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# Canadian Forest Service Update to NASA ABoVE

NASA ABoVE Science Meeting  
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# Natural Resources Canada Canadian Forest Service (CFS)

Provides science and policy expertise and advice on national forest sector issues, working in close collaboration with the provinces and territories.

## Growth and Innovation: Rooted in Sustainable Forests

### Priorities:

- Support forest sector competitiveness
- Optimize forest value
- Advance environmental leadership
- >600 staff; 70 research scientists



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# CFS research portfolio



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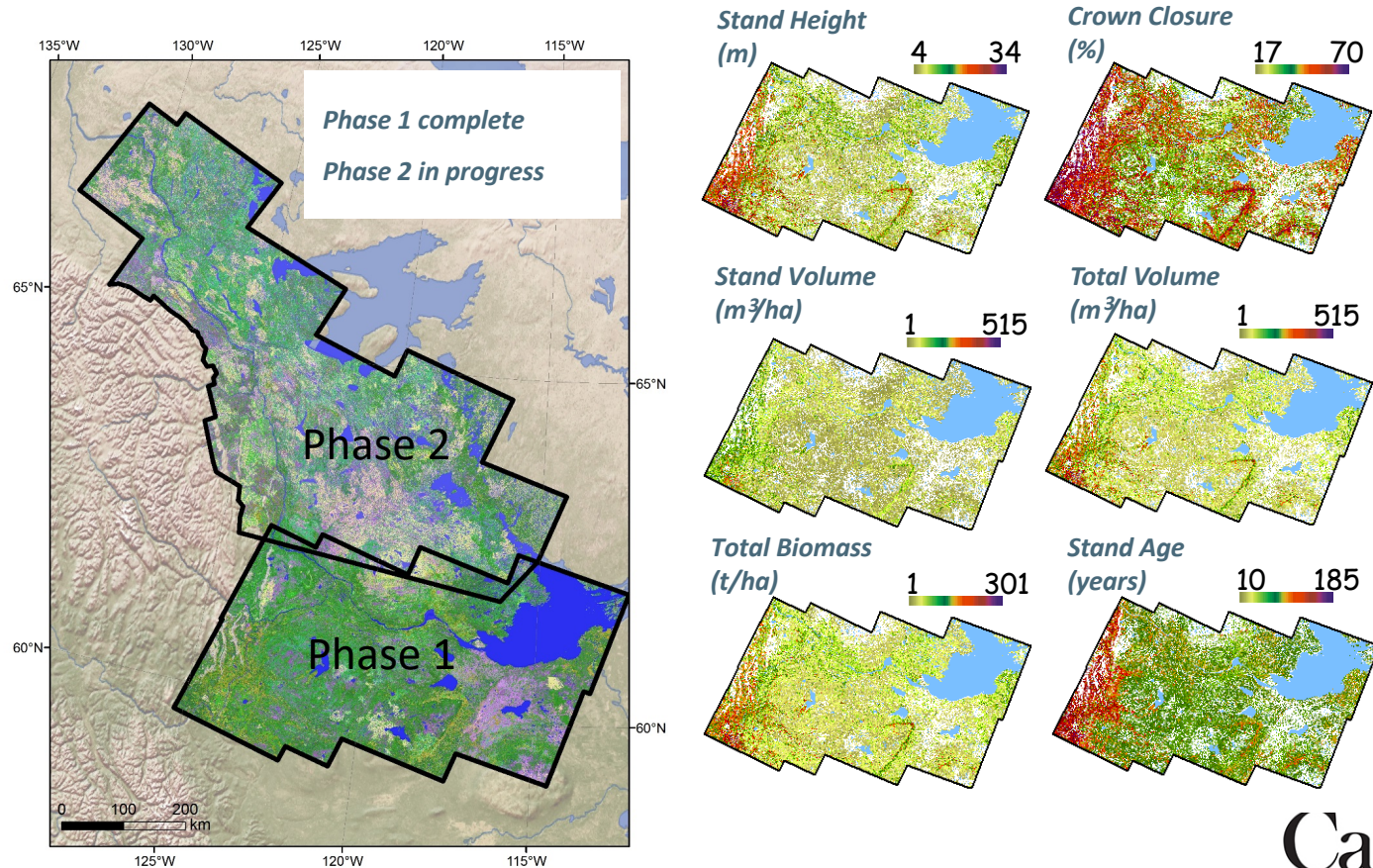
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# Integrating Remote Sensing & Field Data for Forest Inventory in the Northern Boreal (Hall, Castilla et al.)



