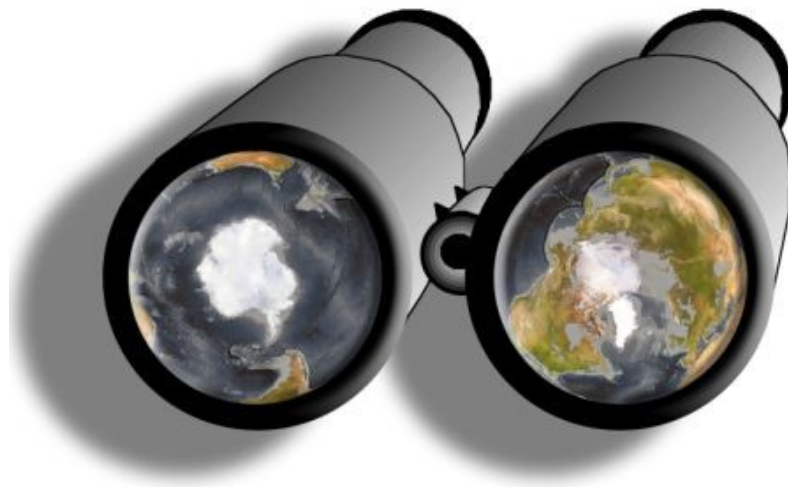


**Poles Together Workshop  
July 20-22, 2005**

**Internal Evaluation Report  
(Revised May, 2006)**



Prepared by

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## Poles Together Workshop Overview

The Poles Together Workshop, sponsored by CIRES and NOAA, was held July 20-22, 2005, as an opportunity for polar researchers, science educators, and communication experts to network and plan a wide range of education, outreach, and communication strategies for the International Polar Year 2007-2008 (IPY).

Participants came from organizations that included U.S. federal agencies (e.g., NOAA, NSF, NASA, USGS) and international organizations (e.g., International Antarctic Institute in Hobart, Australia; the International Polar Foundation based in Brussels; the Swedish, Dutch, and German national IPY committees). Other participants represented universities such as Columbia University, the University of Alaska at Fairbanks, the University of Colorado, the University of the Arctic, Ohio State University, and the University of California at Merced. Attendees also included professionals in marketing, science education, and the travel industry. The workshop offered a mix of "ice-breaking" information sharing and networking opportunities, working group breakout sessions, demonstrations of innovative tools and resources, and presentations. Featured speakers included David Carlson, the Director of the International Polar Year, and John Behrendt from INSTAAR (the Institute of Arctic and Alpine Research), who shared images and stories of his IGY adventures to Antarctica 50 years ago.

Building on the past efforts of many individuals (including various workshops and planning meetings of the International Science Union (ICSU), World Meteorological Organization (WMO), the National Academies, and the 2004 Bridging the Poles Workshop), the Poles Together Workshop tapped into the energy and potential for polar regions to inspire, engage, and interest people around the world about the polar regions and their links to the rest of the planet. Poles Together served as a community-building event during which opportunities, challenges, and potential partnerships and collaborations were identified.

Funding for this summary of the workshop has been provided by the National Science Foundation and the NOAA Office of Education and Sustainable Development.

Co-chairs Mark McCaffrey from CIRES Outreach and Education Program and Carol Knight from NOAA Research were assisted in organizing and facilitating the workshop by Susan Lynds (CIRES), Susan Foster (University Corporation for Atmospheric Research), Rusty Low (Digital Library for Earth System Education), Becky Boger (GLOBE Program), Sheldon Drobot (University of Colorado), and Jane Beitler, Stephanie Renfrow, and Betsy Sheffield (CIRES' National Snow and Ice Data Center). The organizers of the workshop thank CIRES and NOAA for their support.

The urgency and excitement clearly evident at the workshop has led to new partnerships and relationships, and to the development of specific strategies and plans for implementing education, outreach, and communication efforts for IPY, which officially begins 88 weeks after the workshop.

IPY 2007-2008 will be the fourth IPY; the first was in 1882-1883, the second in 1932-33, and the most recent, which was expanded to the International Geophysical Year (or IGY), in 1957-1958.

## **A Note on Poles Together Evaluation**

As plans came together for the Poles Together workshop, we realized that with no budget for formal evaluation of the workshop, we lacked the ability to hire an outside, external evaluator. Fortunately, Susan Lynds of the DLESE Evaluation Service Center offered to help set up an internal evaluation strategy with the goal of collecting immediate feedback from the participants so we could make adjustments in mid-stream as well as collect information in the form of observations and surveys from attendees that could be analyzed later should funding to complete a more formal evaluation of the workshop be made available.

In the Spring of 2006, the National Science Foundation and NOAA provided us with funding to complete the evaluation and final report on the Poles Together workshop, and we are extremely grateful for their support. The following report employs qualitative and quantitative measures to reflect on the process and outcomes of the Poles Together workshop. It is decidedly an internal evaluation written by a key contributor to the workshop whose task of summarizing the proceedings six months after they occurred was daunting indeed. As such, it is a reconstructed snapshot in time primarily designed to help the team who organized the workshop learn whether their objectives were met or not.

This evaluation document contains an Executive Summary with highlights and recommendations from the workshop based on feedback from participants, an overview of how the evaluation plan was developed, and a look at data from the initial registration survey. We have also included the results from a survey that 100 elementary and secondary science teachers completed relating to polar topics and misconceptions; while not directly related to the workshop outcomes, the results of this survey were presented at the workshop. Also included in this report is an analysis of the online SWIKI tool which was used to record notes and share files, a look at three different sets of breakout sessions, and feedback from surveys given to attendees during and at the conclusion of the workshop. The outline used to develop specific measures of the workshop objectives, and the specific survey instruments used are included as appendices.

Mark McCaffrey  
May, 2006

# Executive Summary

## Highlights

- Based on the turnout and feedback from participants, the Poles Together workshop was extremely successful for bringing together a wide variety of professionals committed to the International Polar Year (IPY) for networking and brainstorming.
- Uncertainty about funding for IPY projects was a substantial concern among the participants. Identifying alternative sources of funding such as private foundations became a focus for the “Umbrella Group” which emerged as a new group from the workshop. .
- The three sessions of Breaking the Ice (one-minute self introductions) were highly appreciated as an efficient way to introduce everyone and encourage networking.
- The Swiki (an online tool for organizing files and sharing information) was well-used for documentation and recording during the workshop, but was not used to continue the process as the groups worked together afterward. In instances where the Swiki was not used by the breakout groups, the notes of their discussions are incomplete or missing.
- Overall, based on survey feedback and observations, the engagement and enthusiasm of participants was excellent throughout the workshop.
- Development of a central IPY EOC website at this workshop was unrealistic due to limited resources and the need for coordination with other organizations undertaking this task. However, ideas discussed at this workshop will be valuable resources for the development of such a website in the future.
- The productivity of the final breakout sessions was remarkable. This was probably due to several factors:
  - Participants took charge and created the final breakout sessions they were most interested in.
  - Participants were getting comfortable with the venue and Swiki after three days of workshop.
  - Participants felt a sense of urgency to produce results before they left.
  - The attendees had by this point made connections and collaborations forged during the early part of the workshop so less time was needed to get to know each other in the breakout groups.

## **Recommendations for future workshops**

- Have designated, trained leaders in each breakout group to guide the groups to achieving their goals and continue monitoring of the group's work after the end of the workshop.
- Designate staff recorders to document the work of breakout groups would enhance the quality of records of breakout sessions.
- Maintain communication with participants during the coming year to build upon the foundations laid by the workshops and keep the issues discussed in the forefront of their attention.
- Address the issues of funding, collaboration, and leveraging opportunities with existing funded projects.
- Refine introduction session.
- Place calendar in a more convenient location.
- Keep objectives attainable.

## Evaluation Plan for Workshop

Evaluation has been emphasized as a key component of IPY Education, Outreach and Communications (EOC). The Poles Together Workshop included evaluation in the planning, execution, and reporting phases of the workshop project. As the workshop was designed, organizers delineated the goals and measurable objectives. Based on these objectives, an evaluation plan was developed to provide summative data on how well each objective was met. The objectives and evaluation methodologies are summarized in Appendix 1.

As part of the front-end evaluation, two questionnaires were administered before the workshop began—one to science teachers and the other to workshop attendees. One of the goals of evaluation is to allow project managers to understand their constituents and audiences better. These two surveys allowed the planning personnel to discover a bit more about these two groups of people (the participants and a key potential IPY audience) and their interests in IPY issues before the workshop began.

At the workshop, organizers modeled the power and variety of evaluation metrics and through this report will demonstrate their use in outcome analyses and accountability reporting. One of the first presentations on the first day described the evaluation protocol for the workshop and its essential nature to the overall IPY EOC process.

During the workshop, participants recorded their discussions in the breakout sessions on a Swiki (online interactive website) and/or on flipcharts. These discussions were to have addressed key points in preliminary IPY EOC calendars, communication plans for IPY EOC interests, and developing plans for an interactive website to track projects, deliver news, discuss issues, and improve networking. Analysis of the documentation of the sessions will reveal whether these objectives of the workshop were achieved.

The participant list reveals whether the workshop was successful in bringing together researchers, program managers, and EOC professionals across nations, institutions, areas of study, and hemispheres. The agenda will identify opportunities within the workshop that encouraged networking and forming of partnerships.

This summary report covers the results of analysis of the above data and provides an overview of the success of the workshop at achieving its stated goals and objectives.

# Front-End Evaluation

Two questionnaires were administered before the workshop began—one to science teachers and the other to workshop attendees.

## Attendee Registration Survey

The registered attendees at the workshop filled out a registration survey (see Appendix 2); 126 surveys were completed. One question asked them about their areas of interest and expertise. The results are presented in Figures 1 and 2.

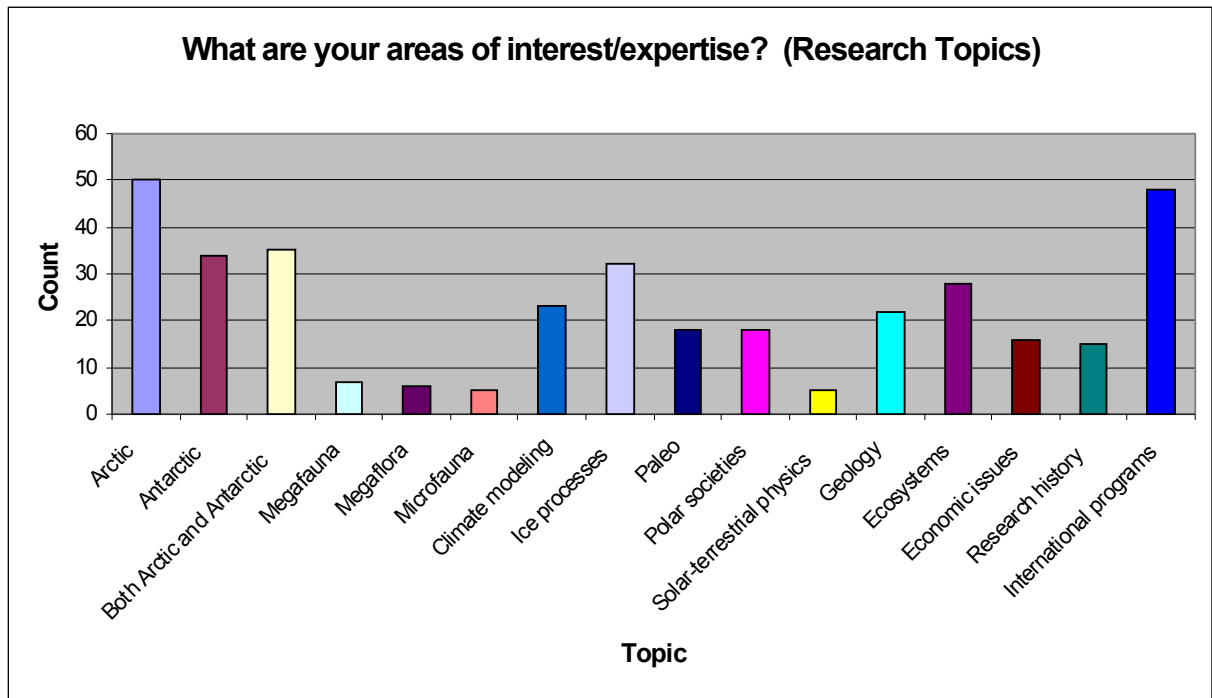


Figure 1. Interests and expertise of registered attendees in research areas.

