**OIB Science Team Meeting: Land Ice**

*24-25 June 2014, University of California, Irvine*

Science Definition Team: E. Rignot, E. Larour, B. Smith, L. Koenig.

Excused SDT: Mark Fahnestock, Ian Joughin.

Remote participation (webex): Ian Howat.

Project: Michael Studinger, Christy Hansen.

NASA HQ: Thomas Wagner.

Instrument Team: Bill Krabill, Jim Yungel (ATM), John Paden, Carl Leuschen (CRESIS), Jim Cochran, Christy Tinto (gravity).

NSIDC: Steve Tanner + others.

**Day 1: Tuesday, 24 June**

*Joint sea ice / land ice session:*

Following the traditional welcome, with the 50th anniversary commencement speech of President Obama, Thomas Wagner reviewed OIB from NASA HQ perspective. Project is going well, OIB in 2017 budget, possibly 2019 and has received plus-ups. Cryo is gaining more visibility. NASA is building new web sites. Tom mentioned that NASA spends more money than any other agency to study ice sheets. Tom announced a desire to increase cryo education, new sea level rise focus, and preparation to the DS 2017.

Michael Studinger reviewed the OIB project, with the assistance of Christy, Nathan, Donghui, Vincent, and Jeremy. OIB is mentioned in an increasing number of publications. OIB will deploy on DC-8 in fall 2014, C-130 in Greenland in 2015 with no gravity, no magnetometer, no MCoRDS. Antarctica 2015 will be from McMurdo with P3, and Arctic 2016 with P3. SDT needs to make recommendations for shifts between Punta Arenas and McMurdo. Noted efforts by NSIDC, and results of mid-term review that will need to be addressed in the next 2 weeks. Michael recommended a strategy for handling community requests which could be put in place by Arctic 2015. Michael then presented data products and research from the project office, mostly focused on sea ice.

Steve Tanner reviewed recent progress at NSIDC and the status of products and availability online. Steve discussed recent data portal enhancements, new forms of data manipulations that would be available in the near future and briefly solicited SDT inputs.

Discussion of Arise was postponed due to a 20 min delay of the start of the meeting.

*OIB Land Ice Team/Sea Ice Team Breakout.*

Following modifications by John Sonntag after telecom June 16 and June 20, we agreed on a strategy for sampling Abbot and Venable ice shelves, we removed some George VI missions and extended existing ones to capture changes along the coast of the southwest side of the Peninsula. We examined mission details for Pine Island, Thwaites and Smith to provide baselines for drafting more optimum mission plans. It was noted that the Pole Hole 88 could not be covered in one mission. We decided to call “baseline” missions that will be flown repeatedly from Punta Arenas at every campaign, and we prioritized all missions (high, medium, low) currently in the book, proceeding region by region. We tried to maximize the repeat of NASA/CECS missions going back to 2002. We made sure to include maximum region diversity to improve options for OIB based on weather. The decision process was more or less complete by lunch time.

After lunch, we started the glacier thickness discussion. Ian Howat reviewed remotely his assessment of completeness of ice thickness measurements for ice discharge calculations. Ian made recommendations for gaps, synergy with MC and feedback from MC to the instrument team. Mathieu Morlighem was present but did not present results from the MC method.

Prasad presented a review of recent progress in radar measurements of ice thickness. In particular, he presented new achievements on Byrd Glacier, and Jakobshavn Isbrae. He offered a brief, positive comparison with WISE and MC. He showed results that seem to illustrate that the main source of clutter in outlet glaciers is surface clutter, not volume scattering. He documented the drastic change in ice loss along the coastline compared to the interior regions. He presented new results from the array signal processing techniques to reduce surface clutter. In particular, the approach reveals several horizons beneath Jakobshavn, possibly temperate ice interface, ice/sediment interface and noted that the retrieved depths (2.5 km) are compatible with past seismic measurements. Several results were discussed for Jakobshavn Isbrae, including cross over analysis. On Byrd, the system/processing revealed some of the thickest ice in Antarctica (3.7 km), low cross over errors, discussed UAV radars, comparison of MC with MCoRDS, and presented plans to extend the study to other glaciers in Greenland that yielded problematic bed echoes in the past. Prasad also suggested a coupling with MC estimates. Several radars are now in operation. Prasad recommended to installs hard points on the P3 to get a 24-element

Radar in the future. He ended with a discussion of wideband multibeam imaging. The plan is to upgrade all glacier thickness data in the next 6 months, at which point SDT will meet again with CRESIS.

**Day 2: Weds., 25 June**

*OIB Land Ice Team Breakout*

Eric R. reviewed progress of the first day and agenda for day 2. We reviewed the OIB mid term review comments and discussed some of our responses. Others will be drafted and circulated to the SDT for comments/approval/modifications/complement.

Christy presented the overarching strategy of Arise. Lora discussed the mission details for land ice, along with a list of priority flights for land ice. The mission planning is fairly complex and includes a set of selectable missions based on weather/cloud conditions. A number of points were made in the discussion of the land ice flights, which Lora accepted to take into account in the next revision.

Meeting was adjourned around noon.

Action items:

* Complete review of OIB mid term review comments, circulate and send to project (Eric R.)
* CRESIS to complete analysis of glacier data over the next 6 months and report to SDT (Prasad).
* Revision of land ice priorities for land ice (Lora).
* Revision and more final draft of land ice missions (John).