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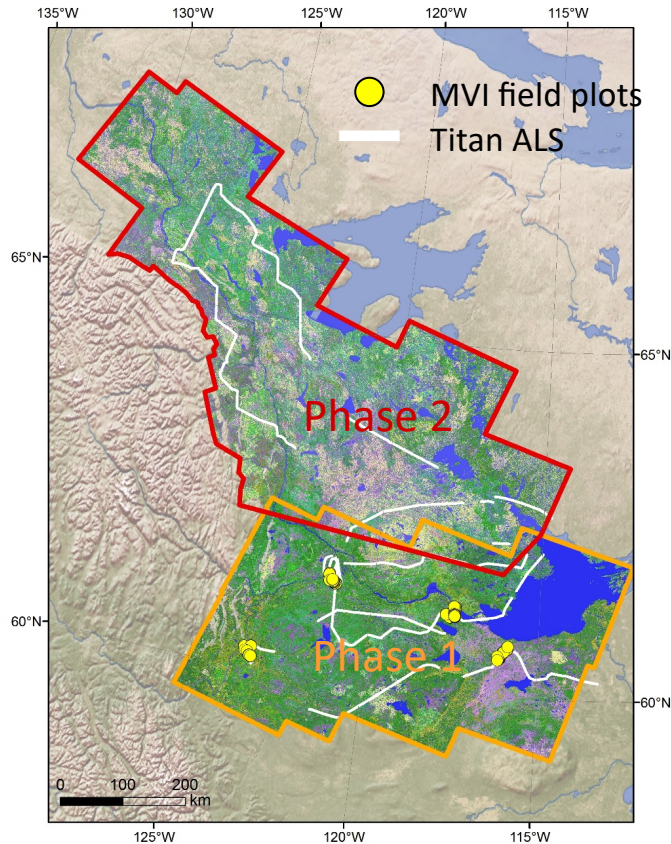


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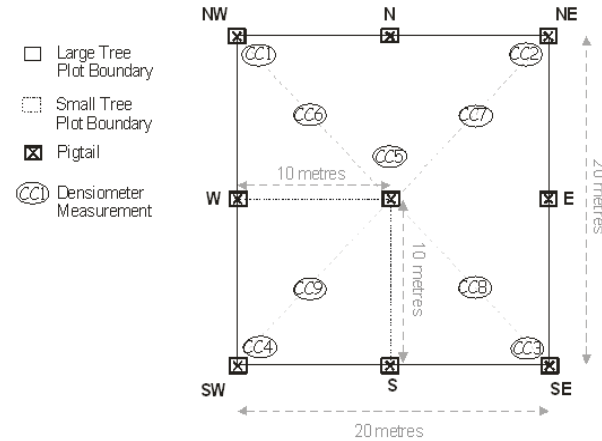
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# Integrating Remote Sensing & Field Data for Forest Inventory in the Northern Boreal (Hall, Castilla et al.)