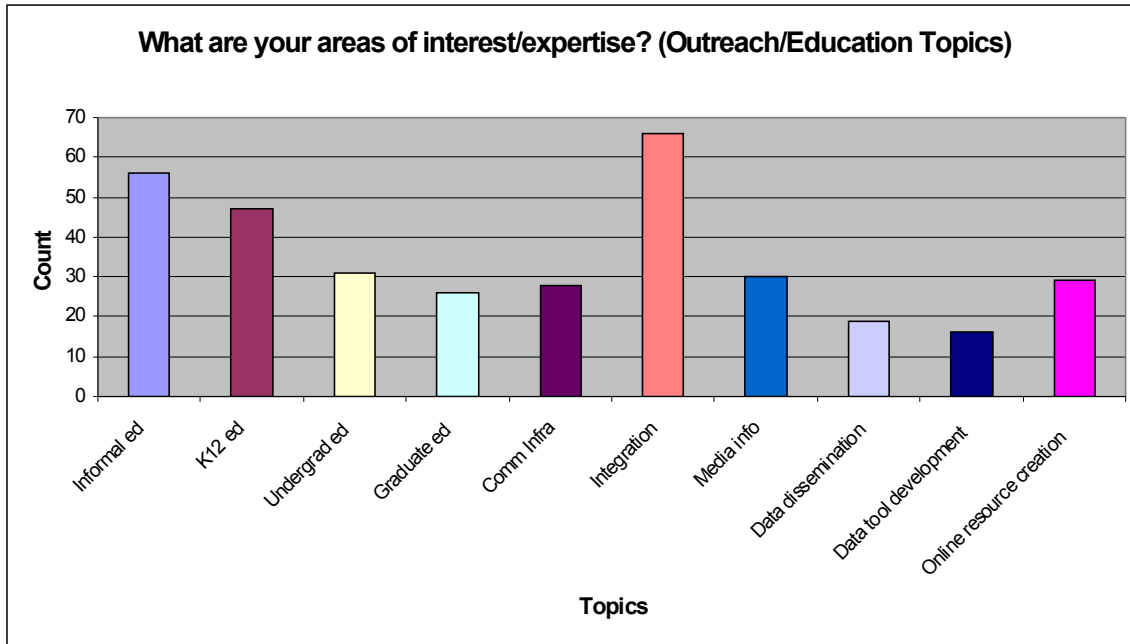


Figure 2. Interests and expertise of registered attendees in outreach areas.

Attendees were also asked what professional role they represented at the workshop. Results from this question are shown in Figure 3. Research scientist, science communicator, and having an IPY project under development were the most common responses.

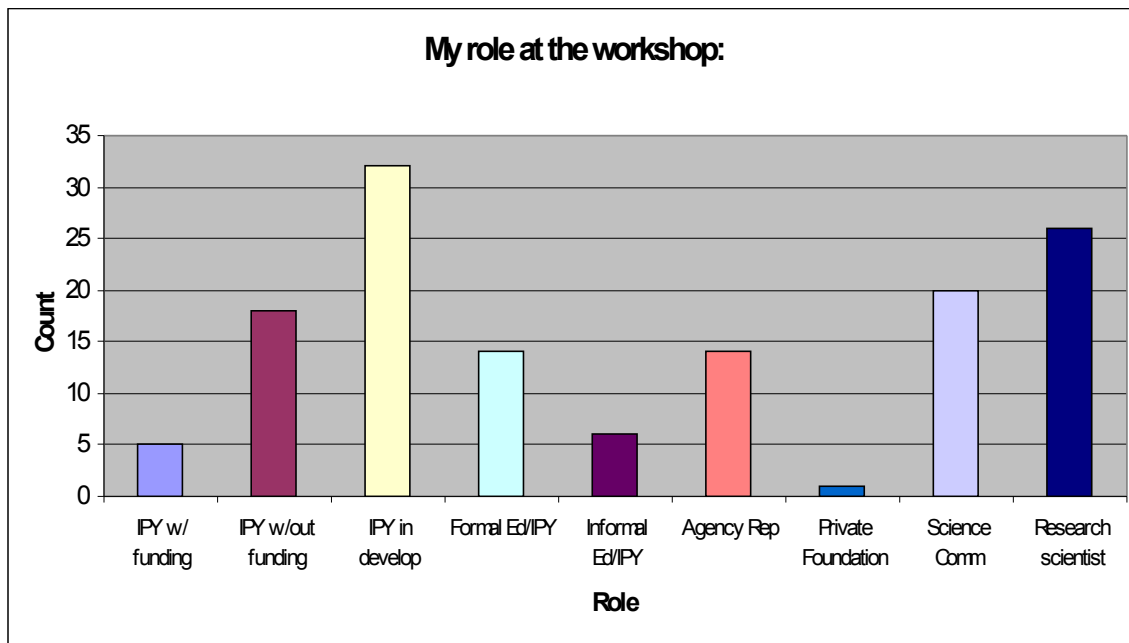


Figure 3. Professional roles of registered attendees.

The audiences that attendees were focused on are summarized in Figure 4. The general public and pre-university audiences were the most commonly selected groups.

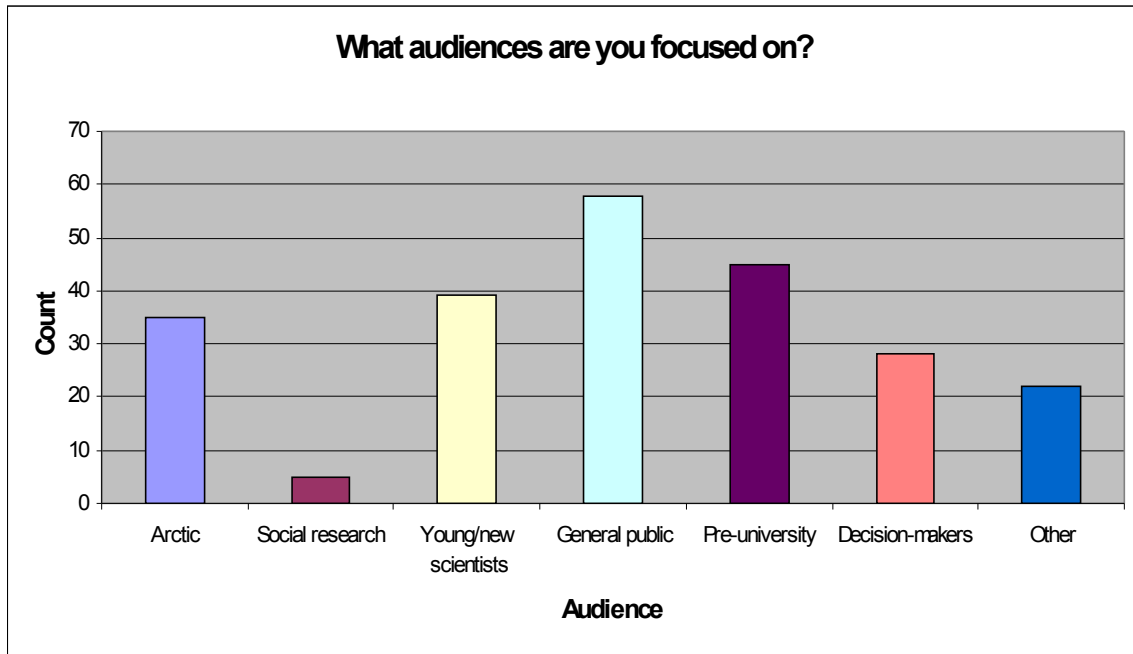


Figure 4. The audiences that attendees were focused on.

## Polar Studies Teacher Survey

From June 15 until the workshop, a web survey was presented asking teachers about their use of polar studies in geoscience classrooms (see Appendix 2). Requests for response to the “Why Don’t Polar Bears Eat Penguins?” survey were sent out via a variety of lists of K12 science educators and 102 people responded.

Out of 102 respondents (frequency  $\approx$  percent), 32 were aware of the IPY (see Figure 5.).

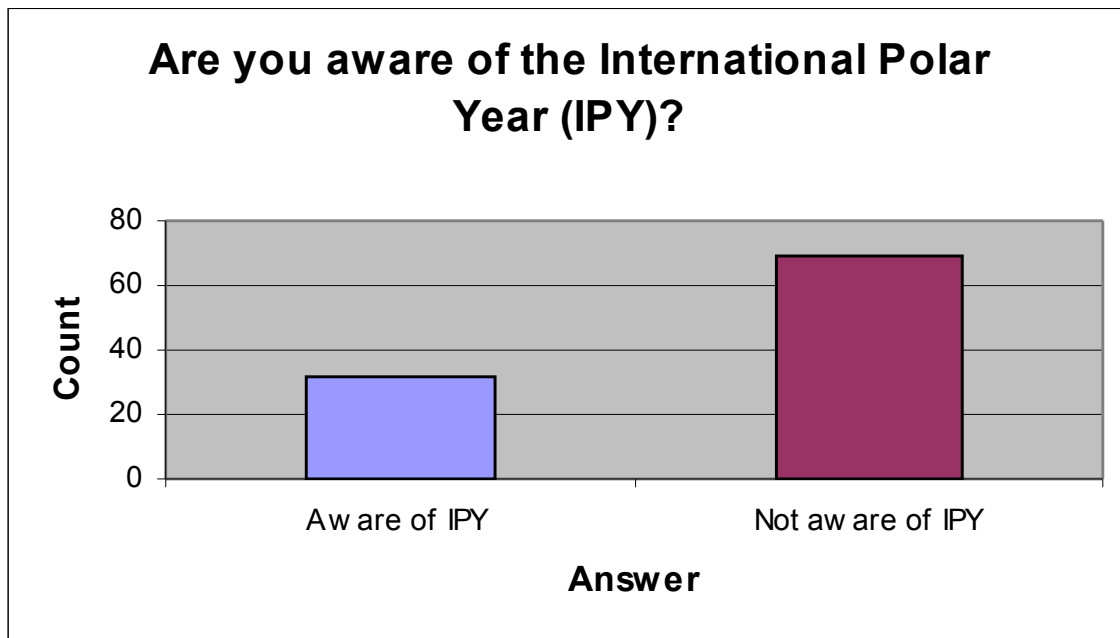


Figure 5. Of teachers answering an online survey the summer of 2005, less than one third had heard of the IPY.

