

Future Science Opportunities in Antarctica and the Southern Ocean

Update to
OPP OAC
May 18, 2011
David
Bromwich



Statement of Task (1)

- Utilize existing information
 - Work of other organizations (e.g., ICSU, SCAR, etc.)
 - Recent scientific achievements in Antarctica and the Southern Ocean (e.g., IPY)
 - Previous workshops and reports (e.g., from NSF and NRC)
 - Strategic plans of involved federal agencies

- Identify changes to anticipated types and scope of scientific programs
 - Focus on U.S. presence in Antarctica and the Southern Ocean
 - Over the next two decades

- Examine opportunities for international Antarctic scientific collaborations
 - Based on recent U.S. experiences from IPY and other anticipated activities

- Report any new emerging technologies
 - Should they be found while reviewing scientific achievements
 - Those that enhance U.S. ability to realize important future opportunities or the application of new technologies that enable the collection of scientific data in more effective or efficient ways

Statement of Task (2)

- Comment on the broad logistical capabilities and technologies that, from a science delivery perspective, would need to be improved or require major changes
 - In order to enable anticipated types and scope of future U.S. scientific programs
 - With intent of informing the concurrent FACA Blue Ribbon Panel that will examine and have a central focus on logistical operations in Antarctica
- Committee is not expected to set priorities among scientific research areas
 - Nor is the committee to discuss budgetary issues
- Primary goals
 - To identify important future research directions in Antarctic
 - To inform the companion BRP review looking at logistical planning and operations

Committee Membership

- **Dr. Warren M. Zapol, Chair** (IOM)
 - Harvard Medical School
- **Dr. Robin E. Bell**
 - Lamont-Doherty Earth Observatory
- **Dr. David H. Bromwich**
 - Ohio State University
- **Dr. Thomas F. Budinger** (NAE/IOM)
 - Lawrence Berkeley National Laboratory
- **Dr. John E. Carlstrom** (NAS)
 - University of Chicago
- **Dr. Rita R. Colwell** (NAS)
 - University of Maryland
- **Dr. Sarah B. Das**
 - Woods Hole Oceanographic Institution
- **Dr. Hugh W. Ducklow**
 - Marine Biological Laboratory
- **Dr. Peter Huybers**
 - Harvard University
- **Dr. John L. King**
 - University of Michigan
- **Dr. Ramon E. Lopez**
 - University of Texas, Arlington
- **Dr. Olav Orheim**
 - Research Council of Norway
- **Dr. Stanley B. Prusiner** (NAS/IOM)
 - University of California, San Francisco
- **Dr. Marilyn Raphael**
 - University of California, Los Angeles
- **Dr. Peter Schlosser**
 - Lamont-Doherty Earth Observatory
- **Dr. Lynne D. Talley**
 - Scripps Institution of Oceanography
- **Dr. Diana H. Wall**
 - Colorado State University

Process Thus Far

■ Fall 2010

- Formed balanced committee
 - More than 200 nominations for committee members
 - Variety of scientific expertise; 1/3 are “outsiders”

■ January

- Initial teleconference – January 4
 - Discussed report scope with NSF
- Visit to Antarctica – January 15-22
 - NSF organized; visits with scientists in field
 - 5 committee members and 2 NRC staff

■ February – April

- 1st Committee meeting – February 1-2
 - Heard from sponsors and agencies
- 2nd Committee meeting – February 28-March 2
 - Presentations on key science issues
 - Continued drafting report
- 3rd Committee meeting – April 19-21
 - Continued drafting report



Sources of Information

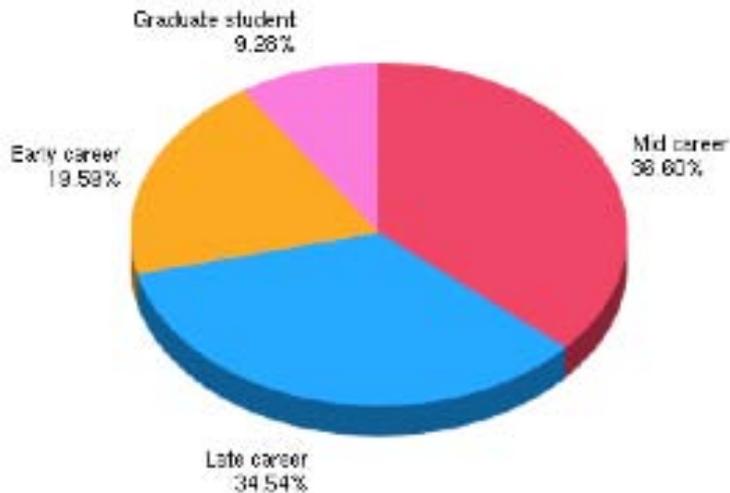
- Library of approximately 140 background articles, reports, etc.
- Briefings from scientific experts and agency representatives at committee meetings
 - Agency perspectives
 - Various scientific issues
- Phone interviews and in-person visits
 - Individual Committee members talking to leading scientists and agency representatives