Sampling Design: fixed area plot (20 x 20 metres)



Individual tree measurements:

- Species
- Status (live/dead)
- Diameter at breast height (DBH)
- Height (m)
- Tree-ring core (5-10 trees/plot)

# Forest Inventory (MVI) / GNWT PSPs (Hall, Castilla et al.)

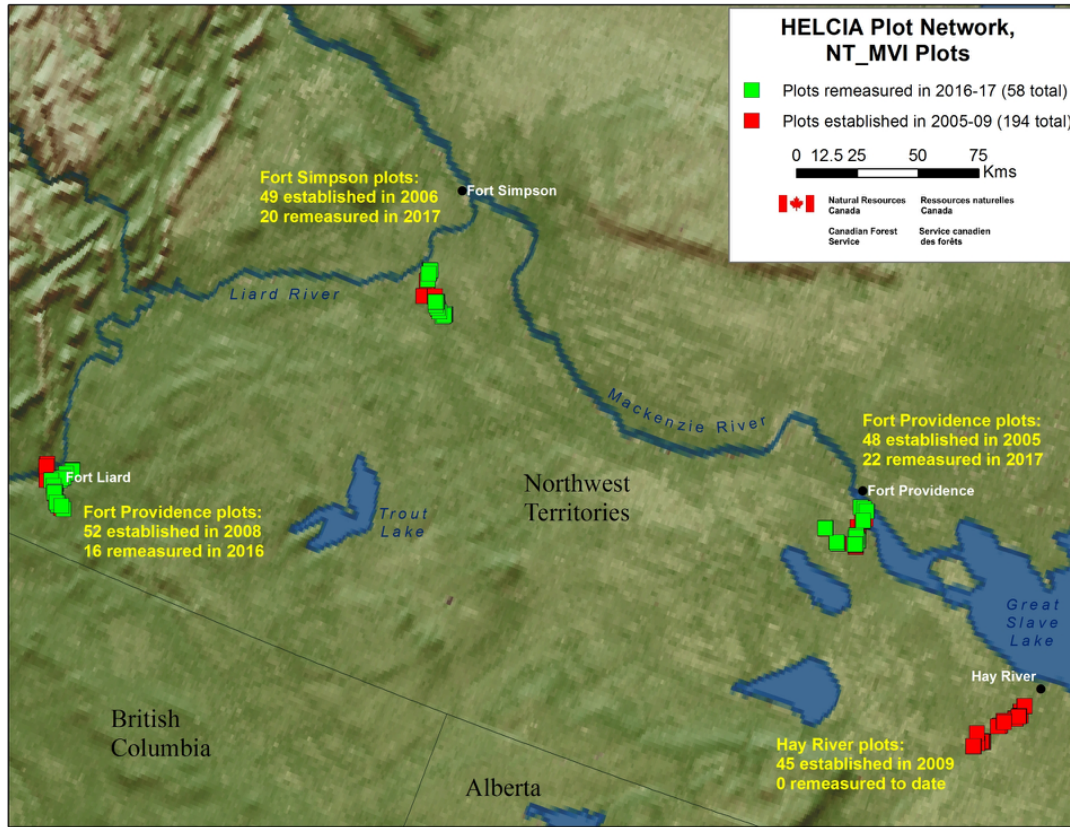
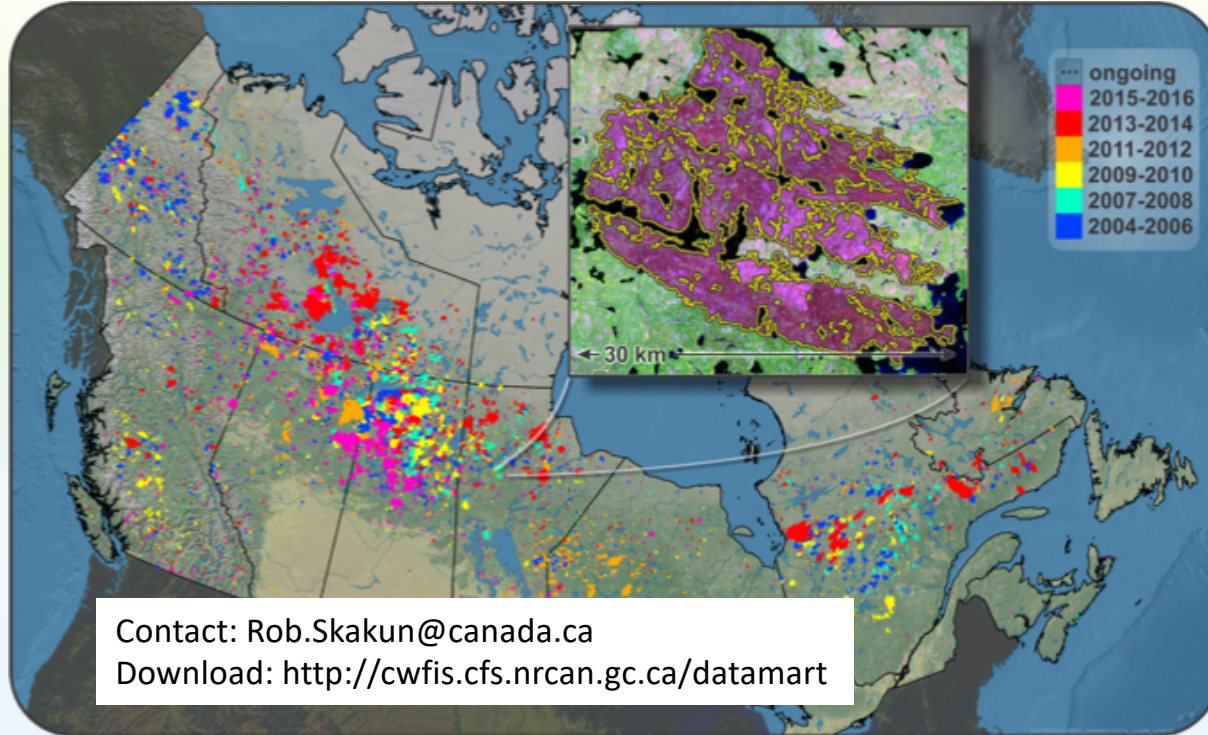