The most popular polar science topics taught by these educators were climate change and ozone, as shown in Figure 6. The misconceptions they have noted in their teaching are displayed in Figure 7; climate and seasonal change misconceptions were the most common. Grade levels taught by respondents are illustrated in Figure 8; due to the greater emphasis on science in higher grades, the majority being from middle school and high school was not surprising.

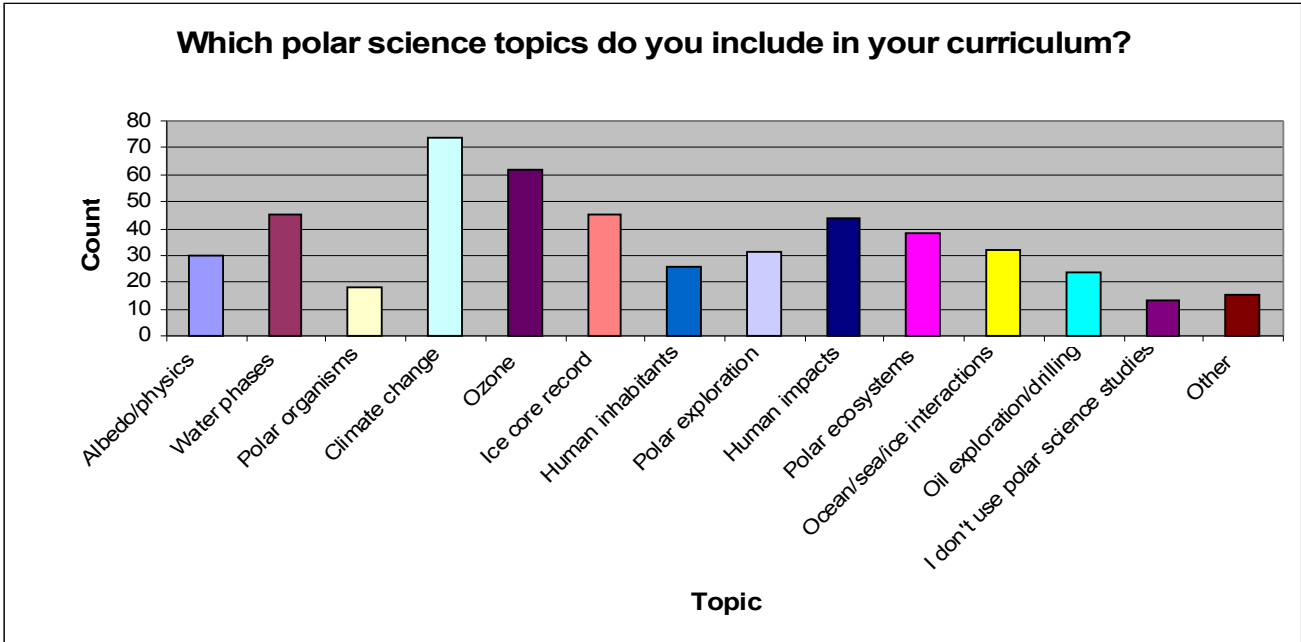


Figure 6. Polar science topics taught by educators responding to survey.

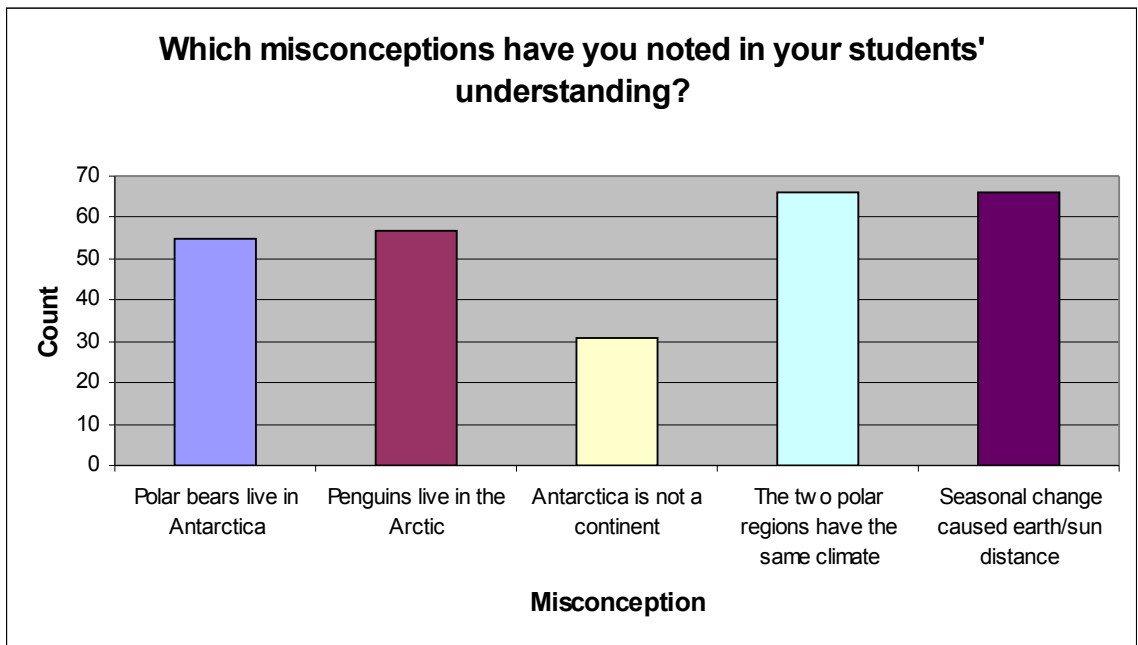


Figure 7. Misconceptions in students' understanding, as reported by survey respondents.

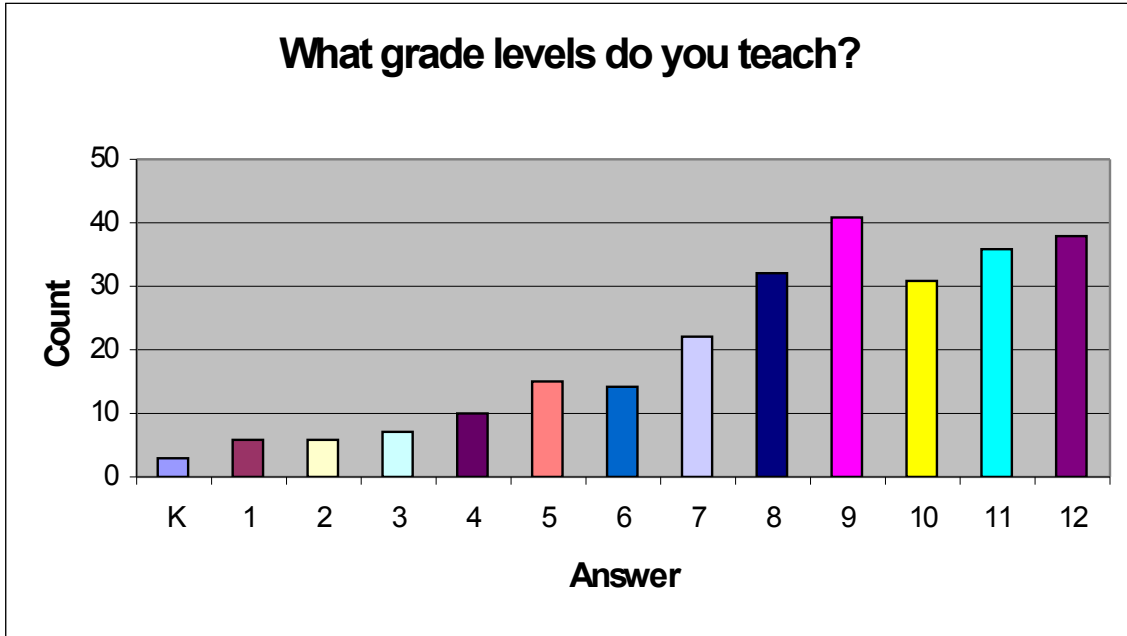


Figure 8. As might be expected, most of the teachers responding to the survey taught middle school and high school.

Over half the teachers responding to the survey indicated their interest in learning more about IPY and IPY education developments (see Figure 9).

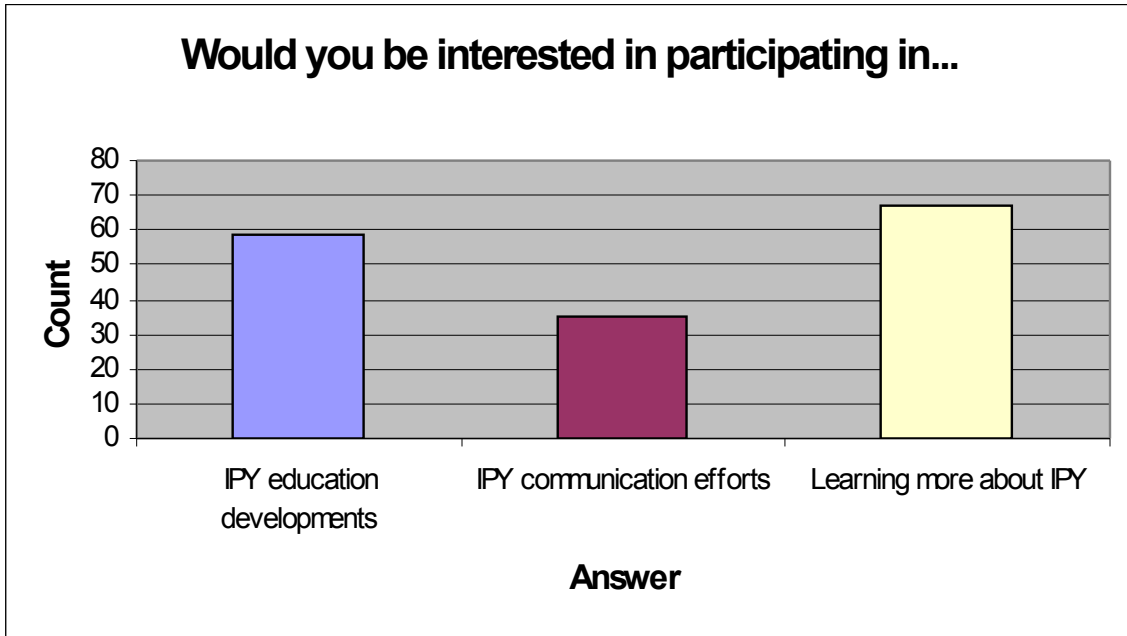


Figure 9. Teachers' interest level in learning more about IPY and associated EOC efforts.

# Workshop Evaluation

## Swiki Data Analysis

The Swiki was fairly well-used during the workshop. However, only one group (the Umbrella group) continued using the Swiki afterwards to monitor their progress.

It may be that there has been continuing work by some of the groups formed at Poles Together, but that is largely unknown. One suggestion for a modification of design in the future would be to have group leaders selected before the workshop and trained and committed to using the Swiki (or another platform) to monitor progress after the completion of the workshop.

Having a pre-established leader for each group would also free up time during the breakouts spent recruiting volunteer leads and establishing the protocol of each group. In feedback questionnaires, several participants requested more breakout time and one suggested that specific leads in each group be designated beforehand. The presence of a pre-selected leader and/or recorder in the group might have resulted in more thorough and consistent documentation of the breakout groups on the Swiki as well.

