensed data we have acquired at a range of spatial scales. Post-doctoral associate Craig Tweedie manages FAV program.