Minutes
Ice Core Working Group 2015 Virtual Meeting
May 21, 2015

Attendees:
***IDPO-ICWG**: Karl Kreutz (Chair, U. Maine), Christine Foreman (MSU), T.J. Fudge (UW), Andrei Kurbatov (U. Maine), Erich Osterberg (Dartmouth), Eric Steig (UW), Jeff Severinghaus (SIO)*
***IDPO:** Mary Albert (Dartmouth), Blaise Stephanus (Dartmouth), Mark Twickler (UNH), Joe Souney (UNH)*
***IDDO** (U. Wisconsin): Krissy Slawny*
***NSF**: Paul Cutler, Mike Jackson, Hedy Edmonds, Bill Wiseman*

- **Welcome & Review Agenda (Karl)**
  - Karl welcomed everyone to the virtual meeting. Because participants span time zones from Scotland to California, not everyone will be able to remain for the full meeting, so after the NSF update, discussion items will be first on the agenda, followed by presentations in the second half of the meeting. Vas Petrenko and Sarah Aciego are both in the field and cannot call in.

- **NSF Update (Paul Cutler & Hedy Edmonds)**
  - Paul thanked ICWG members for serving on the committee, and noted that NSF appreciates scientists' efforts on behalf of the science community.
  - The NSF budget is uncertain at present, but some are concerned that the new budget may be flat at best. Program Managers are working hard to not overcommit their programs.
  - It is currently reviewer and panel season; NSF staff appreciate community members being willing to review proposals.
  - Update on staffing: Lisa Clough will be the new Section Head in Ocean Sciences; Mike Jackson is the Program Manager for Antarctic Research Facilities, including IDPO-IDDO; Julie Palais will return to Antarctic Glaciology in PLR at the end of June.
  - Hedy Edmonds noted that the Arctic budget has a rather discouraging funding horizon.
  - Hedy said that there are rotator positions available for Arctic program managers, and she urged scientists to consider serving as a rotator, and also pass the word to the community.

- **Progress and planning on new site selection for ice coring sites (Karl led a discussion)**
  - Site selection activities have been proposed for Hercules Dome. The ice depth is approximately 2800m, the last interglacial is estimated to be about 300 m above the bed in a 100m packet.
  - Allen Hills has an ice depth of 600-800 m, accessible with the Intermediate Depth Drill with a drilling fluid. It had up to 5 cm accumulation rate in the past.
  - RAID construction is progressing and there will be a panel at NSF to determine whether to proceed to the next phase. The test in the ice well went well, and hopefully there will be an Antarctic field test in 2016-17. The first science season is envisioned to be 2017-18 at a little dome near South Pole.

- **Ice coring new technology needs (Karl led discussion)**
    - Andrei indicated that cleaner version of an ice coring drill that could go to 900 m is needed. Erich said that a cleaner version would be a good idea for the Badger-Eclipse drill as well.
    - T.J. reported that coastal dome sites in Antarctica could use a drill in the 900 m depth range.
    - IDPO should work on Science Requirements for a drill in the approximately 900 m depth range that would be more agile and with a smaller logistical footprint than the Intermediate Depth Drill.
    - Joe noted that there are papers by Simon Sheldon and by Stef Bo Hansen that talk about less logistically intensive drills for intermediate depths.

- **"Shovel Ready" projects that have not yet been proposed to NSF (Karl led a discussion)**
    - Andrei identified the need for the following needs for ice storage at NICL:
        - Storing small samples of ice (a total of 10-15 ISC boxes) in conditions colder than -80 C for studies involving gases and biology.
        - Remove metal parts from the facility to make it cleaner for trace elements
        - Need ice core boxes suitable for warmer locations
    - Christine identified the need for a biologically clean room at NICL
    - Jeff supported the idea of installing a small -80 C freezer, possibly inside one of the existing NICL freezers. Modular panels would enable portability.
    - Jeff indicated that there may be a need for a second drill for intermediate depths, so that one could be in Antarctica and one in the Arctic.
    - The group discussed innovations in ice core storage now in place in other nations. ICWG will provide recommendations to NICL for consideration in the NICL Strategic Plan. .

- **Discussion of updates to the IDPO Long Range Science Plan**
    - The first season for Oldest Ice might be 2024 or later.
    - The timeline for Herc Dome is ambitious but ok as it is.
    - The North Taylor Dome site would be a Badger-Eclipse drill site, not Intermediate Depth Drill
    - Qaanaaq, Greenland definitely needs the Intermediate Depth Drill
    - Drilling to investigate basal ice is very low priority compared to all other projects
    - South Dome, Greenland is a possible new site to look at history of Greenland warming; the depth would be in the ballpark of 1800 m; the Intermediate Depth Drill could be used.
    - Attempting to get a 400 m dry core with the 4-inch drill should be kept at priority 3 or lower. Dry coring usually yields poor results below about 150 m, but not always. Dry drilling is still a research problem.

- **Membership Rotation and new Chair (Karl led group discussion)**
    - After many years of service, Karl will be rotating off as ICWG Chair. One of the current members should be the new Chair, and the ICWG will need a new regular member.

- The group decided that new members should be scientists whose research involves ice cores directly, but the new member does not need to have the same specialty (chemistry, gases, etc) as the member who is rotating off.
- Karl will draft a memo to the community asking for a new ICWG member, and Mary will have it sent out via listserves.
- After discussion of possible ways of electing a new Chair, the group decided that they would likely follow the same process that the SAB uses. This will be done by email, sometime in late summer after the Arctic field season has ended.
- Erich suggested, and others agreed, that ICWG emails should have "ICWG Action:" in the subject line, to draw attention to it out of the bulk of emails that people receive.

- **ICWG Terms of Reference (Karl led the discussion)**
  - The ToR are in the dropbox; members should edit as they see fit. Any updates will be discussed and a final version approved by email, probably near the end of summer when people are back from the field.

- **Next ICWG meeting (Karl led the discussion)**
  - The group urged that the next meeting be in-person, to facilitate extended discussion and spontaneous interaction & ideas. In order to recommend items on the Long Range Science Plan to the SAB, it should be before the SAB meeting (which will be sometime between mid-February and the end of March). Having it in conjunction with, but not during, the AGU meeting would work. After the AGU is too close to Christmas for most. Mary will poll ICWG members at the end of summer to see how many are going to the AGU, and also will look into a place for a 1-day meeting on the Sunday before the AGU.
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- **IDPO Update (Mary Albert)**
  - Mary Albert gave a presentation on current activities in IDPO

- **IDDO Update (Krissy Slawny)**
  - Krissy gave a presentation on current efforts in IDDO field projects and drill development projects
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- **NICL Update (Mark Twickler)**
  - Mark gave a presentation on current activities in NICL

- **Science Results – brief updates**
  - Highlights of ice coring projects were presented for SPICE, Herc Dome, NW Greenland, and Denali projects. The presentations will be made available via the IPDO-ICWG site.

- Summary and Action Items – Karl
  - Follow-up items include:
    - Mary will involve scientists in forming IDPO Science Requirements for an ice coring drill for drilling in the 900 m depths; this will likely start in late summer
    - Andrei will start a document for ICWG recommendations for NICL strategic planning, and Karl will send it out to the ICWG for further input & edits

- Karl will draft a memo to the community asking for a new ICWG member, and Mary will have it sent out via listserves.
- ICWG election of a new Chair will occur via email in late summer
- ICWG members should look at the Terms of Reference and add information as desired
- ICWG will have an in-person meeting probably on the Sunday before the AGU. Mary will follow up on planning in late summer