If logistics permit, having a projector and screen to display the Swiki notes in each group would have eliminated the need for flip-charts and probably would have resulted in more integration of the Swiki into the workshop as a whole. It would also have allowed the moderators of the groups to be the recorders since they could have entered information into the Swiki as they lead the discussion.

Another possibility would have been to have designated workshop staff members in each group to do a consistent job of recording on the Swiki. Staffers familiar with the use of the Swiki and well-versed in the recording goals would probably produce a more consistent result than volunteers recruited from the breakout participants..

## **Breakout Sessions**

First, we'll look at the effectiveness of the various breakout groups at the Poles Together workshop. Three breakout sessions were designed into the agenda: Theme Breakouts, Audience Breakouts, and Action Breakouts. On the final day, the Action Breakouts were discussed in the full group and were changed to be Mode and Method Breakouts. The Data Stories Breakouts that were originally scheduled on the first afternoon were deleted due to time constraints.

In all breakout sessions, there were groups that either did not have enough members to meet or else they did not record their work on the Swiki or on flipcharts. Overall, breakout sessions were very effective in coming up with networking and communication ideas. The groups, however, came up with few specific action items to be addressed and even fewer specifics on personnel to undertake these tasks. Minimal plans were made for development of an IPY EOC website and calendar that could be continually updated in the future.

Observation data by evaluators showed that there was excellent participation by group members in most groups; participation increased as each session went on and as the workshop progressed. By the final day, the enthusiasm and participation levels in all groups were very high.

The first breakout session was divided by IPY themes.

## Thematic Breakouts

The first set of breakout sessions were divided among the official themes for IPY —Status, Global Linkages, New Frontiers, Human Dimension, Change, and Vantage Point.

The **Status (Polar Snapshot)** breakout was to address the issue of determining the present environmental status of the polar regions.

Several specific actions were discussed, including regular updates on research, celebrities to engage in the effort, partnerships with the Discovery Channel, and publications. Networking and communication ideas included real-time data availability, school linkages, and interface plans between the different groups of researchers, the public, and schools worldwide.

The **Global Linkages (Polar Canaries)** breakout was to address the issues of advancing understanding on all scales of the links and interactions between polar regions and the rest of the globe, and of the processes controlling these.

A number of plans were discussed to bring polar issues into the schools and community of non-polar regions in immediate and personal ways. Uses of media and plans to sustain the effort beyond IPY were reviewed. Several existing websites were mentioned that could be linked from a central IPY EOC website, leveraging existing IPY-related efforts.

The **New Frontiers (The Great Unknown)** breakout was to address the issue of investigating the frontiers of science in the polar regions.

This group discussed a number of research topics that might be of interest in the IPY EOC effort. They had a few specific ideas of celebrities and organizations that would be good to partner with.

The **Human Dimension** breakout was to address the issue of investigating the cultural, historical, and social processes that shape the sustainability of circumpolar human societies, and to identify their unique contributions to global cultural diversity and citizenship.

This group emphasized possible events to link to IPY (e.g., International Circumpolar Expedition) and possible corporate collaborations (e.g., Coca Cola).

No documentation was available for the following thematic breakouts:

- The **Change** breakout was to address the issues of quantifying, and understanding, past and present natural environmental and social change in the polar regions; and to improve projections of future change.

- The **Vantage Point** breakout was to address the issue of using the unique vantage point of the polar regions to develop and enhance observatories from the interior of the Earth to the Sun and the cosmos beyond.

## Audience Breakouts

The next group of breakout sessions was designed around potential audiences for IPY EOC information—Young Researchers, Pre-University Education, Arctic Communities, General Public, Decision Makers, and Global Audience. There were no data for the Scientific/Research Community breakout group (promoting polar research within the scientific community; building inter-disciplinary or bipolar links).

The **Young and Potential New Polar Researchers** (Encouraging young scientists) breakout was to address the issues of recruiting new and future research scientists and collaborators and increasing awareness at post-secondary educational institutions and research institutions.

The primary problem mentioned in this group was the lack of funding to retain promising young researchers. Ways to enhance funding were discussed. A collaboration between tourism vessels and young scientists was discussed.

The **Pre-University Education Community** (K12 Education combined with Pre-University Audiences) breakout was to address the issues of infusing learning and creating interest for science with the excitement of discovery of the polar regions.

The K12 Audience group came up with many ideas for how to bring IPY information to the K12 audience. They had suggestions for how to link the three groups—scientists, teachers, and students. They did not specify if anyone from the group were tasked to take these actions.

The **Arctic Communities** (Arctic peoples) breakout was to address the issues of strengthening dialogue and links between Arctic communities and the research community in general.

The Arctic Communities group discussed ways to bring arctic residents into the plans for IPY communications. They reviewed existing organizations that could be incorporated as partners in the effort.

The **General Public** breakout was to address the issue of making the public more aware, excited and supportive of polar issues--“Why is the polar regions and Polar research important to all people on earth?”

The General Public group developed a number of brief phrases that represent the key ideas to communicate (e.g., “Cool Places - Hot Science”). They brainstormed a wide variety of effective methods of outreach, including the

media, museums, and art. Their collaboration ideas included webcasting and field trips.

The **Decision Makers** breakout was to address the issues of informing decision-makers, parliamentarians, legislators, and other organizations on the role and importance of the polar regions; informing research activity decision makers.

The Decision Makers group identified several key messages such as “adaptive management” and ideas for grass-roots collaborations within a variety of communities.

### **Global Audience**

The Global Audience group addressed things in a methodical way, providing ideas for development of the website, plans for the calendar, and connections to existing events to use them as venues for IPY outreach.

## **Final Breakouts**

The Action (or Modes and Methods) breakout groups that emerged on the final day of the Poles Together workshop were a result of whole-group discussion by attendees and modification of the original agenda to conform to the group's preferences. These breakout groups were very productive overall, based on the Swiki notes. In part this may be due to their taking charge and creating the activities they were most interested in. It may also be partly due to their getting comfortable with the venue and Swiki, a sense of urgency (time was running out at the workshop), and the many connections and collaborations that they had forged during the early part of the workshop.

### **Data in IPY E&O**

The Data breakout group developed several specific recommendations about enhancing the availability and value of IPY data online. Although it is not documented in the Swiki, the breakout group's leader has kept workshop managers updated of this group's continuing work towards their goals.

### **Field Experience**

Five existing field programs that connect IPY topics with students (K12 and undergraduates) and teachers were reviewed. It was agreed that the emphasis should be placed on availability to underserved groups. The Field Experience group was enhanced by combining with the Encouraging Young Scientists and Expeditions groups. The latter two groups did not have their own Swiki notes and were largely integrated here.

### **Exhibitions**

Again, lack of funding was seen as a primary limiting factor. Exhibitions are expensive. Options to minimize cost by creating smaller exhibits directed at smaller museums were discussed, as well as using content to develop an online exhibit (perhaps only online). They came up with messaging strategies, marketing issues, and possible unique opportunities in the future. They made a specific plan to get together in November to discuss collaborative exhibits, but there is no reference to whether this happened.

### **Visual Media**

This group was very productive and well-organized in their notes. They discussed the needs for IPY films of various topics, formats, and lengths for use in classrooms, on websites, on networks, and in other areas. They discussed training and equipment for scientists in film-making to enhance the collection available. A number of specific venues for disseminating the films were

mentioned. The addressed the opportunities for integrating diversity in films and detailed possible partners for collaboration.

### **K12 Audiences**

This group was exceptionally productive and developed very specific ideas and actions. They also were one of the few groups who identified specific people to take care of specific tasks. They listed the central messages to communicate to K12 audiences (especially teachers), developed a number of ideas for marketing the messages, and detailed opportunities in the near future for communicating IPY topics. Their Next Steps included remaining in contact with each other and pursuing funding for two specific projects.

### **Umbrella Group**

The Umbrella group met both during the last morning and that afternoon. During the workshop, they summarized the outcomes from the other breakout groups. They listed key messages to communicate to both the public and funding agencies. This group developed two specific actions that they would take by fall 2006. They created a committee to coordinate funding for IPY EOC, designating specific people from the group that will participate. Two other specific individuals were tasked with being the liaisons with two prominent IPY organizations.

The Umbrella Group was the only group to continue to use the Swiki after the workshop to record their progress. Minutes from their August 23 meeting are located on the main Swiki page.

## Workshop Objectives

### Objectives Measured by Swiki

Each workshop objective to be evaluated by Swiki documentation (see Appendix 1) is listed below in bold. The Swiki evaluation is summarized under each objective heading.

#### **Participants will develop and record (on Swiki and/or flipcharts) preliminary IPY education, outreach and communications (EOC) calendar and list of planned IPY events and projects**

- In almost all breakout groups, IPY events and projects were listed by participants. These can be gleaned when the official IPY EOC calendar is set up.
- A very preliminary calendar was developed during the workshop on the Swiki but this will be incorporated into a more active location in the future for continuous updating.
- The Global Audiences breakout group discussed the calendar as a project.

#### **Participants will establish and record (on Swiki and/or flipcharts) networking and communication plans for IPY EOC interests**

- Thirteen of the breakout groups discussed networking and communication plans in their sessions.
- The variety, breadth, and detail level of the groups' suggestions were impressive; a comprehensive summary of this data will provide a valuable resource for IPY EOC ideas in the future.

#### **Participants will develop and record (on Swiki and/or flipcharts) plans for an interactive web site to track projects, deliver news, discuss issues, and improve networking**

- Four breakout groups discussed plans for a central IPY EOC website in their sessions.
- A number of existing sites to leverage were mentioned, as well as possible resources to host on this website (e.g., films).
- Development of a central website was beyond the available resources and appropriate auspices of this workshop. A central IPY EOC website will be developed in the future and the suggestions at this workshop will be available to inform its content.

#### **Workshop will facilitate the matching up of complementary research and outreach efforts and interests with similar goals/themes, encouraging collaborative work**

- Eight groups addressed how they might match up complementary efforts to encourage collaboration. Many other

groups suggested organizations (e.g., National Geographic) that could be approached to partner with IPY EOC work.

- Museums (e.g., Boston Museum of Science), science education projects (e.g., Earth Ambassadors network), well-known events (e.g., the Iditarod), and industries (e.g., tourism vessels) were all identified as potential collaborators.

#### **Participants will identify specific leaders for specific collaborative projects**

- Three of the groups identified specific people among their participants to lead particular tasks and projects.
- It may be that there were actually more specific identifications of project leaders in the sessions, but only the projects were documented in the Swiki.

#### **Participants will determine specific actions for workshop participants on specific projects**

- Nine groups developed ideas for specific actions that could be undertaken. Very few included specific plans to carry out these actions, however (i.e., who, what, where, when, how).
- As with the networking and communication plan objectives, the ideas for specific actions can be included in an ideas resource that should prove valuable as IPY EOC plans progress.

## Objectives Measured by Surveys

Each workshop objective to be evaluated by survey instruments (see Appendix 1) is listed below in bold. The survey evaluation is summarized under each objective heading.

There were 57 respondents to Wednesday's survey, 37 to Thursday's survey, and 29 to the final survey.

### **Participants will share ideas for IPY events and projects**

All respondents to the final survey said they had learned of IPY EOC projects that were new to them at the workshop (see Figure 10). In Wednesday's survey, many respondents mentioned how much they enjoyed learning about what other IPY professionals were doing in their work during the Breaking the Ice sessions and informal conversation.

