

## C01-O10

### **NASA'S ARCTIC BOREAL VULNERABILITY EXPERIMENT: ACCELERATING SCIENCE WITH BIG DATA CLOUD TECHNOLOGIES AND LIFECYCLE DATA MANAGEMENT**

*Peter Griffith (NASA Carbon Cycle & Ecosystems Office, United States)*

*Daniel Duffy (NASA Center for Climate Simulation , United States)*

*Elizabeth Hoy (NASA Carbon Cycle & Ecosystems Office, United States)*

*Stephen Ambrose (NASA Center for Climate Simulation , United States)*

*Mark McNerny (NASA Center for Climate Simulation , United States)*

peter.griffith@nasa.gov

The Arctic Boreal Vulnerability Experiment (ABoVE) is a new field campaign sponsored by NASA's Terrestrial Ecology Program and designed to improve understanding of the vulnerability and resilience of Arctic and boreal social-ecological systems to environmental change (<http://above.nasa.gov>). ABoVE will integrate field-based studies, modeling, and data from airborne and satellite remote sensing. The NASA Center for Climate Simulation (NCCS) has partnered with the NASA Carbon Cycle and Ecosystems Office (CCEO) to create a high performance science cloud for this field campaign. The ABoVE Science Cloud combines high performance computing with emerging technologies and data management with tools for analyzing and processing geographic information to create an environment specifically designed for large-scale modeling, analysis of remote sensing data, copious disk storage for "big data" with integrated data management, and integration of core variables from in-situ networks. The ABoVE Science Cloud is a collaboration that promises to accelerate the pace of new Arctic science for researchers participating in the field campaign. Furthermore, by using the ABoVE Science Cloud as a shared and centralized resource, researchers reduce costs for their proposed work, making proposed research more competitive.

The ABoVE Science Cloud will:

- Provide a shared set of computational and data resources to the ABoVE science team.
- Enable access to large, common data sets (both observation and model) that are relevant to the ABoVE research goals.
  - Provide a system and collaboration environment by which results may be quickly and readily shared to the ABoVE research community and ultimately to decision makers.
  - Enable researchers to propose larger problems, analytics, and more science than they could address using the capabilities of typical computer workstations.
  - Provide tailored computational, analysis, and data management environments to meet the needs of the individual science projects.
  - Support researchers with comprehensive services to facilitate the use of advanced information technology, creation of metadata and documentation, and archival of finalized products.

Specific examples of successful utilization of the ABoVE Science Cloud by three pre-ABoVE funded projects will be presented.