

# OPP Advisory Committee

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## Draft minutes

XLI meeting of the Advisory Committee for the Office of Polar Programs, National Science Foundation

5-6 November 2012 • Arlington, Virginia

Stafford I, Room 1235

### Members present:

**Cecilia Bitz (Chair)**, Atmospheric Science, University of Washington  
**Paul Bierman**, University of Vermont  
**Mary-Elena Carr**, Columbia Climate Center, Columbia University  
**Christina Cheng**, University of Illinois  
**David J. Closs**, Supply Chain Management, Michigan State University  
**Mark Fahnstock**, University of Alaska Fairbanks  
**Linda Green**, University of Arizona  
**Linda Hayden**, Elizabeth City State University  
**Orville Huntington**, City of Huslia, Alaska  
**Jeanne Kosch**, Occupational Safety, Health, and Environment, Crofton, Maryland  
**Chris Martin**, Oberlin College  
**Dennis McGillicuddy**, Woods Hole Oceanographic Institution  
**Jordan G. Powers**, Mesoscale and Microscale Meteorology, NCAR

### Office of Polar Programs (OPP) staff present:

The majority of OPP staff attended all or part of the meeting.

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## Day One

### Introduction

The committee met on November 5-6, 2012, in Room 1235 at the National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230. The committee provides guidance, recommendations, and oversight on how OPP can best serve science, promote education, ensure workforce diversity, and set priorities. The meeting, chartered under the Federal Advisory Committee Act, was open to the public. Members represent a broad range of polar science and logistics domains, geographical locations, type of institution as well as other elements of diversity. The Advisory Committee welcomes communications from the research community regarding NSF's polar programs.

Dr. Cecilia Bitz, Chair, opened the meeting and welcomed all the members and OPP staff. She noted that the committee can help to make the transition to a realigned Geosciences (GEO) and OPP smooth and productive. Polar Programs has unique strengths in areas such as interdisciplinary research and the involvement of indigenous peoples as collaborators. At the same time, there are commonalities with GEO.

Sue LaFratta-Decker, Senior Advisor explained that the meeting was being held in compliance with the Federal Advisory Committee Act and confirmed that all committee members were free of any conflicts of interest and could participate in all aspects of the meeting.

Committee members introduced themselves and shared their thoughts on key priorities for the meeting. Themes included the OPP-GEO realignment, the balance between science and logistics, and broadening participation of underrepresented groups.

### **Updates from NSF**

Dr. Marge Cavanaugh, Acting Assistant Director for Geosciences, gave a status report on the OPP-GEO realignment as follows:

GEO and OPP senior leadership agreed on two guiding principles:

- (1) Do no harm – both programs are strong; no need to rush.
- (2) Optimize activities where possible, and look for ways to do things better.

With regard to the Advisory Committees, the GEO AC (Dr. Louise Kellogg, chair) met just a few weeks ago, and Kelly Falkner made a presentation on OPP activities. Dr. Kellogg will participate in this OAC meeting. Moving forward, the OPP AC may become a subcommittee of the GEO AC, as is done now for the other GEO divisions. However, this arrangement will not affect the terms of the present OAC members. OPP's AC may decide to meet separately next spring; the first merged meeting could be next fall. Is this workable from the OPP AC perspective? Subcommittee meetings can take place in between spring/fall meetings of the entire ACs. The GEO AC is particularly excited about the merger as it will open new opportunities for broadening participation and social science activities that are current strengths of OPP. Other aspects of common ground are systems science and an interest in the long-term health of the planet.

Questions from OPP AC members:

- How will the COV process be affected by the merger? Dr. Cavanaugh stated that the process is quite general, and GEO runs 3-4 COVs per year (different divisions, sections, programs).
- How will the OPP AC conduct its business in 3-hour breakouts as a subcommittee? Dr. Cavanaugh stated that pre- and post- meetings could be scheduled, as well as intercessional activities.
- How can we make sure OPP social science does not get diluted in the merger? Dr. Cavanaugh sees that activity gaining strength from the merger, insofar as GEO has a strong interest in that area.

### **OPP Acting Director's Report**

Dr. Kelly Falkner, Acting Office Head of Polar Programs, summarized new developments since the last meeting.