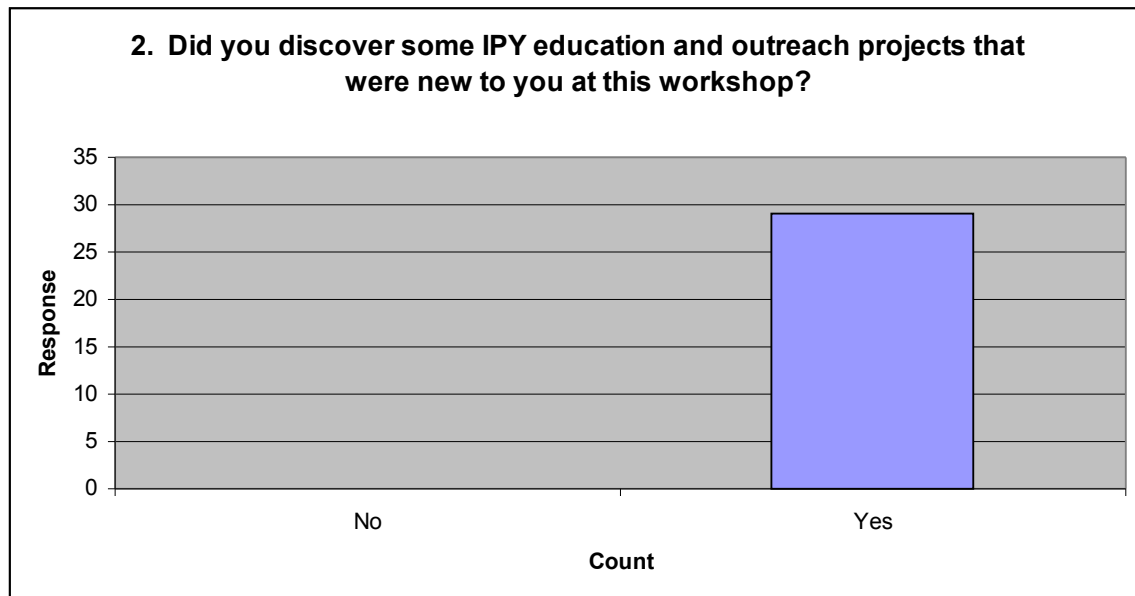


Figure 10. All respondents reported learning of IPY EOC projects new to them.

### **Workshop will provide opportunities for IPY researchers and EOC professionals to discuss their projects, learn about others, and lay the groundwork to continue to communicate following the workshop**

All respondents to the final survey confirmed that they had networked or formed partnerships with other attendees at the workshop (see Figure 11). Several respondents to the Wednesday survey commented that they had met future collaborators.

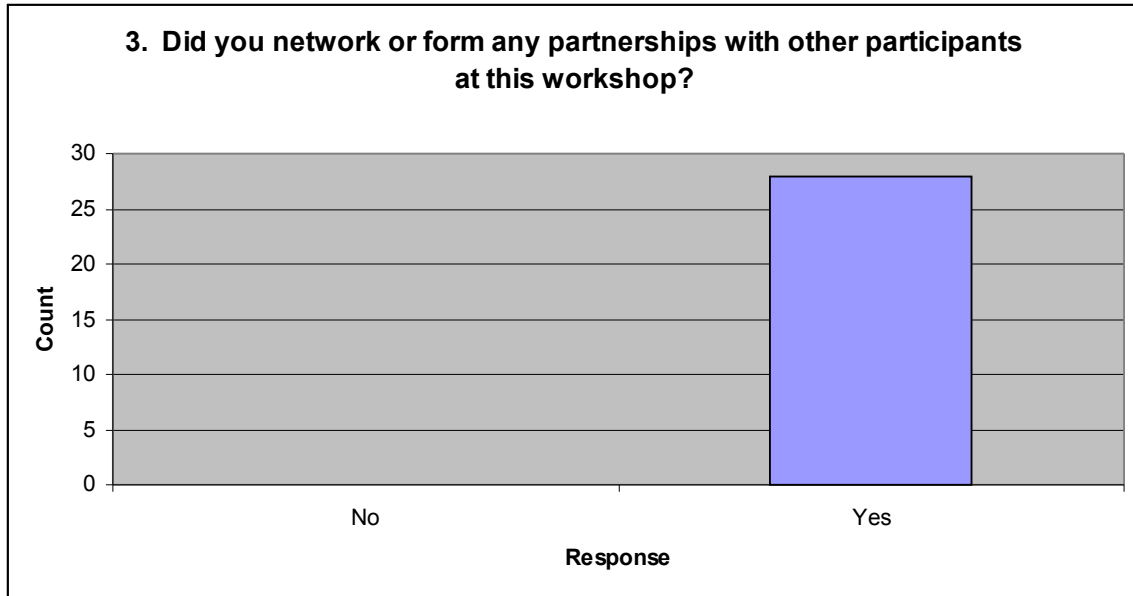


Figure 11. All respondents reported having formed partnerships or networking with other participants during the workshop.

**Workshop will bring together researchers, program managers, and EOC professionals across nations, institutions, areas of study, hemispheres**

The participant lists reveals that attendees came from eight different countries and 65 different organizations, schools, and universities. They expressed research interest in 17 different fields of study. One participant was from the southern hemisphere.

Figures 12 and 13 show the variety of areas of study (research and outreach) in which attendees are involved.

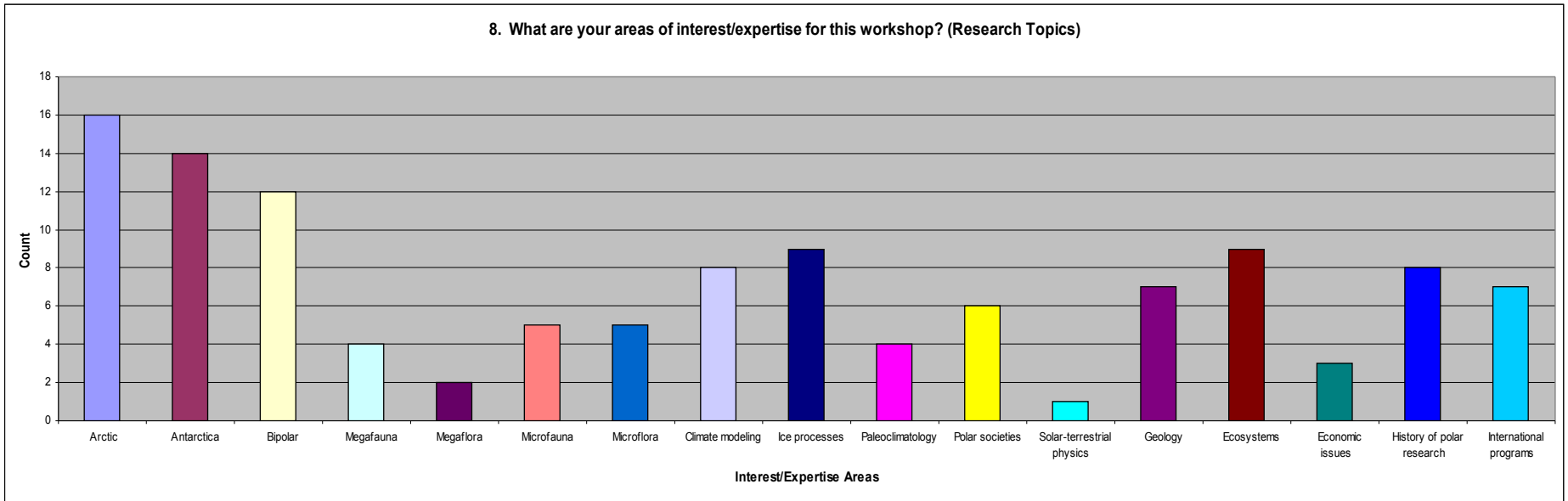


Figure 12. The areas of research interest indicated by attendees.

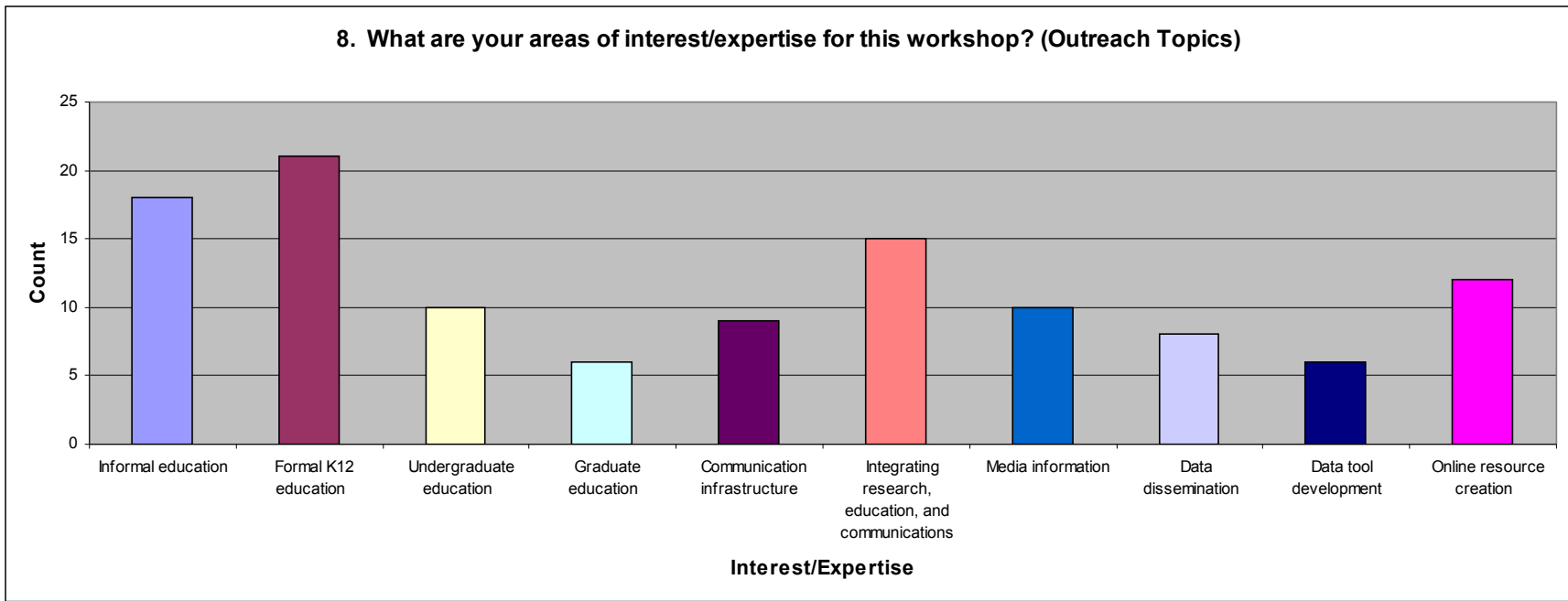


Figure 13. The areas of outreach interest indicated by attendees.

**Workshop will create opportunities within the workshop to encourage networking and forming of partnerships**

As shown in Figure 11, most participants felt they had networked and many reported forming partnerships as a result of the workshop. One attendee reported having established three different education partnerships at Poles Together. Several reported partnerships “in process” or potential partnerships that had been begun.

