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RESEARCH ROUNDTABLE FINAL REPORT

Session Title: ***China -US Polar Region Partnerships: The International Polar Year 2007-2008 and Beyond***

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Session Summary: The cooperation of China and the United States in polar research activities has forged ties of friendship in recent years that have led to ever increasing bilateral and multilateral engagement. Cooperation has included navigation in icy regions, the psychological study of scientists working in polar areas, and sharing of research facilities and logistics. The US provided valuable technological assistance and information to China's first arctic expedition. The Polar Research Institute of China has conducted cooperative research, participated in academic exchanges and visited research organizations in the United States. Building on these foundations and capitalizing on an increasingly complimentary research agenda in the polar regions, a Roundtable was convened at the 3rd George Bush Conference on China-US Relations in Washington DC in October of 2007. The Roundtable entitled: "China -US Polar Region Partnerships: The International Polar Year 2007-2008 and Beyond" reviewed areas of scientific and research collaboration of mutual interest to China and the US. These discussions provided an opportunity for academic, scientific and governmental leaders to discuss issues of mutual interest in the polar regions including the ramifications of global change. The goal of the Roundtable was to explore ways to enhance China-US cooperation and set forth a plan to develop even more beneficial partnerships between the two countries.

Findings/Recommendations: The Roundtable discussions and presentations identified a wide range of potential mechanisms for increasing collaboration between China and the US in the polar regions. There are many examples of previous and on-going successful collaborations that provide a foundation for expanding existing relationships as well as creating new partnerships. Explicit follow-on activities were identified that encourage collaboration and solidify partnerships at the national, scientific program, organization/agency, and individual researcher levels (see Appendix 1). These discussions suggest a multi-faceted strategy to advance China-US partnerships in science in the polar regions during the IPY and beyond.

National Program-to-National Program - Joint China-US relations in the polar regions are facilitated by a good working relationship between national polar science programs. In the US, polar science is managed by the National Science Foundation's Office of Polar Programs (OPP). The National Oceanic and Atmospheric Administration (NOAA) has a history of cooperating with its equivalent in China, the State Oceanographic Administration (SOA) in Arctic oceanography and atmospheric monitoring and research. In China, the Polar Research Institute of China (PRIC) is a primary focus of polar research and logistics. PRIC is an institute within SOA. These organizations have been conducting bilateral discussions for some time and have developed a working relationship based on mutual interests and benefit. One item best coordinated at the national program level is the sharing of logistical support in the polar regions. The US NSF OPP has a long history of international partnerships based on reciprocal agreements where each side bears the costs of its nationals and the host partner provides in-kind support. There are international organizations that provide a forum for bi- and multi-national discussions and

exchange of information on logistics such as the Council of Managers of National Antarctic Programs (COMNAP). China and the US are members of COMNAP. On occasion, NSF has funded special focus bilateral programs targeting timely and urgent scientific needs in collaboration with other countries. These programs rely on an equivalent program in each country that funds its own nationals to participate in joint programs. In the US, the NSF International Program Office funds international activities. These programs include exchanges of students and researchers, workshops and planning efforts, and joint programs. There may be equivalent opportunities in China. Interested researchers are encouraged to take advantage of these opportunities for partnership building. These types of activities are especially important at the early stages of collaboration and these monies are available to facilitate planning efforts and student exchanges.

Organization-to-Organization - Most researchers in the US are housed in Universities or research centers. This allows for organization-to-organization agreements and exchange programs of various types. These are generally in the form of Memorandum of Understanding (MOU) or Agreement (MOA). The details of these types of agreements are highly variable and may include a philosophical commitment to work together; faculty, researcher and student exchange programs; reciprocal accommodation agreements; and/or joint degrees. Texas A&M University is planning on signing an agreement with Ocean University to offer joint graduate degrees in Oceanography that would include students spending time on both campuses, sharing the burden for tuition, and requiring degree committees to include faculty from both Universities. This is but one example of bilateral organization-to-organization agreements. Interested parties are encouraged to pursue these agreements to provide a framework for furthering partnerships. In many cases MOUs/MOAs have little or no commitment of resources and are primarily administrative mechanisms to allow collaboration if funding can be found elsewhere. Faculty should consider spending time at institutions in China for development and sabbatical leaves as a way to develop joint programs. As mentioned above, often organizations have scheduled field operations or field facilities that are flexible enough to offer others an opportunity to participate and visit for relatively minor additional costs. Most US Universities are looking for ways to internationalize the undergraduate and graduate student experience and these types of exchanges can meet these objectives.