Photo by: Roger Brett



# Mapping Fires: National Burned Area Composite: 2004-current (Castilla, Skakun)



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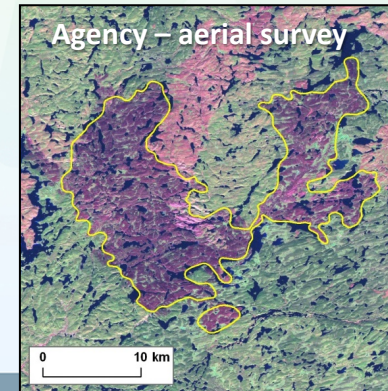
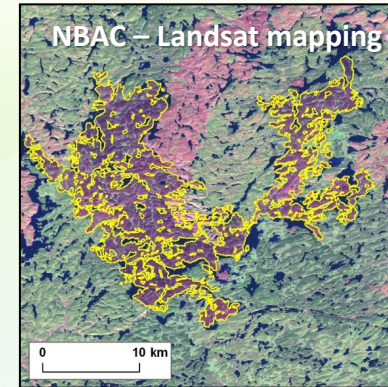
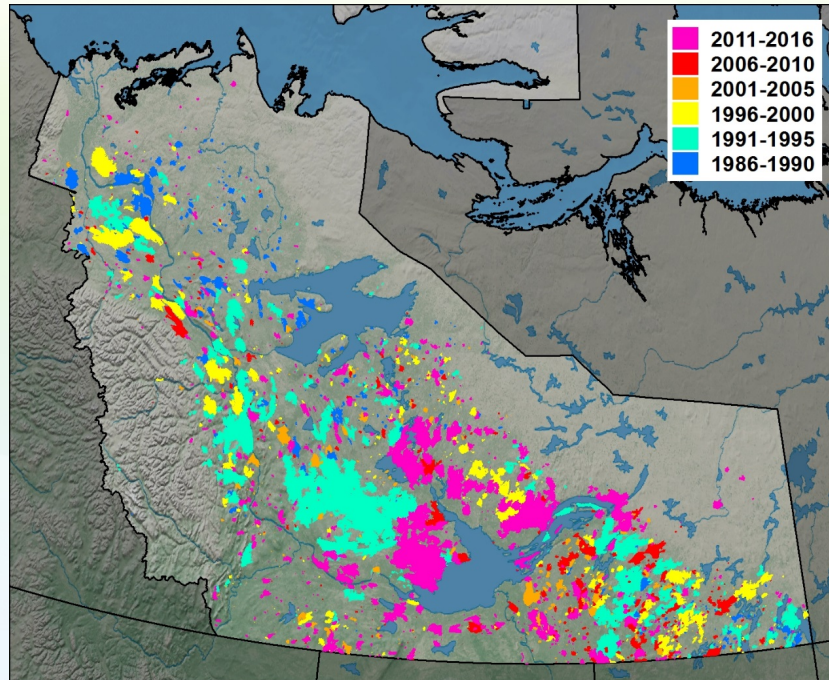
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# Improving burned area data in the NWT (1986-2016) (Castilla, Skakun)