**Funding institutions and managers will present information on funding issues and opportunities**

On Wednesday, a panel entitled “Funding Futures: Panel Discussion on Challenges and Opportunities Related to IPY Funding” was held. In Wednesday’s survey, nine participants specifically said this panel was one of the most valuable aspects of the day.

Figure 14 shows the results of the final-day question that asked if they had learned anything new regarding funding for IPY at the workshop. Although more responded “no” than “yes,” there were 11 respondents who did report learning about funding opportunities for IPY work.

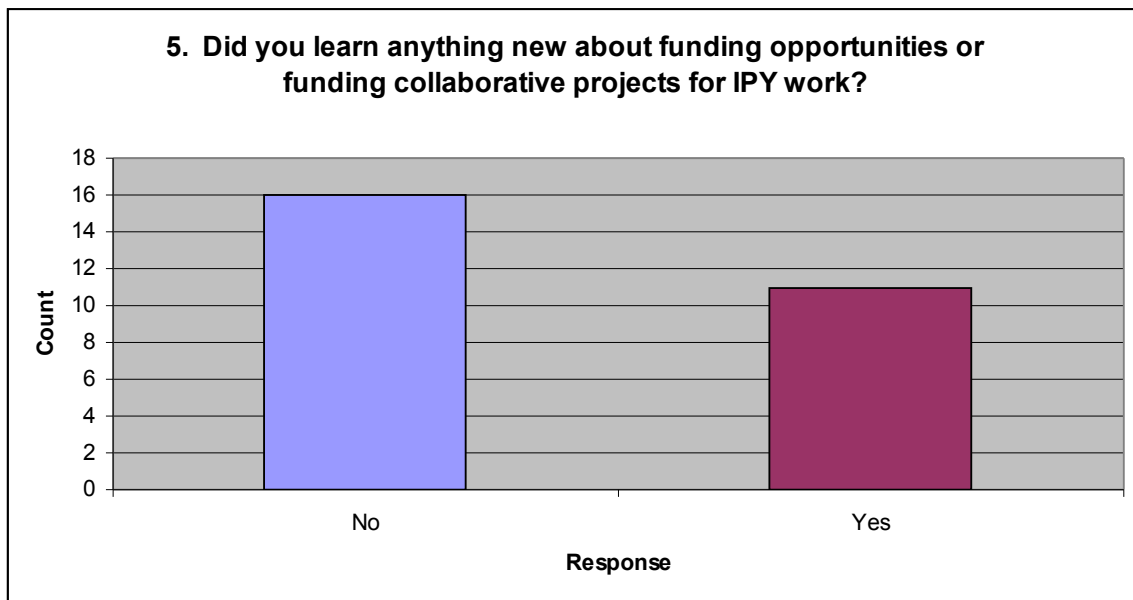


Figure 14. Attendees who learned something about funding opportunities or collaborations for IPY work at the workshop.

**Brainstorming sessions will facilitate creative ways in which collaborative projects can be funded, including in-kind support**

Figure 14 indicates some participants' success at finding funding opportunities for IPY projects. In addition, one respondent reported finding funding partnerships in the Wednesday survey as did two respondents to open-ended questions on the Friday survey.

**Breakout sessions along IPY themes will support participants in combining and working together on projects**

Three respondents to the Thursday survey reported collaborations they had set up. Over a dozen respondents to open-ended questions on Friday's survey mentioned specific collaborations they had developed at the workshop. Figure 15 displays the responses to the specific question on collaborations in Friday's survey.

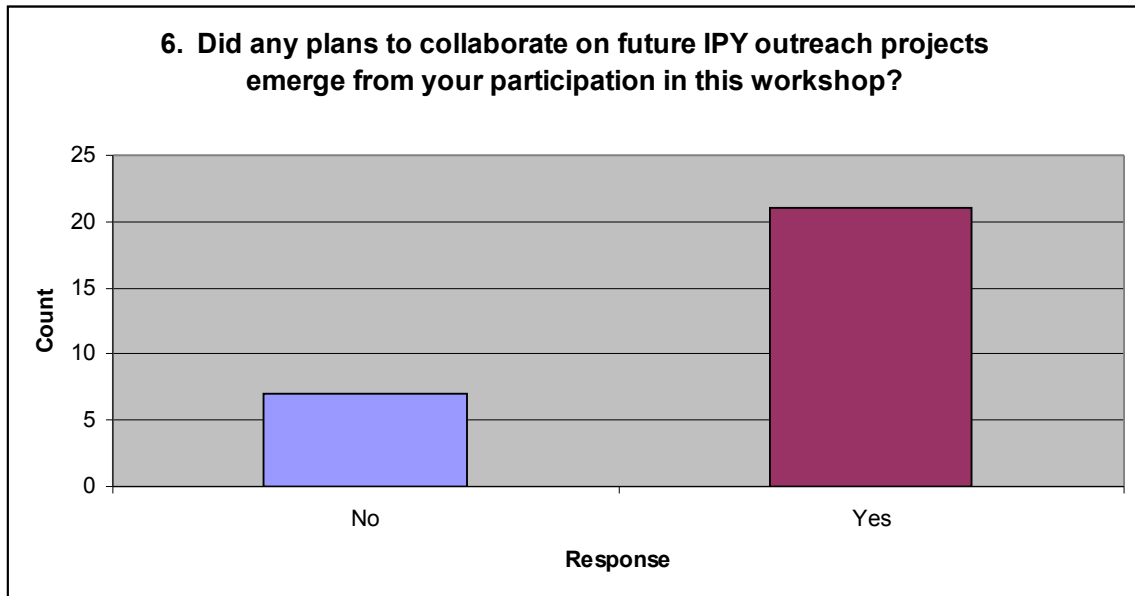


Figure 15. Respondents reporting whether collaborations on IPY outreach projects had emerged for them at the workshop.

**Workshop will provide information, instruction, and practice opportunities for future IPY EOC collaborations.**

The breakout sessions were designed to provide a foundation for collaborations on IPY EOC throughout the workshop. As shown in Figure 15, these opportunities were largely successful.

## **Other Feedback from Surveys**

### **Wednesday Feedback Survey**

The most striking feature of the feedback on Wednesday was the overwhelming appreciation of the Breaking the Ice sessions. Well over half the respondents appreciated the way the three sessions were designed and commented how it encouraged networking. Nine people also expressed appreciation for the funding panel. Several also appreciated the historical context of the IGY presentation.

Most of the requests for change on the first day were directed towards having more time to network and talk with other attendees. This was the focus of the second and third days of the workshop, as most of them realized. A few people requested a clear idea of the tangible outcomes of the workshop. Several people requested that more information be available at the start of the workshop, including information on participants (like that presented in Breaking the Ice) and an overview/history of IPY and IGY.

### **Thursday Feedback Survey**

The second day feedback emphasized the value of the breakout sessions, especially the second one (based on Audiences). The first breakout (based on Themes) was not reported to be as useful. The EarthSLOT and Science on a Sphere demonstrations were both mentioned as highlights of the day by several attendees. The IGY film was also mentioned by a few people as much appreciated.

Several attendees said that the first breakout session, especially, would have been better with clear leadership in the groups and a specific agenda. While many people expressed enjoyment at the relatively unstructured nature of the breakouts, there was some frustration at too much time being wasted in the groups while they decided what they were doing. There were also requests for assigned leaders who were not invested in dominating the discussion. One person expressed, "frustration with inefficiency of breakout sessions; [we] need leaders in each group who know what to do."

Several people were frustrated that they didn't feel anything was being accomplished, expressing their wish for achievable goals. One attendee summed it up by saying, "Goals were both too vague and too ambitious. What should I do as an individual when I leave here? What are other people going to do? Also need a gap analysis - what's being neglected?" Another requested, "[We need to] develop a 'real' plan, not just assume networking would take place here and program development at home via e-mail. [We need] dedicated time to leave with a plan." Many of these sentiments came out in the group discussion on Friday morning and the agenda was adjusted accordingly.

### **Final Survey**

Attendees responded to a question asking what their primary role was at the workshop, based on six categories—Education/Outreach Professional, Teacher (K-12), Informal Educator, Funding Organization Representative, Scientist, and Media Specialist. The results of this question are shown in Figure 16. Note that the funding panel was held on Wednesday and this survey question was administered on Friday; this may explain the lack of any participants saying they were from funding organizations.

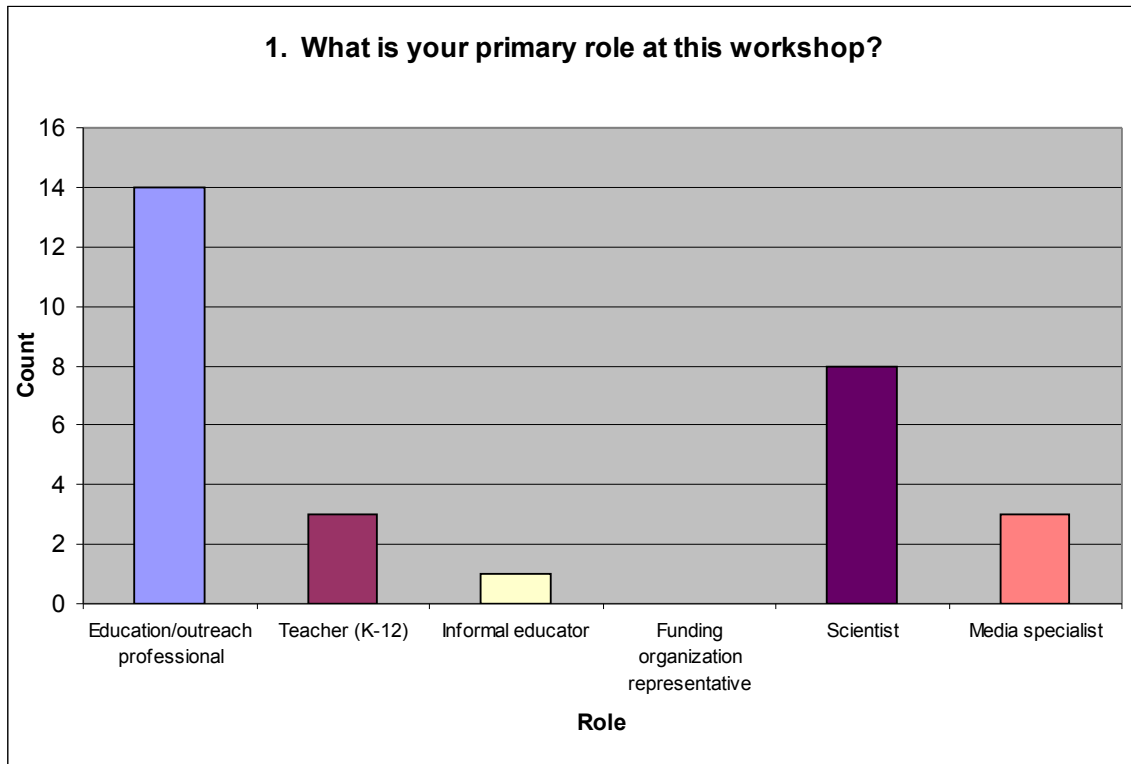


Figure 16. Respondents' professional roles at workshop.

Logistics at the workshop were addressed in six survey questions. Three questions addressed the program materials, facilities, and refreshments; these questions were rated on a scale of 1 to 5, with 5 being Excellent. The results are shown in Figure 17. Online logistics were addressed in three questions that covered the registration process, meeting website, and Swiki; these questions were rated on a scale of 1 to 3, with 3 being Easy/Useful. The results are shown in Figure 18. Overall, the ratings were very good for all logistics.

