March 21 ICWG meeting, Arlington, VA:
The agenda for this meeting was developed at the end of the March 20th meeting as areas of continued discussions were identified and participants schedules taken into . The meeting started with Jim White presenting a plaque to Kendrick Taylor, from the Siple Dome investigators, in recognition for a job well done on the Siple Dome project. Kendrick's leadership and persistence in the Siple Dome ice core project was a monumental achievement.

Ice Core Drilling Services (ICDS) Update
Don Lebar, ICDS Project Manager for deep drill development, presented the scheduled planning for the new deep ice core drill development. Don described the overall ICDS development process starting with the conceptual development then into the detailed design, construction, testing and development schedule. The ICDS plan was using the Eustis report on the 5.2" drill review which stated that it was better to build a new drill than to refurbish the 5.2" drill. After the ICDS presentation a lively discussion took place. Highlights of these discussion were:

NSF Perspectives:
NSF plans to have continuous involvement in the drill design
NSF has created a team to manage ICDS: Art Brown - Leader, Julie Palais - Scientific objectives, Brian Stone - Logistical support
The contract to ICDS has rigorous requirements - not "best effort" performance
Need to take advantage of European expertise
ICDS should hold a meeting with the Science team and European drillers

Scientific community feedback
European comments: Timeline for drill development and core from Inland WAIS would not allow for scientific findings until at least 2009. The community can not wait this long for these results. Although the development of a new generation deep drill technology would be good, there are existing drills which plans are available for, that could be used to develop US capability in deep drilling in a faster timeline.

US Community comments: Lots of discussions. Major points listed below:
- Don't need to re-invent the "wheel"
- Take advantage of European technology
- Scientific requirements must be defined and prioritized before development
- Team of scientist to be defined to collect science community requirements and pass on to ICDS. Ken Taylor was chosen to lead this group.
- Need to accelerate the process to get drill operating faster
- US Community has minimal drilling expertise

Antarctic Logistics:
As we have known for the past couple years the availability of C-130s for deep field support will be very limited in the next couple years. NSF is working on ways to free up more air support for science. The current plan is to develop an overland traverse capability and use this to support the South Pole Station. If this is achieved it will free up C-130 missions which would be available to the science community. The planing now is to have the South Pole traverse capability during the 2004-2005 season. International collaborations could also help the US logistical situation.

March 20th Workshop Report:
Discussions were held to discuss the Workshop report from the march 20th meeting. The draft outline is being produced for the " U.S. Ice Core Science: Recommendations for the Future" report. This draft outline will be presented to the Polar Research Board by Buford Price and Richard Alley. The draft outline will be circulated to the community once it has been reviewed by the ICWG.
An article for Eos about the meeting and the future of US Ice Core science was discussed.

Funding Opportunities:
As we do each year, we want to make people aware of funding opportunities in the NSF's Crosscutting/Interdisciplinary Programs. These programs can be found on the NSF webpage at: http://www.nsf.gov/home/crssprgm/

Some highlights:
Biocomplexity in the Environment (BE): Although this year's deadline was in January it is highly suggested that investigators make themselves familiar with this program. Funds are usually available for instrument development and do not require cost sharing.
http://www.nsf.gov/home/crssprgm/be/ere_be-competitions.html

Major Research Instrumentation Program (MRI)- this program is designed to improve the condition of scientific and engineering equipment for research and research training in our Nation's academic institutions. Cost sharing is required in this program but for instrument development requirements are less. Cost sharing can also be part of "international help".
http://www.nsf.gov/od/oia/programs/mri/start.htm

Research Experiences for Undergraduates (REU) - This program features two flexible mechanisms for support of student research: REU Supplements and REU Sites. REU Supplements may be included in proposals for new or renewal NSF grants or cooperative agreements or as supplements to ongoing NSF-funded projects. REU Sites are based on independent proposals to initiate and conduct undergraduate research participation projects for a number of students. Get undergraduates involved in your research!
http://www.nsf.gov/home/crssprgm/reu/start.htm

NASA opportunity:
Astrobiology Science and Technology Instrument Development (ASTID) this program requests proposals to develop instrumentation capabilities that will help meet Astrobiology science requirements on future space flight missions, as well as unique Astrobiology science objectives on Earth. This program has great connections with Antarctic Lake Exploration.
http://research.hq.nasa.gov/code_s/nra/current/nra-02-oss-01/appendA2.html#A.2.13

Much of the rest of this meeting involved the discussions relating to the March 20 meeting. That information was added to the March 20th review previously sent out.

March 22 ICWG meeting, Arlington, VA
The setup for this years ICWG meeting was a little different than in the past due to the March 20th "Future of US Ice Core Science" Workshop. The typical fashion of the ICWG meeting is to discuss items relating directly to NSF, NICL, NICL-SMO and the ICWG on the first day. Since we invited numerous speakers and guest to the March 20th meeting we held off on these discussions until the last day of the meetings.

