

Amy Breen, International Arctic Research Center, University of Alaska Fairbanks  
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## **The Alaska Arctic Vegetation Archive: A report on the status of the Arctic Vegetation Archive and an application in northern Alaska**

### Abstract:

An overarching goal of NGEE Arctic is to improve our pan-Alaskan, and ultimately pan-Arctic, understanding and modeling of tundra ecosystem processes. To this end, we contributed vegetation data collected from Barrow, Alaska in Phase 1 of NGEE Arctic to the Arctic Vegetation Archive (AVA). AVA is a vegetation-plot database for the Arctic tundra biome with goals of uniting and harmonizing circumpolar Arctic vegetation data and applying the data to an Arctic vegetation classification, ecosystem and biodiversity models, management of Arctic resources, and Arctic education. High quality plot data and non-digital legacy datasets that are in danger of being lost have the highest priority for inclusion in the archive. A PanArctic Species List (PASIL) provides a standard list of accepted vascular plant, bryophyte, and lichen species names. Work on the AVA is being accomplished within individual Arctic countries. Here we report progress on an Alaska prototype for the AVA and provide a preliminary analysis of the data currently in the Alaska-AVA.

The Alaska-AVA is accessible to scientists and the public via the Arctic Alaska Geocological Atlas, an on-line resource being developed by the Alaska Geobotany Center and the Geographic Information Network of Alaska at the University of Alaska Fairbanks. The Alaska-AVA utilizes the Turboveg for Windows database program and follows protocols developed for the European Vegetation Archive. Species cover data and ancillary data, including environmental, soils and spectral data, photos, maps, and publications are linked to each plot's geographic location. Approximately 5,000 vegetation plots in northern Alaska are being evaluated for inclusion in the Alaska AVA. These data will also be archived in the ORNL-Distributed Archive Active Center, VegBank, the Ecological Society of America's Panel on Vegetation Classification's vegetation plot database, and referenced through the Global Index of Vegetation Databases (GIVD). Approximately 2,000 plots from 20 separate studies have been imported thus far, including NGEE Arctic vegetation plot data from Phase 1.

A preliminary vegetation analysis is presented that focuses on regional-level vegetation changes along a gradient traversing the three Arctic bioclimate subzones, and three major physiographic provinces, in northern Alaska. Changes along key environmental gradients (summer temperature, soil moisture, soil pH, snow) are examined using multivariate methods. Vegetation classification and variability of habitats across the study area will be discussed. Relationships among plant community composition and environmental gradients across Alaska, and ultimately the Arctic, will provide important model benchmarks for the next generation of models developing under NGEE Arctic.