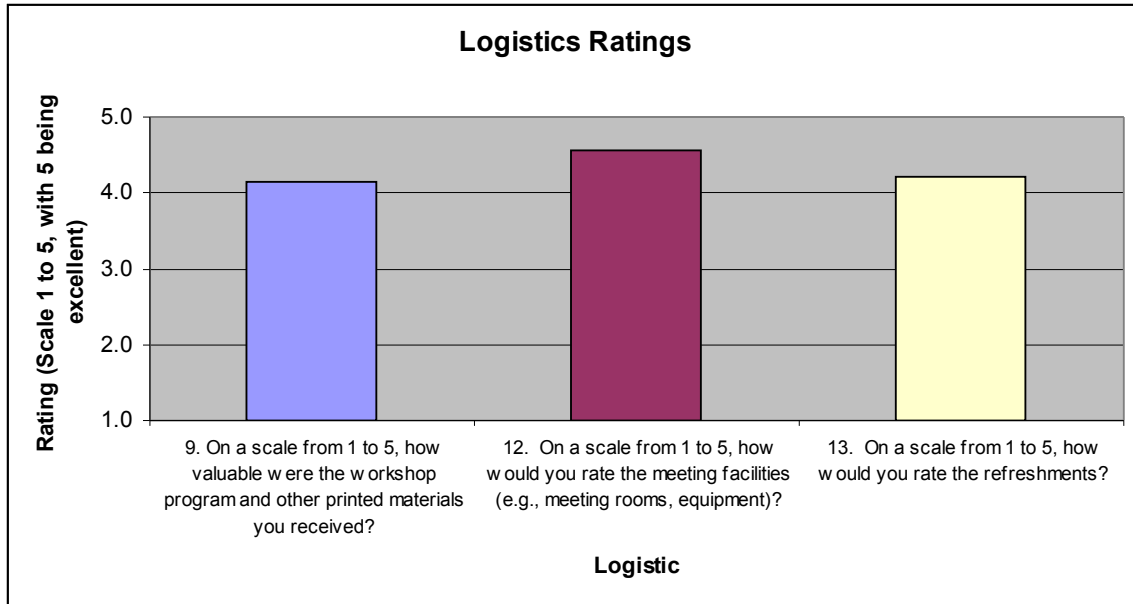


Figure 17. Logistics ratings for program materials, meeting facilities, and refreshments.

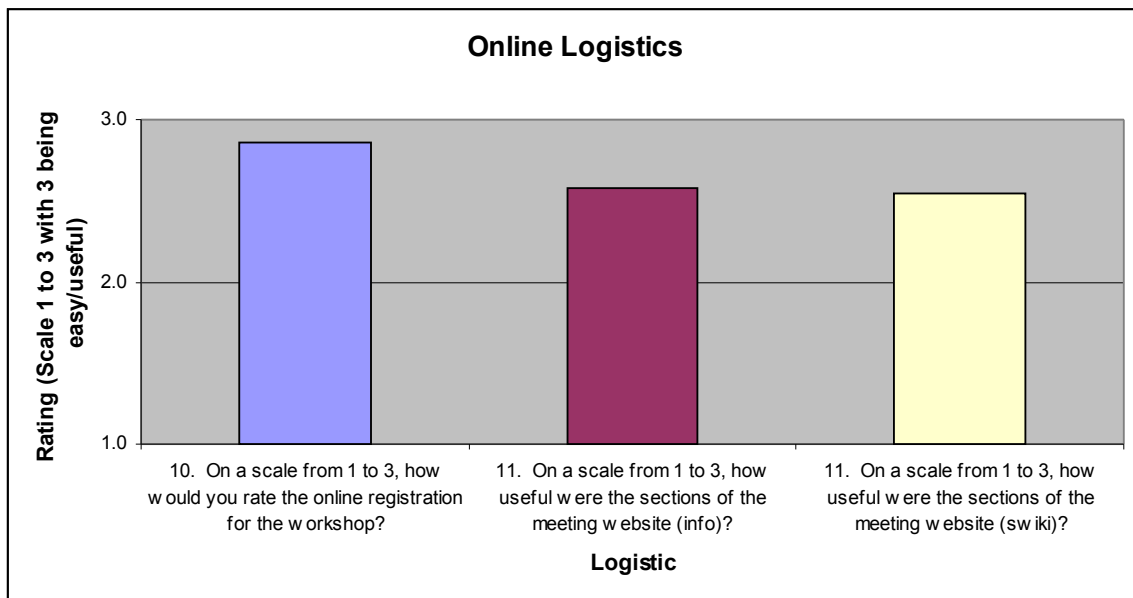


Figure 18. Logistics ratings for online registration, meeting website, and Swiki.

## Summary—Looking to the Future

The Poles Together Workshop was very successful in reaching most of its objectives. Its main limitations lay in planning to accomplish too much in the time allotted in the way of concrete plans and partnerships. Poles Together, however, has laid a comprehensive foundation for the ICE workshop to be held in the spring of 2006. Several key outcomes from Poles Together may be of value in the planning for the ICE workshop and beyond.

A preliminary **calendar** for IPY EOC was developed. Most of what was included were short-term goals for actions resulting from the workshop. Other items had to do with IPY-related anniversary dates. A comprehensive IPY EOC calendar is seen as an essential resource by attendees and should be developed, maintained, and implemented in a central location for all to use.

**Agenda Flexibility** was mentioned a number of times by participants as a real value at Poles Together. When time became short and the schedule was adjusted to suit the preferences of the consensus of the group overall, participants appeared to feel empowered to make the most of their sessions. Administrators for any future event may want to be attentive to participants and model their flexibility on that of the Poles Together schedule.

**Breaking the Ice** (three sessions of one-minute self-introductions) was extremely effective at introducing all participants and encouraging networking. In Wednesday's daily questionnaire, a majority of people mentioned these sessions as among the most valuable for the day. In a face-to-face workshop, this proved to be an excellent use of time on the first day. The main improvement to Breaking the Ice that emerged from the workshop evaluation would be to strictly enforce the one-minute limit. This exercise might be adapted to an online workshop in some way.

**Breakout Sessions** were very effective for networking, sharing ideas, and providing the foundations for future IPY EOC collaborations. They were considered by many to be the most valuable aspect of the workshop overall; the final day breakouts were the most effective of the three. Networking and partnership generation are effectively addressed in breakout sessions, especially when the session topics and agenda are in alignment with participants' strongest interests.

The enthusiasm of participants in Poles Together is a driving force that should carry forward into future IPY EOC events. The rich variety of talents, experience, and insight offered by workshop attendees is an invaluable resource for the future.

## Appendix 1. Evaluation Outline

The evaluation plan included triangulated data gathering including Swiki records and flipcharts, observation notes by evaluators, and both front-end and feedback questionnaires. In addition, the participant list and agenda provided documentation of the workshop. The objectives of the workshop were collected into a table of methods to clearly delineate which evaluation or documentation resource would be used to discover whether each objective had been met. This appendix includes this table.

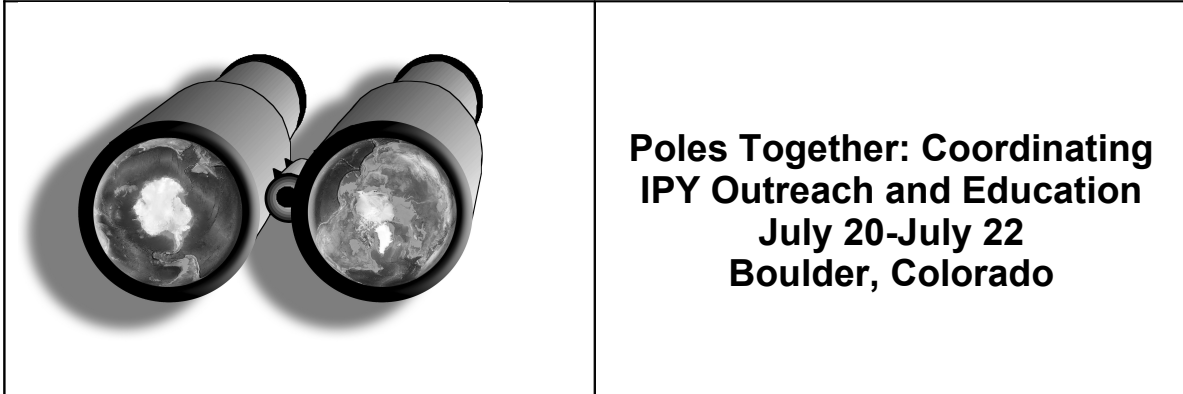
Objectives	Final Questionnaire	Observation	Agenda & Participant Review	Swiki, Form & Flipchart Analysis
Participants will develop and record (on Swiki and/or flipcharts) preliminary IPY education, outreach and communications (EOC) calendar and list of planned IPY events and projects				X
Participants will share ideas for IPY events and projects	2, 3	X		
Participants will establish and record (on Swiki and/or flipcharts) networking and communication plans for IPY EOC interests				X
Participants will develop and record (on Swiki and/or flipcharts) plans for an interactive web site to track projects, deliver news, discuss issues, and improve networking				X

Objectives	Final Questionnaire	Observation	Agenda & Participant Review	Swiki, Form & Flipchart Analysis
Workshop will provide opportunities for IPY researchers and EOC professionals to discuss their projects, learn about others and lay the groundwork to continue to communicate following the workshop	2, 3, 7, 8	X	X	
Workshop will bring together researchers, program managers, and EOC professionals across nations, institutions, areas of study, hemispheres	1,7,8	X	X	
Workshop will create opportunities within the workshop to encourage networking and forming of partnerships	4	X	X	

<b>Objectives</b>	<b>Final Questionnaire</b>	<b>Observation</b>	<b>Agenda &amp; Participant Review</b>	<b>Swiki, Form &amp; Flipchart Analysis</b>
Workshop will facilitate the matching up of complementary research and outreach efforts and interests with similar goals/themes, encouraging collaborative work		X		X
Funding institutions and managers will present information on funding issues and opportunities	5	X	X	
Brainstorming sessions will facilitate creative ways in which collaborative projects can be funded, including in-kind support	5		X	
Break-out sessions along IPY themes will support participants in combining and working together on projects	6		X	
Participants will identify specific leaders for specific collaborative projects			X	X
Participants will determine specific actions for workshop participants on specific projects				X
Workshop will provide information, instruction, and practice opportunities for future IPY EOC collaborations.	6	X		

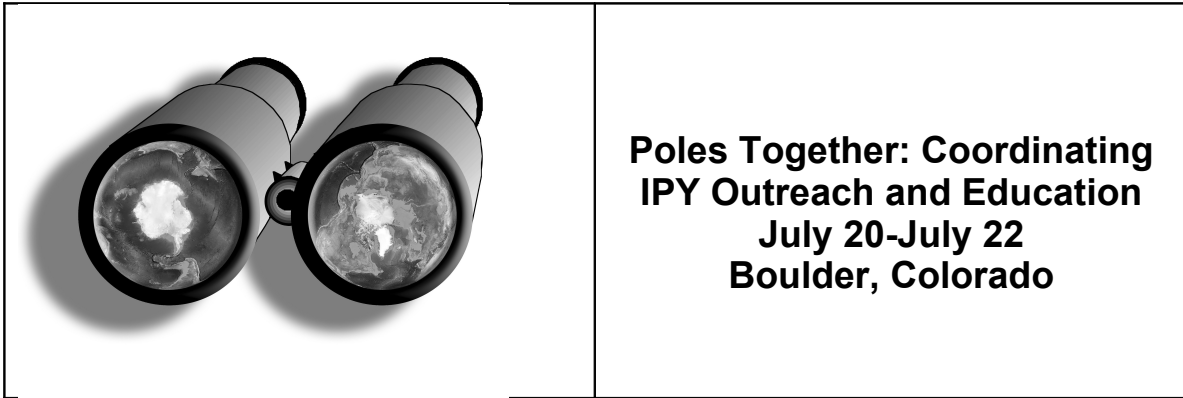
## Appendix 2. Evaluation Instruments

This appendix includes the five evaluation surveys used before and at the workshop.