First, the Report of the U.S. Antarctic Program Blue Ribbon Panel, *More and Better Science in Antarctica through Increased Logistical Effectiveness*, has been completed. NSF charged an internal team to respond to the Panel's recommendations. The team has been working to produce an initial report in time for the National Science Board meeting in early December.

Second, the Interagency Arctic Research Policy Committee (IARPC) completed a draft five-year research plan and received extensive public comment. The most recent draft (dated September 6) is posted on the NSF OPP web page. The report identifies those areas best addressed by interagency cooperation.

Dr. Falkner showed a brief video of the launch of the R/V *Sikuliaq* that took place on October 13. This is a light icebreaker vessel designed to serve primarily Alaska and Bering Sea.

With respect to the budget, NSF is operating on a continuing resolution, and the FY 2013 budget request is similar in scope to the FY 2012 request.

OPP has had a few staffing changes, as follows:

- Dr. Celeste Carter, Program Officer in Education and Human Resources, Division of Undergraduate Education, will be serving as a part-time liaison with OPP with responsibilities in the integration of research and education.
- Mr. Peter West, Program Officer, continues to manage the Antarctic Artists & Writers Program and serve as a liaison with the Office of Legislative and Public Affairs.
- Ms. Lynn Reid is the new Albert Einstein Distinguished Educator Program Fellow in OPP. She teaches mathematics in Grades 9-12 at the Maggie L. Walker Governor's School for Government and International Studies in Richmond, Virginia. Her interest is in using polar data sets for classroom learning.
- Dr. Nature McGinn, American Association for the Advancement of Science (AAAS) Policy Fellow, is a marine biologist on assignment with the Office of Polar Programs, U.S. Antarctic Program. At the University of California Davis Bodega Marine Laboratory, Nature studied interactions between the multidrug resistance cellular defense system and pharmaceutical pollutants in the early life history stages of echinoderms and echiuroid worms. She followed her Ph.D. with a postdoc focusing on the reproductive biology of the endangered white abalone. In Polar Programs, her focus is on identifying opportunities for international collaboration and cooperation in the Antarctic Peninsula.
- Mr. George Blaisdell is now the Chief Program Manager for Antarctic Infrastructure and Logistics. Congratulations to Mr. Blaisdell on being selected for this important position.

#### **Session with Drs. Cora Marrett, Deputy Director, and Subra Suresh, Director, NSF**

Drs. Marrett and Suresh joined the session to answer committee members' questions about realignment and other matters.

Dr. Suresh emphasized that Polar Programs plays a very important leadership role and that we at NSF need to protect but also improve upon the science and infrastructure. Dr. Suresh is committed broadly to strengthening infrastructure and looking for opportunities in the science. He sees both intellectual and scientific drivers for the realignments. First, there are many interdisciplinary and infrastructure activities throughout the Foundation, not just in the offices attached to the Director's office. Science is moving at an amazing pace, while organizational structures remain static. It is not necessary or efficient to create a new office every time there is an interdisciplinary or infrastructure-intensive activity. The goal is to find ways to foster science nimbly and strengthen both science and infrastructure. For the principal investigator (PI), nothing will change in the proposal and award process.

The committee members raised questions on broadening participation, climate change, extractive resource development on indigenous lands, and ethical dimensions of research.

Dr. Suresh emphasized that NSF's mission is to fund basic research, and there are some programs to ensure that the product of research gets a chance in the marketplace (e.g., Small Business Innovation Research Program, Partnerships for Innovation, Engineering Research Centers, and Innovation Corps). These programs are a small part of the overall NSF activity, but nonetheless important. NSF also wants to be sensitive to indigenous populations and ethical practices in research.

Both Dr. Marrett and Dr. Suresh appreciate committee perspectives, and encouraged committee members to share their perspectives with the community as well as other advisory committees.

#### **Grand Challenges in Communicating Polar Science**

Dr. Paul Bierman saw great value in communicating science clearly and told about his experience of including a journalist on his project in Greenland. Dr. Carr led a discussion of the vision statement layout and committee members made helpful suggestions on the photos and text.