NSF Updates:
Funds used to support NICL and NICL-SMO come from several program areas including Antarctic Glaciology, Arctic Natural Sciences, Earth System History, Antarctic Biology and Arctic System Science.

Polar Programs Budget Request:
Polar Programs is requesting a 2.6% increase in the FY 2003 budget request. To learn more about the budget request to Congress visit:
http://www.nsf.gov/bfa/bud/fy2003/nar_opp.htm

Ice Core Drilling Services (ICDS) Contract
- Awarded June, 2000
- 5 year award, review after 3 years
- Contract is for ~2 million per year which is broken up as:
  - ~30% management and administration
  - ~20% current field activities
  - ~50% other tasking
- Contract provides support for worldwide ice core drilling (Arctic, Antarctic, high altitude).
- Money is available for drill development.
- Decisions on deep drill development will be made 3 groups and NSF:
  - ICDS
    - Don Lebar - Project Manager
    - Bill Mason - Lead Drill Engineer
    - Bruce Koci - part time
    - TBD - ICDS conducting search for another engineer
    - Consultants - Bill Eustis, Mark Wumkes
  - Scientific Direction Team - Headed by Kendrick Taylor
  - Outside Consultants - TBD

ICDS will hold a workshop to include the above individuals to develop a tasking statement for deep drill development.

ICWG Action Items in reference to ICDS:
* ICWG nominated Ken Taylor to serve as the leader of the Deep Drill Scientific Direction Team. Ken will work with the community to add additional members and solicit drill requirements.
* ICWG recommends that the US requires it's own drilling capabilities.

NICL Updates

Todd Hinkley (thinkley@usgs.gov) is the Acting Technical Director of NICL. Joan Fitzpatrick is now working for the USGS Regional Director's Office. We would like to extend our sincere thanks to Joan for her leadership at NICL over the past many years and wish her the best in the new position.

Activities

NICL had 101 days in which outside investigators (clients) were at NICL. The main summer activity was the USITASE CPL. Typically, February through July are the busiest times at NICL.

Incoming shipments were 2.2 tons (Antarctic retrograde)

Outgoing shipments were 6.3 tons (includes shipping containers and freezer packs)

Public Relations/Outreach

NICL averages about 2 public relations (tours, video shoots, etc) events per week

1,450 people (not including clients) visited NICL last year for tours, video shoots, etc. May and June are typically the most visited times at NICL accounting for about 30% of the total visitors.

Physical Plant

Only a couple of minor sensor failures and no major problems.

Inventory and Database:

NICL has rebuilt the database to reflect what is in the archive rather that what has been taken, as was previously recorded. The database is 98% complete and near term goal to make this database available on the web. NICL-SMO has access to the database and uses it in selection of core allocations.

NICL has installed touch screen computers in the freezers that are directly linked to the database. This allows for direct input to the database when samples are cut in the freezer.

NICL is in the process of re-inventorying the archive. The Vostok cores have been completed and GISP2 is about half done. When a core is pulled for sampling, it is completely cataloged and entered into the database.

NICL would like to establish guidelines for data content and format for any cores collected that will be archived at NICL.

New Directions for NICL

Field Core Handling

NICL would like to take on the responsibility for in field core logging and handling for intermediate and deep ice core programs. The goal of this would be to take the responsibility to assure continuity in physical care of core and collection of information about core. NICL would be able train the field loggers at the facility before going into the field. During the training process, cores from the archive could be used for training, helping with the inventory of the cores at NICL. NICL staff would be in the field to oversee the core handling procedure. This could also give more stable working conditions for core handlers as they would have the experience to assist in the summer CPL operations. This will be addressed in the next ice core project.

Digital Imaging of Ice Cores:

NICL is working on high quality digital imaging of ice cores. Progress has been made but some technical problems exist such as speed for imaging, illumination enhancements and storage capability.

Core Storage

NICL is currently at 90% capacity. There is space available for 1250 meters of core. A mobile racking system would increase capacity by ~11,000 additional meters of ice core. The cost for the mobile racking system is $490,000. There are some technical issues that need to be worked out if the mobile rack system was to be installed including floor loading and lighting.

ICWG Action Items in reference to NICL:

The ICWG recognizes the storage issue at NICL. Although some space can be made available by putting additional cores on the deaccession list, this will not solve the long term storage issue. It was reported that sometimes NSF funds remain at the end of the fiscal year. It is the recommendations of the ICWG that if funds remain, some of the money be transferred to NICL and held towards the probably purchase of the new racking system in the future.

NICL-SMO Update

A proposal was submitted by Mark Twickler for the continuation of the NICL-SMO at the University of New Hampshire in June of 2001. The proposal was funded in January, 2002 for a five year period.

