

ABoVE Full SDT Telecon – June 12, 2013

Attendees: Sharon Billings, Natalie Boelman, Peter Griffith, Guido Grosse, Forrest Hall, Dan Hayes, Eric Kasischke, Libby Larson, Juha Metsaranta, Chip Miller, Mike Rawlins, Rob Striegl, Ruth Varner, Diane Wickland, Stan Wullschleger; Rapporteur: Elizabeth Hoy

Topics Discussed:

1) Update on homework exercises #1 & #2 (provided by Dan H.)

Homework #1 (group exercise): Two groups have sent responses and Dan H. is awaiting responses from the remaining groups.

Homework #2 (individual exercise): Responses have been received from SDT members and have been synthesized into a table for review by the SDT (ABoVE SDT HW2 Synthesis Table 20130612.xls).

2) Emerging themes for drafting Chapters 1 - 3 of the ABoVE CEP

Dan H. asked the group to respond to a table Dan H. and Eric K. prepared prior to the meeting which was a compilation of the Homework #2 responses from individual SDT members. He specifically asked the group to respond with suggestions of emerging themes based on the table. Below are some of the themes/thoughts mentioned:

- Vegetation is included in over 50% of the responses from the SDT members in Column B (How are ecosystems changing)
- All responses from Column B addressed one of three important issues related to change including impacts of changing 1) moisture levels, 2) vegetation dynamics and 3) elemental fluxes, as well as the feedbacks related to these three issues
- Permafrost thaw is mentioned multiple times within SDT member responses
 - Permafrost dynamics and hydrologic issues are unique in that they are drivers of change and changes themselves
 - Permafrost is mentioned in both Columns B and C, indicating that it may be a crosscutting theme
- Regulating climate is addressed multiple times in Column E (Ecosystem Services Impacted)
 - Regulating climate spans both the impacts of change and the feedbacks of change
- Temporal scale is a possible theme (past, present and future change) – change in the past (50-100 years ago) was driven by different factors than current change and future change, although all are related to climate.
 - Climate change trends over time (“secular climate change”) is important
- Changes in disturbance regimes are important throughout the table as well (thermokarsts, frozen ground, fire, etc.)
- Direct vs indirect changes – for example climate could be direct or indirect as it drives vegetation and recovery dynamics

- The SDT needs to consider direct and indirect changes during the writing of the ACEP (Eric K.)
 - For example, vegetation dynamics could be driven directly by warming or indirectly by disturbance
- Vegetation, permafrost dynamics and trace gas issues are all discussed in the table, however we know how to measure and remotely quantify changes in vegetation. It can be much more difficult to remotely measure nutrient cycling.
 - Microbial activity (as mentioned by Sharon) is imbedded in biogeochemical cycles, but can't be measured remotely. However other factors related to activity can be measured, such as topography
 - While vegetation has been historically measured (and measured well), below-ground issues must still be better understood as they are causing disturbance and feedbacks to the system
 - Measuring permafrost thaw is an emerging area of research
 - A challenge now is integrating subsurface technologies and determining ways to remotely sense soil carbon content
 - The fate of soil carbon (more specific than elemental cycling) is important
 - Elemental cycling is broader than soil carbon as it entails above- and below-ground feedbacks, also green house gasses are important too.
- Scale is found throughout the table – global, local, and regional – fine scale issues are addressed in the table, but scaling up is an issue (needed for atmospheric and modeling research)
 - This should be addressed in study design (Dan H.)
 - When scaling to a regional level, fine scale changes may become less important and should be considered as the design of the experiment progresses
- Seasonality is also an important issue (ie – climate seasonality)
 - Temporal changes have a seasonality component as well
 - Seasonality issues include annual temperature, length of the growing season, phenology impacts and even climate change
- Understanding methane and emissions is also important – differentiating between biogenic, fossil and anthropogenic methane emissions is an issue
 - This issue may fall under Column F (ecosystem services)
 - CARVE is trying to understand constant or variable methane to CO₂ ratios
- Economics and ecosystem services are important. Where high latitude systems were once a weak sink they are now becoming a source and this could have potential future impacts on infrastructure and economics

Agenda Item 3: Geospatial Data Layers

Elizabeth H. and Peter G. presented a list of the current geospatial data layers that they have collected for use by the SDT during the July workshop and asked for comments from the group on additional layers needed. Suggestions from the group included:

- The University of Victoria and Natural Resources Canada as resources for Canadian datasets
- Static vegetation phenology map with baseline green-up, wildlife migration routes, parks and protected areas
- Forest health conditions for the region
- Snow cover and climatology layers

Agenda 4: Logistics for the Fairbanks SDT meeting

The team should plan for the full 2.5 days. Thursday the 11th will include a tour of the permafrost tunnel and the poker-caribou watershed.

The next telecon is July 2nd at 1pm EDT.

Eric K. and Dan H. are putting together Chapters 1 and 2 and may be sending a draft around to the group.