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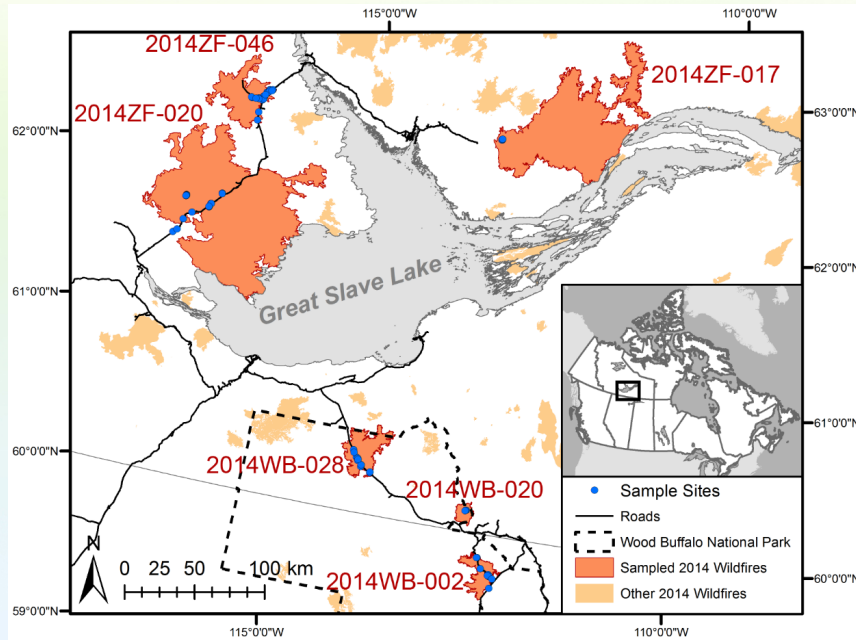
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# Ecosystem Recovery Following Wildfire (Whitman, Parisien, Thompson)



- Samples within 5 wildfires burned in 2014
- Estimated pre-fire stand structure and composition, 1 yr post-fire
- Burn severity and soils, 1 yr post-fire
- Bi-annual repeat sampling of post-fire environments, beginning 1 yr post-fire:
  - Organic soil depth, and organic and mineral soil chemistry
  - Understory vegetation communities
  - Seedling & sapling recruitment & species
  - Coarse woody debris
  - Shrub cover & species
  - Live/dead basal area of overstory trees

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# Ecosystem Recovery Following Wildfire (Whitman, Parisien, Thompson)



– Plot layout: 35 m transect with samples taken at regular intervals

- Soil samples 0, 17.5, 35 m
- Organic soil depth 0, 7, 14, 21, 35 m
- Understory vegetation 0, 7, 14, 21, 28 m
- CWD entire length
- Shrubs entire length
- Understory trees 2 m belt transect
- Overstory trees basal area radial plot 17.5 m

