NASA Overview: ABoVE and Related Activities

Presentation to the Alaska Fire Science Consortium

13 October 2016

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Summary

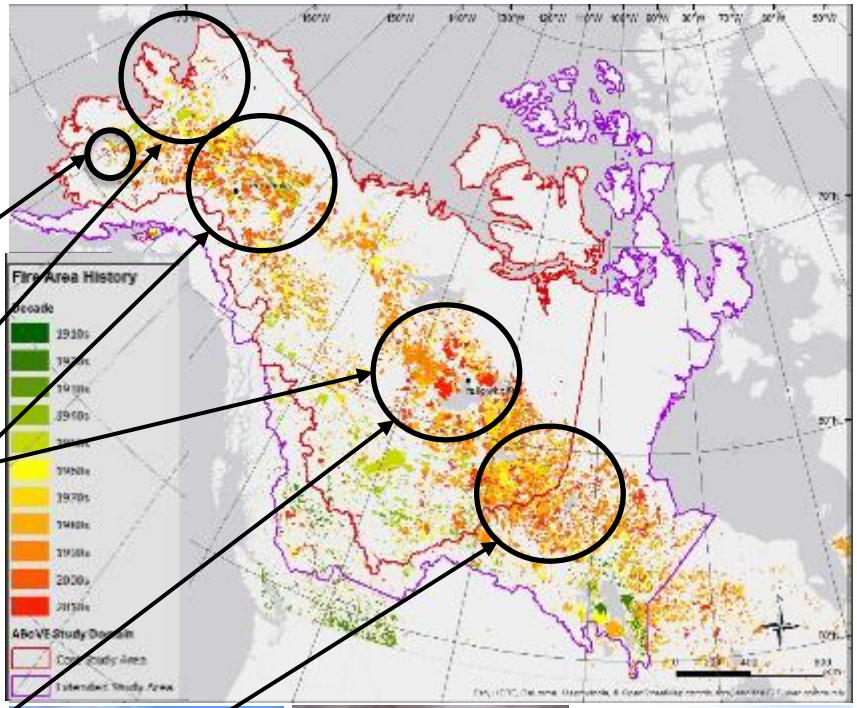
- Fire-related research from 2016 field season
- ROSES2016 – Task A4: Research using airborne remote sensing data
- ABoVE Airborne Campaign – 2017
- Preparing for future satellite L-band SARs – SAOCOM, SAOCOM-C, NISAR

Fire Disturbance Working Group

M. Mack [Chair], J. Barnes, Baltzer, J., Bourgeau-Chavez, L., Ebel, B., French, N., Goetz, S., Hoy, L., Jenkins, L., Johnstone, J., Kane, E. , Loboda, T., Roland, C., Shaeffer, K., Schirokauer, D., Schuur, T., Rogers, B., Thompson, D., Turetsky, M., Veraverbeke, S., Walker, X.

Summer field campaigns linked ground measurements to remote sensing in key fire-prone regions of the ABoVE Domain. Sites spanned from arctic tundra to the southern edge of the boreal forest. Focal activities included:

- Measuring impacts of tundra fire on active layer thickness (Shaeffer project)
- Linking remote sensing products to fire severity and post-fire recovery in Alaskan arctic tundra (Noatak NP; Loboda project).
- Scaling emissions and loss of legacy carbon from forests of the Northwest Territories (NWT) and alpine tundra (Denali NPP; Mack project).
- Detecting fire effects on post-fire vegetation trajectories in NWT forests and alpine tundra (Mack project).
- Predicting fire behavior and impacts in NWT permafrost wetland landscapes (Bourgeau-Chavez project).
- Scaling fire emissions of carbon and impacts on albedo at the trailing edge of the boreal forest in Saskatchewan (Rogers project).