Mr. Peter West said that he runs a twitter feed for OPP, with about 2800 followers, up from 1900 in January 2012. He can link to photos, videos and other materials and is interested in receiving research news from the community. NSF has ways of disseminating material, including through [www.science360.gov](http://www.science360.gov). Radio and podcasts are now available.

Committee members suggested that OPP's web page should be user friendly and include the vision statement as a living document as well as other polar materials, such as a video and photo library. Alternatively, existing sites such as science360.gov could perhaps be leveraged.

Committee members and OPP staff exchanged the following ideas about communicating science:

- Include writers or journalism students in field projects.
- Participate in an effort such as famelab.org, learning how to explain a concept in three minutes.
- Participate in online courses, such as those on coursera.org.

### **Role of Advisory Committee and OPP-GEO Realignment**

Dr. Louise Kellogg joined by WebEx. She gave an introduction to the Geosciences Directorate and the Directorate's Advisory Committee that she chairs. She said that the GEO Advisory Committee had three subcommittees for the three divisions of Geosciences, but also four topical subcommittees that cross the entire Directorate: facilities, diversity and education, cyberinfrastructure, and international. Generally two of the four topics are raised at each Advisory Committee meeting. Membership on the topical subcommittees is self-identified. For the divisional subcommittees, every person on the Advisory Committee is also a member of one divisional subcommittee.

OPP Advisory Committee members engaged in a thoughtful exchange with Dr. Kellogg and expressed the concern that OPP researchers come from multiple areas of expertise, including social sciences, biology, and astronomy and astrophysics. There is also an emphasis on communication and collaboration with northern residents. Adequate representation on an advisory body, such as a polar subcommittee, may require a larger-than-usual membership.

Dr. Kellogg acknowledged concerns and indicated that the Geosciences Advisory Committee would need to rely on polar expertise, including those fields and experiences that are outside of the geosciences. While the divisional subcommittees have gone through a strategic planning activity in April 2012, Dr. Kellogg is open to new efforts that would incorporate the needs of Polar Programs.

### **Risk Management Approaches to Safety and Health**

Mr. Simon Stephenson started the discussion by explaining that the general NSF approach to safety and health of research teams is to place responsibility on the awardee organization. The Antarctic program has its own requirements, and medical screening is required in Greenland. The Arctic Sciences Division is looking at different approaches for the rest of the Arctic.

The committee members observed that conditions in the Arctic can be quite hazardous and require contingency planning. Some guidance from NSF or the logistics contractor is appreciated. However, Arctic environments have huge variation, and sometimes local people are the only ones who know the hazards of a given area. Providing a list of resources, services, and training may be the best thing to do. Institutions have a role to encourage their researchers to use best practices and pay attention to risk management.

Antarctic Infrastructure and Logistics staff pointed out that the more you make the risks invisible to people, the less aware they are. There's a balance between putting the researcher in charge versus providing service. Sometimes it's the "lucky" researchers who have been in the field a long time but whose practices could use improvement who are most resistant to training.

Committee members discussed making a risk assessment package available online so that investigators could work through the risk assessment process, whether or not they needed contractor support for their projects. Another approach would be to mention online resources and information in the award letter.

Mr. Stephenson thanked the committee for a helpful discussion.

### **Arctic Sciences, Partnerships, and Committee of Visitors Review**

Mr. Stephenson began the discussion, noting that OPP is funding a National Research Council (NRC) study on emerging research questions in the Arctic. The Interagency Arctic Research Policy Committee (IARPC) is engaging in U.S. research planning, but the NRC study will take a more global perspective. In addition, the International Arctic Science Committee (IASC) has good U.S. representation. The question is: how are these international and interagency groups affecting you as researchers? If there is no effect, how can we make sure IARPC and IASC activities are helpful to you? Are you aware of what is being discussed in these groups?

Committee members raised related questions, such as how do we build international partnerships without an organized framework such as the International Polar Year? In general, a bilateral partnership on a small scale can work quite well, but on a multilateral, large scale, multiple reviews by different entities complicate the process. Small projects are straightforward as long as the NSF program officer knows his or her counterpart in the other country. Larger projects require more coordination. For a program such as ArcSEES, NSF program officers built funding partnerships before issuing a solicitation.

Committee members work with different collaborative groups, such as the Community Earth System Model (CESM) and the World Climate Research Program (WCRP).

