

Summary of ASTM4 for ABoVE Science Team

The 4th meeting of the ABoVE Science Team, held in Seattle 23-26 January 2018, was by all accounts a great success. Over 150 attendees from NASA, other federal, state, and Canadian agencies, and US and Canadian universities assessed the latest in ABoVE science via a series of invited plenary talks, partner presentations, posters sessions and breakout discussions. Some participants who registered for the meeting were unable to attend due to the government shutdown on the day before the meeting, but NASA headquarters participants (including Hank Margolis, Eric Kasischke and Ken Jucks) were able to make it by the second day of the meeting. Invitational travel helped a number of students, postdoctoral researchers and collaborators to attend, which ultimately included 20 graduate students and 17 postdocs. Many of the 116 poster presentations were led by students and postdocs, and the daily afternoon poster sessions provided a lively and bustling interaction among all participants. A number of attendees mentioned it had the high quality of the much bigger AGU meetings, but intensely focused on common research interests within the ABoVE domain.

Results from the 62 NASA-funded projects as well as 20 affiliated projects were discussed in the breakout sessions as well as the invited plenary and partner presentations (and no doubt evening meals). The plenary presentations were all excellent, nicely setting up the breakout session discussions and ABoVE research in a broader context. These included talks on changing permafrost, amplitude of the CO₂ cycle in high northern latitudes, fire disturbance, hydrology of permafrost landscapes, and integrated ecosystem modeling. Partner presentations nicely complemented the plenaries and breakout session discussions of synthesis activities by providing overviews of potential synergies with large research programs like NGEE-Arctic, POLAR Canada, Global Water Futures, and the Canadian Forest Service, among others. All presentations, including breakout session reports, can be downloaded from the [online meeting agenda](#) (no login required).

There were also after-lunch applied sessions focused on relevant upcoming satellite missions (ICESat-2 and NISAR), a composited high-resolution DEM for the ABoVE domain, modeling with WRF-STILT (an atmospheric transport model), new capabilities on the ABoVE Science Cloud, and data management sessions to enhance integration of data for synthesis activities. Attention to good data management practices was also emphasized, which is reflected in the 63 data products already published at the ORNL DAAC by ABoVE researchers.

The importance of the ABoVE airborne and field campaign was highlighted and resonated throughout the meeting, particularly in the breakout sessions, with discussions of how to advance the scaling of field measurements to satellites via the airborne data acquisitions. Discussions during both thematic breakout sessions (on day 2) and cross-disciplinary breakouts (on day 3) not only helped to advance ongoing synthesis activities, but also identified knowledge gaps and potential new synthesis activities.

Overall, it was clear that ABoVE continues to be innovative and productive. In part due to the “pre-ABoVE” projects initially funded in 2013-2014 there are already 81 publications by 20 of

the 62 NASA-funded projects. Many of these publications appear in top-tier journals including Nature, Science, PNAS and Global Change Biology. ABoVE affiliated and partner projects reported an additional 64 publications (mostly as part of NGEA Arctic). ABoVE also has a dedicated focus collection of papers initiated in the journal [*Environmental Research Letters*](#), with at least 4 papers currently accepted or published and many more in the pipeline (under review and forthcoming). This on-going focus collection will be open for the duration of ABoVE, addressing the influence and impact of environmental changes, including climate change, taking place across the high northern latitudes and their influence on Arctic and boreal ecosystems.

As part of these publications and meeting outcomes we are initiating a compilation of the "Best Things Learned During ABoVE" thus far, with associated slides, graphics and text summaries for a general audience. If you have thoughts on what those should include, and may be willing to help pull summaries together, please contact us and/or your Working Group lead(s) about it. Finally, we would like thank all of those who participated in the meeting (we missed those of you who could not!) and especially the members of the organizing committee for their efforts helping us organize what we thought was, as expected, a most productive and rewarding meeting.

Scott, Chip and Peter