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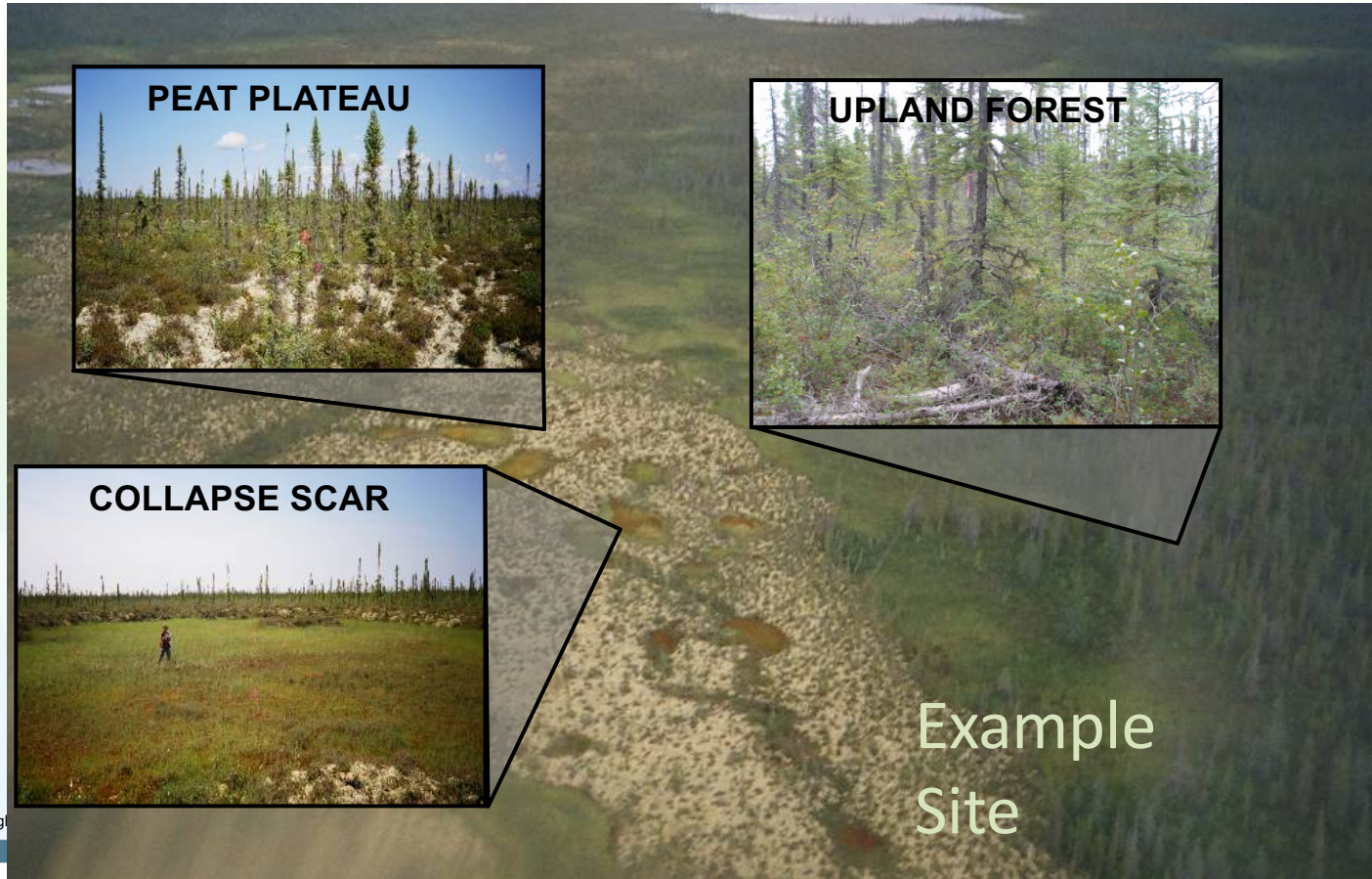
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# Mackenzie Valley (IPY) Plots – Bhatti, Errington, Li