New working group products include:

- Eight peer-reviewed publications (in press + published between 8/2015 and 8/2016)
- Daily 500m 'blue sky' albedo product for boreal North America using MODIS collection 6 BRDF and related products (e.g., aerosol optical depth; Rogers project).
- Burn Severity, Fire Progression, Landcover and Field Data for 2014 NWT fires posted on ORNL DAAC or LTER Network
- Landsat derived 30 m burned area maps, burn severity maps, landscape drainage maps, and previous fire history maps (1972 - 2015) for Arctic tundra

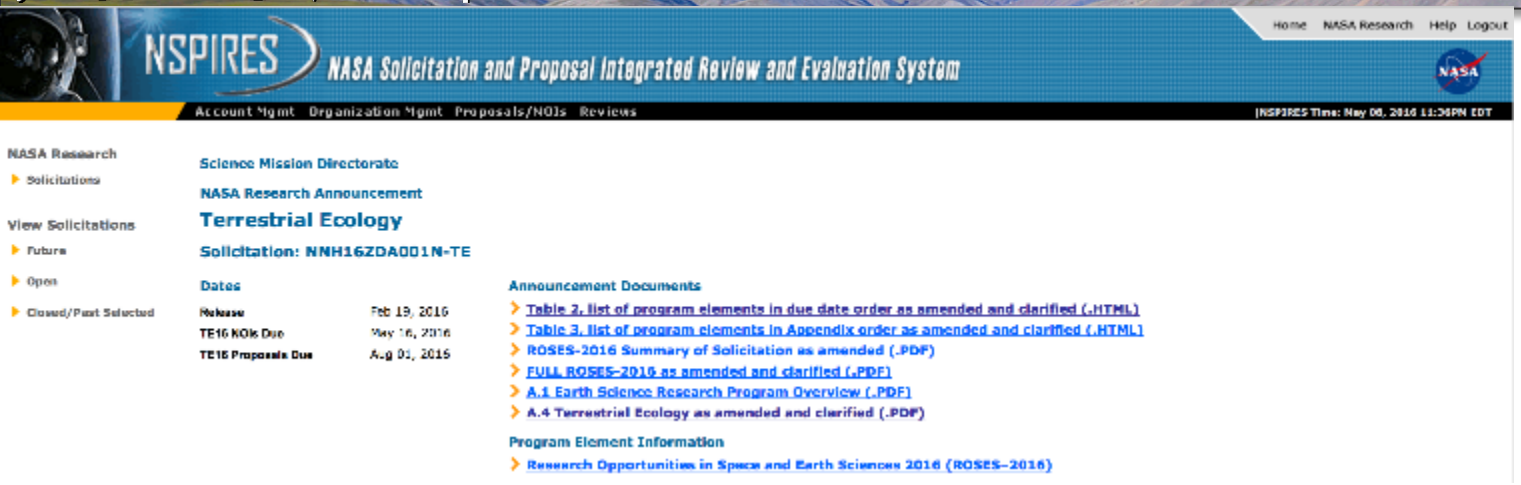
Outreach and stakeholder engagement:

- Public seminar at the Murie Science and Learning Center, Denali National Park
- K-6 environmental education program at Fred Henne Territorial Park, NWT
- Webinars (3) hosted by the Alaska Fire Science Consortia
- Featured in *The Nature of Things* (CBC Canada)
- Featured in NASA Earth Expeditions and the Earth Observatory Notes from the Field
- Community picnic and outreach in Kakisa, NWT

ABoVE Science Team

- Members of the AWFCG with ongoing research can join the ABoVE Science Team as an Affiliated Project
  - Coordinate research activities with other ABoVE Projects
  - Collection of remote sensing data during the ABoVE Airborne Campaign

ROSES 2016 A.4 Terrestrial Ecology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NASA Research
Solicitations
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Science Mission Directorate
NASA Research Announcement
Terrestrial Ecology
Solicitation: NNH16ZDA001N-TE
Dates
Release Feb 19, 2016
TE16 NOIs Due May 16, 2016
TE16 Proposals Due Aug 01, 2016
Announcement Documents
Table 2, list of program elements in due date order as amended and clarified (.HTML)
Table 3, list of program elements in Appendix order as amended and clarified (.HTML)
ROSES-2016 Summary of Solicitation as amended (.PDF)
FULL ROSES-2016 as amended and clarified (.PDF)
A.1 Earth Science Research Program Overview (.PDF)
A.4 Terrestrial Ecology as amended and clarified (.PDF)
Program Element Information
Research Opportunities in Space and Earth Sciences 2016 (ROSES-2016)

NASA Terrestrial Ecology Program has solicited research proposals for use of airborne remote sensing data during the ABoVE Airborne Campaign

