

## Monitoring the Response of Tundra Vegetation to Temperature at Barrow and Atqasuk, Alaska

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The Arctic has warmed and is expected to continue to warm more than other region of the world. This study examines the potential effects of observed warming on the vegetation by observing the response of tundra plants to variation in temperature due to natural temperature gradients, interannual variability, and experimental warming at four sites experiencing modest warming in northern Alaska. The project couples long-term monitoring with experimental warming to determine if the changes observed in the region are due to regional warming or other causes. The four sites span a temperature gradient from warmer Atqasuk to cooler Barrow and moisture gradients from dry heaths to wet meadows. At each site 24 warmed and 24 control plots have been periodically monitored since the mid 90's. The most common response to warming observed thus far is earlier phenological development and increased growth of graminoids; however, the response of a plant species is individualistic and may vary among sites. The trajectories of species composition and cover change were not consistent across sites despite a more uniform response to experimental warming. This may reflect the influence of driving factors other than temperature or the resistance of the plant community to change. Overall the project is finding that warming is one of many factors likely responsible for the observed vegetation changes occurring in northern Alaska.