Mr. Stephenson also asked the question, are the Arctic Sciences programmatic structures working well for the science? This might be a good COV question. The committee had an in-depth discussion about the relationships between the Arctic System Science (ARCSS) Program and the Arctic Observing Network (AON) Program. Are we tracking the right variables? Should the observation network be separate from the arctic system goals? Dr. Erica Key, Program Officer, described the AON focus areas and indicated that AON has taken a grassroots approach in its development. There will be an Arctic Observing Summit in late April – early May 2013 in Vancouver. In addition, there will be a phased release of arctichub.net to promote much-needed awareness of data holdings.

## **Day Two**

### **Antarctic Sciences, Infrastructure, and Logistics**

On the second day of the meeting, Dr. Scott Borg gave a briefing on staff changes in Antarctic Sciences, the recently released Dear Colleague Letter seeking interest from individuals who would like to be considered for rotating Program Officer positions, and the changes to the solicitation designed to streamline the evaluation of logistics and operational needs. He anticipates an April 15<sup>th</sup> due date for proposals and the use of supplementary documentation on "Logistics and Field Plan" rather than the Operational Requirements Worksheets. This is designed to improve pre-decisional communications; it builds on prior Committee of Visitors recommendations and aligns well with the Blue Ribbon Panel recommendations. To further community discussion on this and other topics, Antarctic Sciences will be holding a town hall at the American Geophysical Union annual meeting, Tuesday, December 4<sup>th</sup> at 12:30 pm.

Dr. Borg turned to a discussion of the 2011 National Research Council report, *Future Science Opportunities in Antarctica and the Southern Ocean*. Dr. Borg indicated that Polar Programs would be sponsoring workshops to address the report's recommendations on observing networks. He also noted that Dr. McGinn is working on characterizing various countries' science presence in the Peninsula area, and Dr. Jim Swift is developing a white paper on science community engagement. Dr. Borg asked the Advisory Committee for advice on the following topics:

- What role should the U.S. play in the Southern Ocean Observing System?
- Are there areas that need special emphasis or concept development work via workshops?
- What trade-offs should we consider when we examine short-term vs. long-term objectives?
- How can we leverage international partnerships?
- Where are the obstacles from the PI's perspective?

The Advisory Committee's discussion of these topics brought in the consideration of the Blue Ribbon Panel report on logistics. Work is underway to remediate infrastructure and accrue savings by reducing the number of support personnel and constraining fuel costs. This may require a short-term reduction of pressure on field programs while positioning the science community for observational capabilities, including advanced instrumentation. In response to committee members' questions, Dr. Borg indicated that Polar Programs is looking to partner with other directorates at NSF, including Engineering, to develop opportunities in sensors and other areas. In the meantime, the Antarctic Sciences solicitation will be modified to include more emphasis on the development and testing of instrumentation off ice. Several committee members noted that some of the planned advanced instrumentation would also be of use in the Arctic and suggested that such opportunities should apply to both north and south.

Other committee members pointed out the difficulties of putting field programs on hold. Dr. Borg replied that the field programs will not disappear and that Polar Programs will look for approaches to maintain a balance between off-ice and field projects. Mr. Brian Stone indicated that the approach is to incentivize innovation on the part of the contractor in order to reach the goal of "more and better science," as the Blue Ribbon report title indicates. There is a new planning process in place, with both the Antarctic science and infrastructure/logistics staff at the table with the contractor. This approach looks promising. In addition, Polar Programs is redesigning a survey instrument to measure the effectiveness of the science support. The committee discussed the importance of metrics to determine whether we are getting better science returns for the costs of logistics and infrastructure support.

### **Committee of Visitors (COV) Plans**

Dr. Korsmo presented a tentative plan for the upcoming Arctic and Antarctic COVs. Each will incorporate the logistics and infrastructure elements of the science into the COV. She explained the options for the portfolio analysis section of the COV template, indicating that some combination of standard and tailored questions would be fine. She provided the COV templates to the Committee. Dr. Powers volunteered to be the Advisory Committee liaison for the Antarctic COV, and Dr. Bitz promised to follow up with other members to choose an Arctic liaison. Suggestions for each COV Chair should be provided to Dr. Bitz. The ensuing discussion covered topics such as how best to sample the awards and declines, how much time is needed to complete the COV report, the advantages of a pre-COV webinar, and the importance of a question-and-answer session with program officers so that the COV can understand the context for decision-making.