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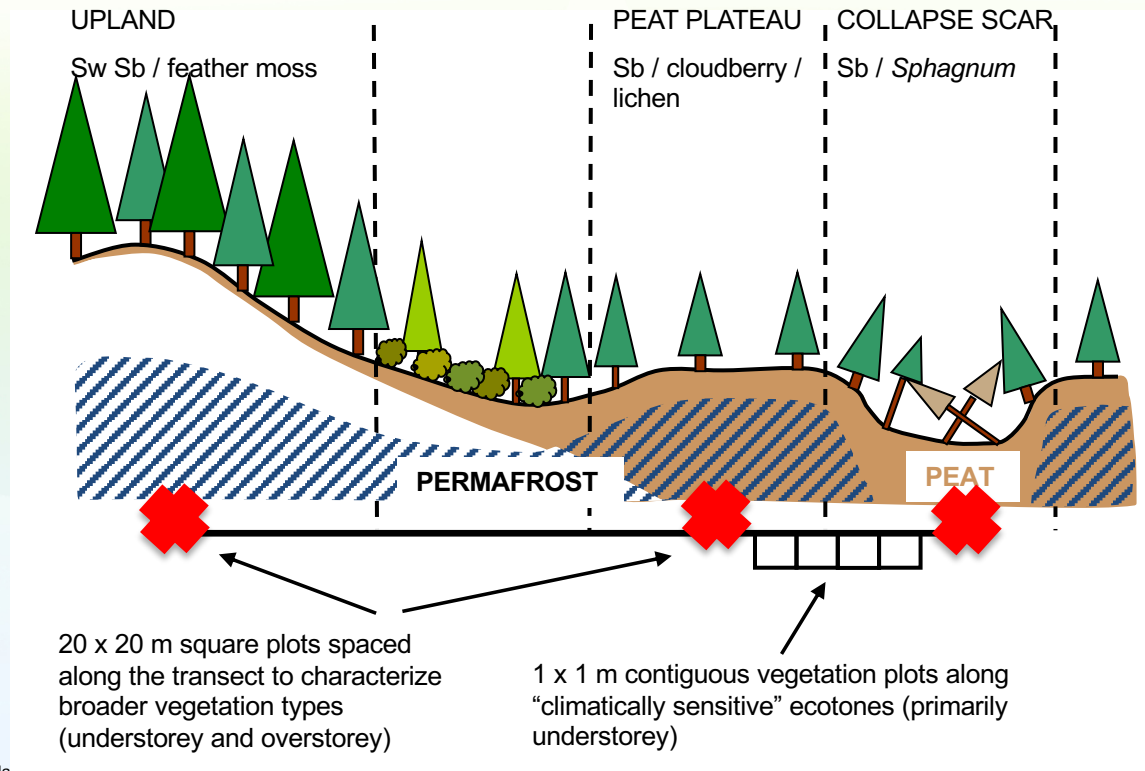


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# Mackenzie Valley (IPY) Plots – Bhatti, Errington, Li



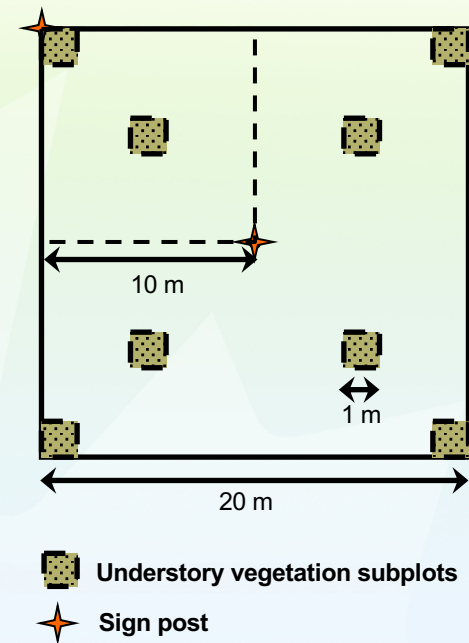
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# Mackenzie Valley Plots – Bhatti, Errington, Li