Community Survey

- Gathered metadata on respondents
- Survey questions
 - Asked to identify important scientific research questions for next 2 decades
 - Asked to identify emerging technologies
 - Asked about workforce issues – is there a next generation?
- Distributed to >1000 recipients
 - Antarctic/Southern Ocean science community
 - Broader Polar science community
- More than 200 responses
 - Broad cross-section of experience levels and disciplines
- Not a systematic survey
 - Should not be used to officially speak on behalf of the community
 - Lessons learned will serve as input to report

Community Survey Respondents (1)

At what stage are you in your career?



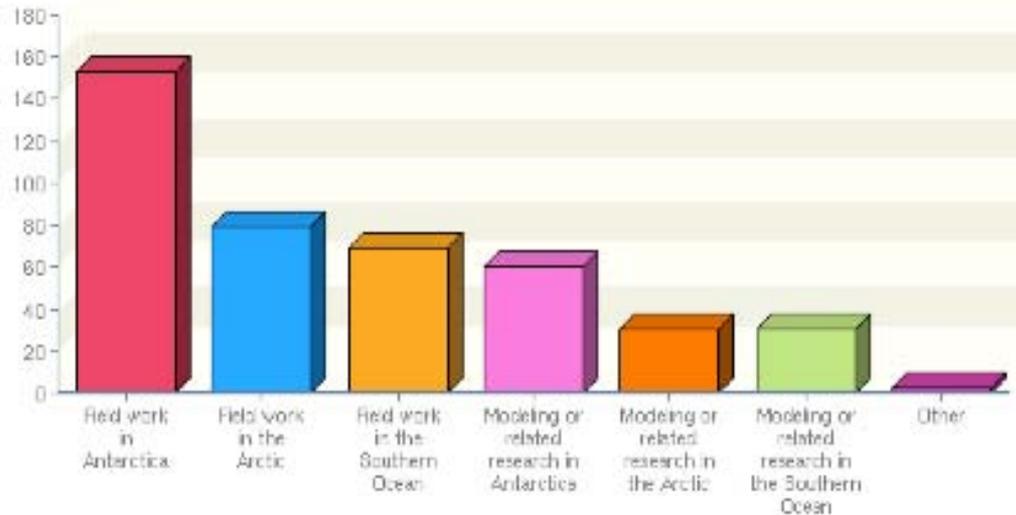
Are you a principal investigator?



Respondents cover various stages of career

Community Survey Respondents (2)

Where have you conducted research?



Respondents cover breadth of research experience in field and modeling

Item	Count	Percent %
Field work in Antarctica	153	78.46%
Field work in the Arctic	79	40.51%
Field work in the Southern Ocean	69	35.38%
Modeling or related research in Antarctica	60	30.77%
Modeling or related research in the Arctic	31	15.90%
Modeling or related research in the Southern Ocean	31	15.90%
None of the above	3	1.54%

Community Survey Respondents (3)

What would you describe as your major scientific discipline?

- Responses were grouped into 8 categories:

Biology and ecosystems	36%
Oceans and acidification	16%
Geology	15%
Astronomy and space physics	12%
Ice and sea level rise	10%
Atmosphere and climate	6%
Technology	3%
Other (incl. policy, psychology, art)	2%

**Respondents
cover breadth of
scientific
disciplines**

Path Forward

■ Plans

- Report in review in June
 - Report is reviewed by separate panel of experts
 - All reviewer comments must be addressed
- Report release in July
 - Briefings: NSF, OSTP/OMB, Other agencies?, Congress?
- Interaction with NSF Blue Ribbon Panel
 - Exact timing to be determined