## **Broadening Participation**

Dr. Green opened the discussion by introducing three topical areas: the principles for the conduct of research in the Arctic, the role of indigenous peoples in collaborations, and the participation of individuals from underrepresented groups in the research enterprise. Mr. Huntington and Drs. Green and Hayden took the lead in the discussion.

The principles of conduct call for consultation rather than collaboration. Should there be more of an emphasis on collaboration? There are related questions of the intellectual property rights of tribes, familiarity with the local language, and making the research relevant to local residents. All of these questions point to the importance of building relationships of trust. Trust building can start as simply as sharing information about research plans and results as a courtesy to the local communities. Where applicable, the permitting process is an opportunity to share information about research plans.

Dr. Hayden led the discussion on including underrepresented groups in research and suggested promising practices such as:

- Recognize graduate students as mentors for undergraduate students
- Partnerships among diverse institutions and groups such as Minority Serving Institutions (MSIs) and Minority Professional Organizations (MPO)
- Teams of two or more students on a research project
- Joint publications, conference presentations and thesis committees (include diverse students and diverse academic institutions)
- Outreach to school districts with high proportion of underrepresented students
- Virtual mentoring of research teams across different campuses with graduate student mentoring awards
- Collaborations with existing programs for underrepresented students at partner sites
- Summer internships followed by academic year follow-up activities (more than one internship so that the student can see continuity toward degree completion)

Involvement with organizations such as MPOs should be of a sustained and active nature, including the following types of activities:

- Co-sponsor scholarships or awards for several students at their MSI home institution and make the awards at the annual conference.
- Present research based papers and workshops at the MPO conference or event.
- Have the MPO to send a representative to your events or participate in virtual conferences.
- Make sure students apply for Research Experiences for Undergraduate (REU) programs.
- Support student attendance and presentations at the MPO conferences by
  - Encouraging faculty and graduate students to serve as judges for student competitions
  - Funding undergraduates to attend the conference
  - Serving as mentors for the conference

Dr. Hayden noted that underrepresented individuals do not necessarily think about polar science as a reasonable application of their talents and skills. They need to be invited and encouraged. MPOs and the recipients of the prestigious Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM) are committed to mentoring and including students. Programs on campuses can be leveraged as well as outreach opportunities such as NSF Days at minority serving institutions to get out the word about polar sciences.

The discussion closed with the suggestion that Polar Programs consider updating a list of potential activities that PIs could use as reference material. Several committee members and Polar Programs staff members indicated that they would be willing to volunteer.

### **Summary of Action Items and Next Steps**

Dr. Bitz thanked the Polar Programs staff and Advisory Committee members for a productive meeting. She noted that the method of assigning committee members as discussion leads for portions of the meeting seemed particularly successful and should be continued at future meetings.

She brought up the possible formation of a subcommittee or task group on metrics and definitions of success in connection with the discussion of the interaction between science and logistics/infrastructure support.

Committee members also expressed interest in how the realignment with Geosciences would affect the Polar Advisory Committee's future; if a subcommittee of the Geosciences Advisory Committee, how large and how representative of the diverse disciplinary and interdisciplinary backgrounds of polar science and associated logistics fields? Astrophysics and Astronomy, Biology, Social Sciences – all of these disciplines may require representation that has "tendrils" into other parts of NSF and perhaps other advisory committees. Further discussion is needed at the spring meeting.

As Dr. Fahnestock's term concludes at the end of 2012, Dr. Bitz thanked Dr. Fahnestock for his service to Polar Programs. Dr. Fahnestock's parting words were that he truly enjoyed working on the committee, mainly because of responsiveness of OPP to OAC suggestions. He enjoyed the useful and caring structure of OPP and noted that issues were moved forward in a positive way. He expressed concern about dialog in a new AC structure in GEO not fully representing Polar Programs interests.

Dr. Powell thanked Dr. Bitz on behalf of the entire Advisory Committee for her leadership.

The meeting adjourned at 1:49 pm.