## Plot Layout – est. 2007/08

- Tree mensuration (20 x 20 m)
  - Tagged trees ( $\geq 1.3$  m tall)
  - Species, DBH, height, crown class, dead or alive
- Seedling tally (10 x 10 m)
  - Count by species and height class
    - 0-0.49 m; 0.5-0.99 m; 1-1.29 m
- Understory vegetation (1 x 1 m)
  - Eight subplots
  - Shrubs, forbs, graminoids, mosses, lichens, liverworts: percent cover by species
  - Lichen layer depth (16 measurements by sub-plot)
- Environmental Measurements
  - Depth to permafrost (active layer): 13 measurements
  - Depth of unfrozen organic soil: 13 measurements
  - Depth to water table (as possible): 8 measurements
  - Soil moisture (%): 8 measurements
  - Canopy closure (%): 9 measurements



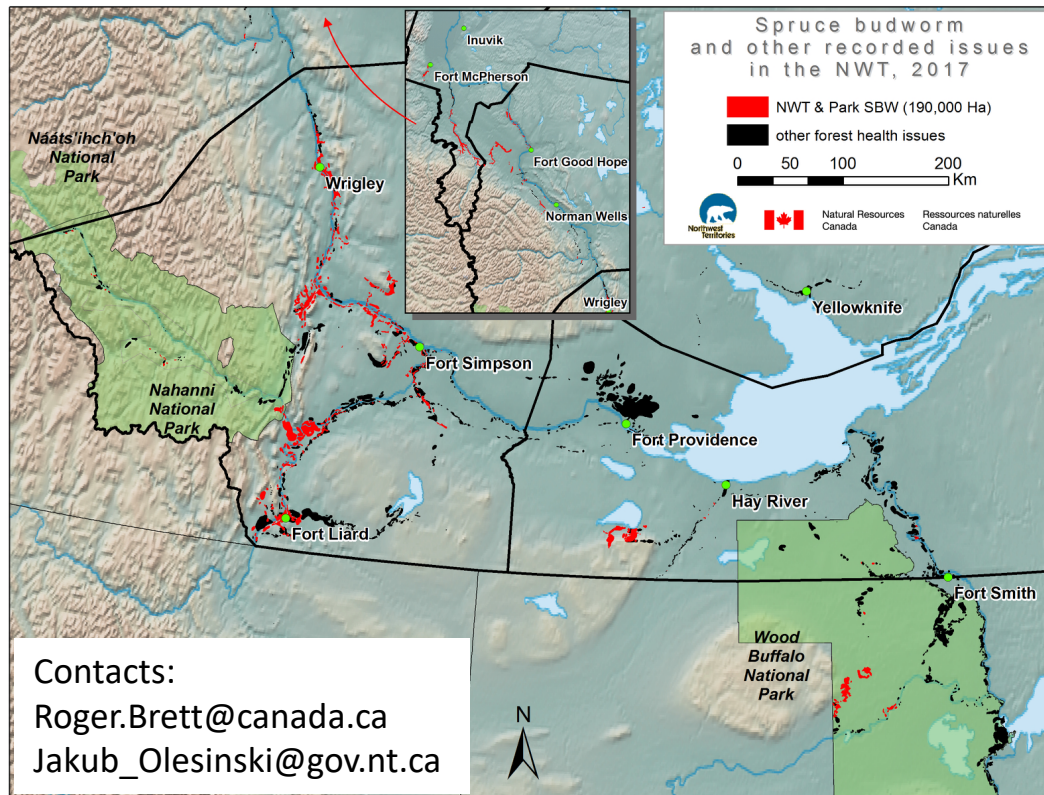


# Mackenzie Valley (IPY) Plots – Bhatti, Errington, Li



36 completed 2017  
33 remain to be sampled

# Forest Health Monitoring in NWT and Wood Buffalo National Park (Brett)



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Photos by: Roger Brett



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# Regional Integrated Assessments of climate change and forests (Edwards; Campbell)

- Building science-management partnerships
- Conducting a vulnerability assessment of GNWT forest resources and management in Dehcho; and Yukon/BC.
- Interdisciplinary approach to understanding and modeling climate change impacts and adaptation within northern forests.
- ABoVE partner project?



# Continued CFS involvement in ABoVE

- Participation in working groups
- Partner projects – still an option
- Organizational / data-sharing agreements?

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# Some Key CFS Contacts

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