Selections will be made in the fall of 2016

Seeks research on using airborne data in key ABoVE research areas

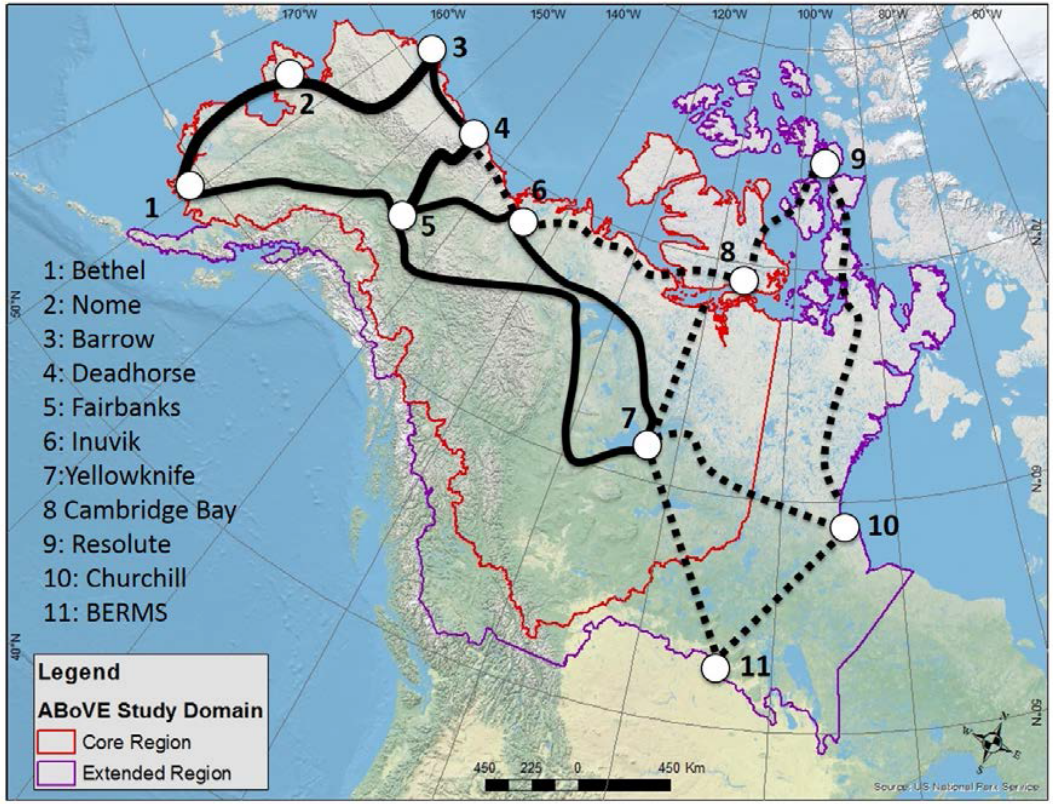
- Impacts of variations in permafrost on ecosystems
- Characterize the type, structure, and function of vegetation, especially in relationship to disturbance
- Understanding of the drivers and impacts of variations in surface hydrology

ABoVE Airborne Intensives

- ABoVE airborne intensives are scheduled for 2017 & 2019
- Collection using airborne Lidar, hyperspectral, and SAR

Goals:

- Provide domain-wide context to unify site-level process studies
- Link to satellite remote sensing
- Demonstrate new remote sensing technologies and multi-sensor data products



Planning Meetings for the 2017 ABoVE Airborne Campaign

17 December 2016 – San Francisco (following Fall AGU Meeting)
17-18 January 2017 – Boulder, CO (3rd ABoVE Science Team Meeting)

Future Spaceborne L-band SAR Data

- Three spaceborne SAR systems are scheduled for launch in the near future
  - SAOCOM A+B (Argentina Space Agency): 2017 launch, 2 separate satellites, 8 to 16 day repeat (at equator)
  - SAOCOM-CS (ESA): 2019 Launch, companion to SAOCOM A, improved biomass mapping using same-pass InSAR
  - NISAR (NASA): 2021 Launch, 12 day repeat (at equator)
- Data from these systems will be downlinked and stored at the Alaska Satellite Facility (UAF)
- Data can be used for improved fuels assessment
  - Biomass mapping
  - Seasonal fuel moisture monitoring

Questions????