Sample Request:

NICL-SMO received 19 sample request since the last ICWG meeting in April, 2001. All requests were approved. The GISP2 and Vostok cores continue to be the most requested cores, accounting for about half of the request.

The Siple Dome - Science Coordination Office is in the process of turning over the priority status of the core to NICL and NICL-SMO. NICL will start maintaining the core database and request from samples from Siple Dome will be allocated through the NICL-SMO with assistance from Ken Taylor.

In accordance with NSF-OPP data guidelines, samples from the NICL archive will only be available to investigators who abide by the guidelines. To learn more about the NSF-OPP data guidelines, please visit: http://www.nsf.gov/pubs/1999/opp991/opp991.txt

Outreach Activities

Outreach activities include numerous presentations at schools, environmental centers, teacher workshops, and visitors at UNH. NICL-SMO also conducts interviews and supplies video and digital images to a wide variety of venues including projects for the National Science Teachers Association, the Department of Education, museums and newspapers. In addition to these NICL-SMO played a role in the "Jason" project giving several lectures to school groups and answers numerous email request on ice cores, climate change and glaciology.

"In Depth" Newsletter

NICL-SMO is working on a newsletter that will be published twice a year. The first issue will be published before June. The newsletter will be made available on the web. We will be asking the community for articles, project updates, new directions in the sciences so let us know if you have something you would like to share.

ICWG

The formation of the ICWG was the result of a recommendation from the NAS report "Recommendations for a US Ice Coring Program" in 1986. The ICWG was formed shortly after and has continued since. The primary role of the ICWG, from the document, are as follows:

- The activities of ICWG must provide the scientific direction and the driving force to execute ICAP (Ice Core and Analysis Program) and include the following specific tasks:
  - --Develop a global strategy and coring plans for the Arctic, Antarctic, and low-latitude geographical regions.
  - --Plan for drill development.
  - --Recommend an appropriate balance between: capabilities in shallow, intermediate and deep drilling.
  - --Plan for development of advanced geochemical techniques.
  - --Represent U.S. scientific interests in international planning.
  - --Interface with other disciplines.

These are the roles that the ICWG perform. As a result of the March 20 workshop, the ICWG will produce a "Recommendations" report to NSF.

Outreach Position:

Several years ago the Group added an Outreach position to the ICWG. This term was served by Stephanie Shipp. As most of you know, Stephanie has a lot of experience in Outreach, primarily through her role in the TEA project. Stephanie added a lot to our ICWG meetings in showing us how to better communicate with the non-scientific world. Although Stephanie was scheduled to serve another year on the ICWG she had to end her term due to other commitments. The ICWG discussed the relationship of the Outreach position to the ICWG. It was decided that the ICWG could use additional scientific representation in the Group. This decision to replace the Outreach position with a scientific representative is, by no means, suggesting that the ICWG does not believe Outreach is important. Public dissemination of research is no longer an option, but is now a requirement. We all should be informing the public (including schools) about the results and the societal importance of our research.

A call for nominations for the ICWG was put out last Fall to replace Pierre Biscaye and Stephanie Shipp, who were stepping down from their positions. Pierre's previous "discipline" was the Particle Rep and as mentioned above, Stephanie was the Outreach Rep. We had opened the Particle position to any discipline and had several nominees. We did not have any Outreach nominees by the deadline so the ICWG voted on only the particle position vacancy and decided to discuss the Outreach position at this meeting. The voting resulted in a tie between 2 of the

nominees. After discussions about the Outreach position it was decided that the ICWG could use the expertise of both of theses individuals.

New Members to the ICWG:
We have elected 2 new members to the ICWG. Kendrick Taylor from the Desert Research Institute and Kurt Cuffey from the University of California-Berkley were added to the ICWG. Buford Price and John Priscu were voted on to the ICWG in the Fall and were also attending their first meeting.

Current members of the ICWG:

"Discipline"	Representative	Alternate
Chair	*Ed Brook	TBD
Atmospheric Chemistry	*Joe McConnell	TBD
Biological	John Priscu	Scott Rogers
Gases	Jeff Severinghaus	TBD
Geophysics	*Gary Clow	TBD
Glaciology	*Richard Alley	TBD
Major Chemistry	*Jihong Cole-Dai	TBD
Electrical/ Technical	Kendrick Taylor	TBD
Modeling	Kurt Cuffey	TBD
Physical Properties	Buford Price	Larry Wilen
Stable Isotopes	Bruce Vaughn	TBD

Members with an asterisk in front of their names are serving the last year of their terms. We will be looking to identify alternates for these members in the next 6 months, who will be begin serving on the ICWG in the Spring of 2003.

The next meeting of the ICWG is tentatively scheduled to take place at NICL in March or April of 2003