Disturbance – Vegetation Breakout

How can the various disciplinary (thematic WG) efforts inform more interdisciplinary efforts?

- Leverage efforts across WGs
- Broaden the development of synthesis activities(?)
- Get into specifics re: data & knowledge gaps...
  - Field mmts & remote sensing
  - Modeling efforts
- Scaling considerations
  - How will we actually go from field to airborne to satellite?
  - Which data sets are most advanced to address this?
  - How can we best address scaling using models?
- How would a future Airborne campaign help address these questions / objectives?
Data – Knowledge Gaps: Canada & AK Fire Databases

- Used for variety of fire-vegetation studies
- Missing records
- Changing reporting jurisdictions over time
- Changing detection efficiencies
- Perimeter ≠ burned area
- Commission/omission spatially and temporally dependent
- Goulden using Landsat to hindcast burned area, refine perimeters
Scaling considerations: fire severity

- Fire severity critical for emissions, succession
- What indices are best, what do they relate to on the ground?
- Residual SOL important for seedling establishment, how can we map? Airborne L/P band?
- Changes in severity over time related to changing successional trajectories/deciduous composition
- Differences in LST may be informative
Syntheses

Fire – Vegetation

• Synthesis of post-fire seedling regeneration measurements
• Test central hypotheses about proportional species changes
• Structural Equation Modeling

Fire – Vegetation

• Remote sensing to better characterize disturbance, successional trajectories
• How vary spatially?
• Evidence to say changing over time?
• Discussion of what RS-based succession means
Other Disturbances

• Ice on snow shrub mortality
• Fire-insect interactions: insect mortality can increase or decrease flammability depending on fuel structure
• Ability to detect with remote sensing, importance of aerial surveys
• Woodcock producing Landsat-based layers of insect disturbance
• Impact on C cycle can be as important as fire
• Vulnerability assessment
• High priority research area for Phase II
New knowledge/insights from ABoVE
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Greater appreciation for variability & drivers of varying successional trajectories, shifts towards deciduous landscape

- Accelerating regrowth
- Regeneration synthesis
- Deciduous mapping
- Changing post-fire albedo due to climate
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Greater understanding of what NDVI dynamics mean

- Not always related to rind width productivity, indicative of infestation and changes in allocation
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- Patterns indicative of eventual tree mortality
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Landsat can be used to improve old fire perimeters

Spring dRed and Canada large Fire hybrid approach (1954-2014)
New knowledge/insights from ABoVE

• Importance of lightning in large fire years
• Lightning – fire – treeline migration – convection feedbacks