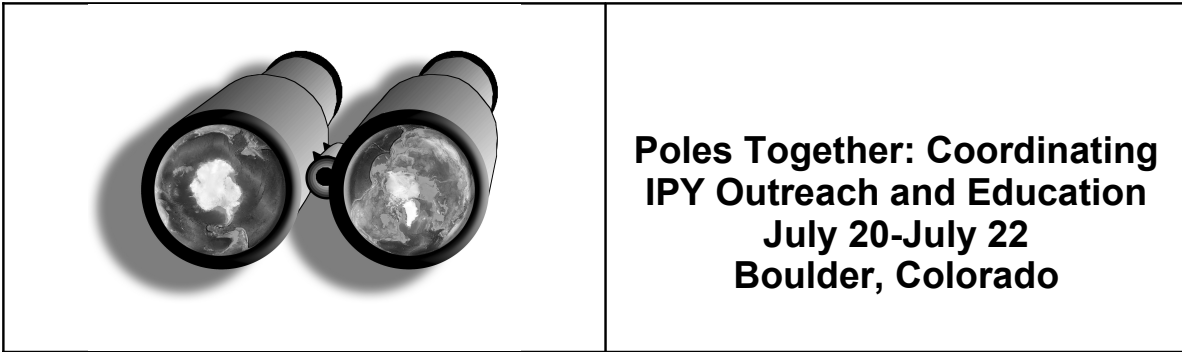
### Wednesday Feedback Questionnaire

1. What were most valuable aspects of today's sessions?
  
  
  
  
  
  
  
  
  
  
2. Which of your expectations for today were not met?
  
  
  
  
  
  
  
  
  
  
3. What would you have changed?



**Thursday Feedback Questionnaire**

1. What were most valuable aspects of today's sessions?
  
  
  
  
  
  
  
  
  
  
2. Which of your expectations for today were not met?
  
  
  
  
  
  
  
  
  
  
3. What would you have changed?



**Workshop Overview Feedback Questionnaire**

1. What is your **primary role** at this workshop? (Please select only one.)

- Education/outreach professional
- Teacher (K-12)
- Informal educator
- Funding organization representative
- Scientist
- Media specialist
- Other (please describe) \_\_\_\_\_

2. Did you discover some IPY **education and outreach projects** that were new to you at this workshop?

- No
  - Yes (please describe) \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

3. Did you learn about any IPY **events** that were new to you at this workshop?

- No
  - Yes (please describe) \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

4. Did you **network or form any partnerships** with other participants at this workshop?

- No
  - Yes (please describe) \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

5. Did you learn anything new about **funding opportunities** or **funding collaborative projects** for IPY work?

No  
 Yes (please describe) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. Did any plans to **collaborate** on future IPY outreach projects emerge from your participation in this workshop?

No  
 Yes (please describe) \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

7. Where do you work (organization, country)?

\_\_\_\_\_

8. What are your areas of interest/expertise for this workshop (check all that apply)?

<b>Research Topics</b>	<b>Outreach/Education Topics</b>
<input type="checkbox"/> Arctic	<input type="checkbox"/> Informal education
<input type="checkbox"/> Antarctica	<input type="checkbox"/> Formal K12 education
<input type="checkbox"/> Bipolar	<input type="checkbox"/> Undergraduate education
<input type="checkbox"/> Megafauna	<input type="checkbox"/> Graduate education
<input type="checkbox"/> Megaf flora	<input type="checkbox"/> Communication infrastructure
<input type="checkbox"/> Microfauna	<input type="checkbox"/> Integrating research, education, and communications
<input type="checkbox"/> Microflora	<input type="checkbox"/> Media information
<input type="checkbox"/> Climate modeling	<input type="checkbox"/> Data dissemination
<input type="checkbox"/> Ice processes	<input type="checkbox"/> Data tool development
<input type="checkbox"/> Paleoclimatology	<input type="checkbox"/> Online resource creation
<input type="checkbox"/> Polar societies	<input type="checkbox"/> Other (please describe)
<input type="checkbox"/> Solar-terrestrial physics	
<input type="checkbox"/> Geology	
<input type="checkbox"/> Ecosystems	
<input type="checkbox"/> Economic issues	
<input type="checkbox"/> History of polar research	
<input type="checkbox"/> International programs	
<input type="checkbox"/> Other (please describe)	
_____	

**WORKSHOP LOGISTICS**

9. On a scale from 1 to 5, how valuable were the workshop program and other printed materials you received? (Please check the appropriate box.)

<b>Below average 1</b>	<b>2</b>	<b>Average 3</b>	<b>4</b>	<b>Excellent 5</b>

10. How would you rate the online registration for the workshop? (Please check the appropriate box.)

<b>Difficult</b>	<b>Somewhat easy</b>	<b>Easy to Use</b>

11. How useful were the sections of the meeting website? (Please check the appropriate box.)

	<b>Not useful</b>	<b>Somewhat useful</b>	<b>Very useful</b>
<b>Information section</b>			
<b>Swiki</b>			

12. How would you rate the meeting facilities (e.g., meeting rooms, equipment)? (Please check the appropriate box.)

<b>Below average 1</b>	<b>2</b>	<b>Average--3</b>	<b>4</b>	<b>Excellent 5</b>

13. How would you rate the refreshments? (Please check the appropriate box.)

<b>Below average 1</b>	<b>2</b>	<b>Average--3</b>	<b>4</b>	<b>Excellent 5</b>

**GENERAL IMPRESSIONS OF WORKSHOP**

14. Please use the space below to add any other comments you have, suggestions for future workshops, or any other ideas you would like to share with us.

---

---

15. If we may contact you further about your experience, please provide your contact information here:

---

---

*Please complete and turn in this form to a workshop staff person or to the drop-box at the registration table during your final day.*

Name

Organization

Address

Address

City

State

Postal Code

Country

2. Will you be bringing a wireless-enabled laptop computer?

Yes

No

3. On Wednesday morning from 9:15 to 11:00, there will be a "Breaking the Ice" Share Fair (facilitated show and tell). Please let us know what you will be bringing to display/demonstrate at this event:

Poster

Handouts

Computer demonstration

I won't be bringing anything

Other (please specify)

4. On Wednesday and Thursday, you may bring your own lunch, purchase a box lunch (\$10), or visit the NOAA Cafeteria near the workshop rooms. Choose appropriate selection(s) below:

I will bring/buy my own lunch(es)

I would like the Wednesday vegetarian box lunch (\$10)

I would like the Wednesday meat box lunch (\$10)

I would like the Thursday vegetarian box lunch (\$10)

I would like the Thursday meat box lunch (\$10)

5. What are your areas of interest/expertise for this workshop (check all that apply)?

**Research Topics**

Arctic

Antarctica

Bipolar

Megafauna

- Megaflora
- Microfauna
- Microflora
- Climate modeling
- Ice processes
- Paleoclimatology
- Polar societies
- Solar-terrestrial physics
- Geology
- Ecosystems
- Economic issues
- History of polar research
- International programs

**Outreach/Education Topics**

- Informal education
- Formal K12 education
- Undergraduate education
- Graduate education
- Communication infrastructure
- Integrating research, education, and communications
- Choice
- Media information
- Data dissemination
- Data tool development
- Online resource creation
- Other (please specify)

6. The description that best describes the role I will play at the workshop is:

- A representative of an already-developed IPY education and outreach program **with** clear funding
- A representative of an already-developed IPY education and outreach program **without** clear funding
- A representative of an IPY education and outreach project that is still in development

- A formal educator (e.g., teacher) interested in IPY
- An informal educator (e.g., museum developer) interested in IPY
- A representative of an agency that may help fund IPY education and outreach
- A representative of a private foundation that may help fund IPY education and outreach
- A science communicator interested in content
- A research scientist interested in communicating IPY activities to non-scientists
- Other (please describe)

7. What primary audience(s) are you focused on?

- Arctic
- Social research
- Young/new scientists
- General public
- Pre-university education community
- Decision-makers
- Other (please specify)

8. If you have any special requests or needs, please list them below:

9. If you have submitted Expressions of Intent to IPY, what number is the EOI?

## International Polar Year Questionnaire—Polar Studies in Geoscience Classrooms

We are investigating the use of polar science studies in geoscience classrooms in order to prepare outreach and education components for the International Polar Year (IPY) during 2007 through 2008. Your feedback is extremely valuable to us.

1. Are you aware of the International Polar Year (IPY) during 2007-2008?

Yes

No

2. Which of the following polar science topics do you include in your curriculum?

Albedo and other physics

Water phases

Polar organisms

Climate change

Ozone

Ice core record

Human inhabitants

Polar exploration

Human impacts

Polar ecosystems

Ocean/sea/ice interactions

Oil exploration/drilling

I don't use polar science studies in my classroom

Other (please specify)

3. What effective and/or creative ways can you suggest to engage students on polar science topics?

4. Which of the following misconceptions about polar regions have you noted in your students' understanding: (check all that apply)

- Polar bears live in Antarctica
- Penguins live in the Arctic
- The Arctic is all ocean
- Antarctica is not a continent
- The two polar regions have the same climate
- Seasonal change and the annual cycle are caused by how close the earth is to the sun
- Other (please specify)

5. Linking polar science topics to national or state science standards would be:

- Extremely helpful
- Somewhat helpful
- Not helpful

6. What web-based polar resources do you recommend?

- Teachers Experiencing Antarctica and the Arctic (TEA) ([tea.armadaproject.org](http://tea.armadaproject.org))
- American Museum of Natural History ([www.amnh.org/education/resources/antarctica](http://www.amnh.org/education/resources/antarctica))
- National Snow and Ice Data Center ([nsidc.org](http://nsidc.org))
- Other (please specify)

7. Would you be interested in participating in any of the following? (check all that apply)

- IPY education developments
- IPY communication efforts
- Learning more about IPY
- Other (please specify)

8. Are you familiar with the IGY (International Geophysical Year) that took place during 1957-1958?

- Yes
- No

9. What grade levels do you teach? (check all that apply)

- K
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

10. Where is your school?

State

11. What subject(s) do you teach?

- Biology
- Chemistry
- Physics
- Geology
- Weather/climate
- Oceanography
- Astronomy
- Other (please specify)

12. How many students are in your average class?

13. Is your school

Public

Private

14. May we contact you about IPY-related education efforts? Your contact information will not be used for any other purpose.

Name

School

E-Mail

Phone

Fax

Thank you very much for your feedback. For further information on this questionnaire, please contact Mark McCaffrey at [mark.mccaffrey@colorado.edu](mailto:mark.mccaffrey@colorado.edu)