Vegetation and Photosynthesis Breakout Debrief

1) Meeting started by getting an overview from each person present about their work in the ABoVE domain. Diverse group of students / professionals spanning field-focused researchers with varying levels of experience using remote sensing data. Roughly equal numbers of the group interested in AVIRIS, LVIS and CFIS

2) Exploiting synergies across airborne datasets

a) Campaign planning resulted in co-located targets and acquired transit lines across the domain. Dates of these acquisitions may significantly vary due to various capabilities and problems with the aircraft used.

b) Relationships between SIF and functional differences (field-based or AVIRIS-derived) across PFTs?
CFIS + AVIRIS across a known transition in plant functional types or gradient in productivity.
- Adrian Rocha's Anaktuvuk Fire Scar site
- Barrow sites monitored by Karl Hummerich
- Transects between Havikpak and Trail Valley Creek north of Inuvik

c) May be possible to exploit previously developed approaches to quantify photosynthetic capacity from imaging spectroscopy, providing an interesting comparison with CFIS SIF retrievals

d) Below-ground biomass estimates, along with optical data, could help understand role of root systems in species ranges, variations in productivity

e) Linking structure and function through multi-resolution lidar and SIF (Eitel)

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3) Existing resources that may be useful for analyzing airborne data:
   a) Canadian High Arctic Research Station: Georeferenced high quality images at many sites
   b) Alaska Vegetation Archive: made thousands of transects and compiled species diversity, abundance, biomass, and more. Some of the data comes with vertical structure of layers (moss/ lichen, herbs, trees) that may be useful in context of LVIS L2 vertical vegetation structure product
   c) North Slope PFT map from Landsat (Matt Mercator)
   d) Maps of above ground biomass from Landsat (Logan Burner)
   e) NG Arctic airborne imaging spectroscopy and lidar, but 2017 not a good year for acquisitions

4) Need for software platform that will facilitate synergizing data collected across sensors:
   a) Examine what sensors collected co-located data across the ABoVE domain
   b) Check acquisition times to determine if particular datasets can be used for synergistic activities
   c) Base on platform SAR group is developing?
   d) Utilize ABoVE Science Cloud (James Shute, Elizabeth Hoy)
      - CFIS will provide Science Cloud with .kml flight lines and L1 radiances
      - Would like other optical airborne groups to do the same
      - Good for field scientists to upload position, date, variable(s) information to help connect to airborne groups seeking relevant field data

5) Ideas for a future ABoVE campaign
   a) Possible contrasting focus on shoulder seasons
   b) Center / focus acquisitions on a few, well-monitored sites (i.e. Bonanza Creek LTER, Seward Penninsula)
   c) Interest in data in regions with intense insect outbreaks impacting ecosystems