Vegetation Dynamics Working Group

B. Cook, M. Goulden, U. Bhatt, E. Campbell, W. Chen, M. Chopping, J. Eitel, H. Epstein, J. Fisher, N. French, M. Friedl, J. Gamon, S. Goetz, H. Greaves, P. Griffith, A. Hendricks, T. Hogg, F. Huemmrich, K. Kremers, M. Macander, F. Meyer, C. Miller, P. Morin, D. Morton, K. Ranson, A. Rocha , B. Rogers, H. Shugart, J. Shuman, D. Sulla-Menashe, S. Veraverbeke, D. Verbyla, L. Vierling, D. Walker, C. Woodcock

Our goals are to understand:

- Controls on arctic and boreal vegetation, including nutrient cycling, phenology and growing season length, permafrost and hydrology, and succession.
- Shifting patterns in tundra ecosystems, with emphasis on shrub encroachment and treeline dynamics.
- Shifting patterns in boreal forests, with emphasis on growth, drought stress, fire and insect mortality.
- Effect of disturbance frequency and severity on recovery rates and trajectory.
- Biome migration and changes in vegetation composition and structure.

Partners:

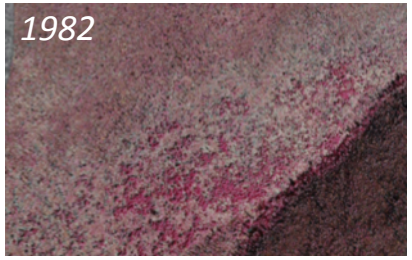
Field campaigns are measuring:

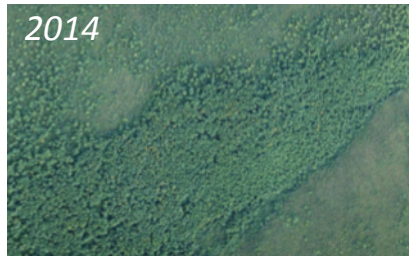
- Biogeochemical recovery at the Anaktuvuk River fire (North Slope, AK).
- Treeline plant physiology and microclimate along Dalton Highway, AK.
- Impact of peatland fires in NWT, Canada.
- Effects of mining on caribou habitat (Yellowknife, Canada).

Remote sensing analysis is being used to:

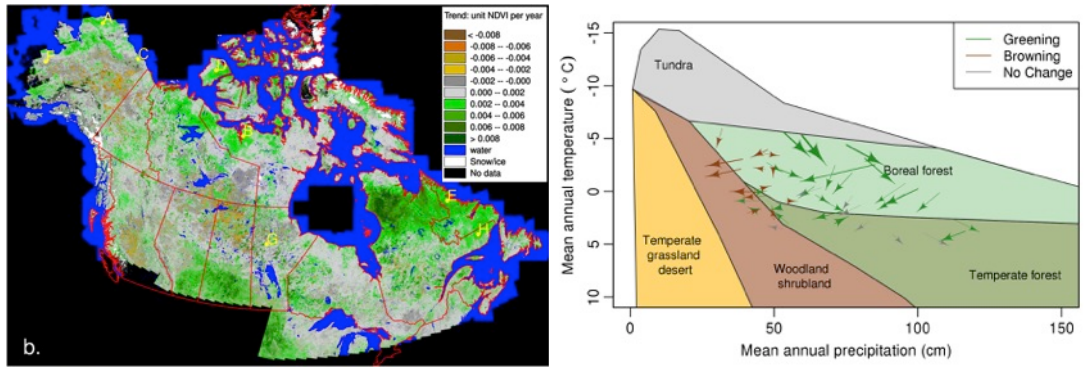
- Characterize 35 years of vegetation change in using historic and contemporary stereo aerial photographs and ground plots.
- Understand interactions between growing season length and carbon flux using MODIS ocean and land bands.
- Mapping Alaskan tundra vegetation.
- Quantify greening and browning trends using Landsat time series.
- Quantify effects of growing season on vegetation and Dall sheep ranges.

Resampling historic USFS inventory plots (Andersen *et al.*) and quantifying mortality caused by winter rains (Verbyla *et al.*)





Documenting shrub encroachment from aerial photos (Cook *et al.*)



Changes in Landsat "greeness" (Ju and Masek, 2016) and successional trajectories (Sulla-Menashe *et al.*, in review)