Program-to-Program - Partnerships and cooperation can be advanced through governmental and non-governmental international organizations that both countries participate in and this is explored further below. CPOMANP was mentioned above as a venue to coordinate logistics in Antarctica. There are many international organizations that China and the US both belong to that facilitate international science in the polar regions. These existing forums offer venues where China and US scientists can increase collaboration in areas of mutual interest. Closer alignment of interests in these organizations would benefit both nations. For example, China and the US are members of the Scientific Committee on Antarctic Research (SCAR). SCAR has 5 major Research Programs and US and China scientists are participating in several of these. These programs organize symposia, conferences, workshops, and scientific meetings that could advance bi-lateral cooperation. Communicating both countries objectives for participation in these programs could lead to closer collaboration. In addition there are other major science programs that serve as a common venue for both countries. One example is the Roundtable that capitalized on the IPY 2007-2008 to have these discussions. There are many IPY programs that China and the US participate in that would benefit from closer coordination between the countries. These programs should be identified and bilateral interactions facilitated.

Researcher-to-Researcher - Lasting relationships are mostly developed at the person-to-person level. While agreements at higher administrative levels can facilitate interactions, it is the commitment of the working researcher/scientist that will move partnerships from an idea to reality. It is also at the personal level that ties can be built by encouraging and facilitating interactions that require only modest financial investments. These interrelationships can be built through a number of mutually beneficial activities, such as joint publication of scientific results, proposing and chairing sessions at scientific meetings, co-organizing and sponsoring workshops and symposia, sharing of data, exchanges of personnel (faculty, researchers, and students), participation in field programs already scheduled by making slots available to others, and developing joint research programs. The combination of the activities over a period of years builds partnerships and friendships that will make larger the more complex and ambitious programs envisioned feasible. The development of one-on-one relationships is encouraged and every opportunity should be taken advantage of to work together. Strong relationships can only be built by working closely together for extended periods of time.

Future Collaborations: The following opportunities have been identified so far:

- Ice Sheet and Ice Shelf Dynamics: The West Antarctic Ice Sheet (WAIS) workshop is held annually near Dulles Airport in the US. This year WAIS will meet with FRISP (Forum for Research in Ice-Shelf Processes), tacitly the European counterpart to WAIS. In 2008, the WAIS/FRISP combined workshop will be in Europe at a site and time to be arranged. T.
- Remote Sensing and GIS Applications in Antarctica - Remote sensing and GIS techniques have been used for High-resolution modeling of surface topography, ice motion, and mass balance including the mapping of Antarctic ice sheet margins and snow melt zones. Sharing of the research experiences and data with colleagues working within the PANDA project on the Amery Ice Shelf. There is the opportunity for training of researchers in PRIC and development of joint projects in remote sensing and GIS.
- Ice Breaker Ship Time in the Arctic Ocean Basin: There will be various opportunities for scientists to participate in upcoming cruises in the Arctic Basin region. US participation on the Chinese ship Xue Long (Snow Dragon) is being considered for 2008 and 2009. There are also plans for coordinated multi-ship cruises during 2008 and 2009.
- LTER Workshop - 2008
- PRIC Polar Planning Meeting, Shanghai, January, 2008
- 2009 George Bush Conference on China-US Relations: In 2009 the George Bush Conference will be held in China. It is possible to propose a polar science Roundtable subject to application and approval. Additional funds will be needed to support US participant travel to China.
- Antarctic and Arctic Oceanography: During the IPY 2007-2008, Southern Ocean sea surface temperature data will be compiled using the long-term Chinese Antarctic Research Cruises. Directly measured surface turbulent fluxes in the Southern Ocean and over the Antarctic sea ice will be analyzed and bulk flux model will be evaluated and improved. Sea ice mass balance buoys in the Arctic Ocean will be deployed to measure sea ice thickness using airborne EM sensor and on-ice drilling. Sea ice data will be generated and used to validate and improve remote sensing of sea ice and sea ice models.

Other Information: An informal working group has been formed called “China-US Science at the Poles (CUSP)” and a web site (<http://psp.tamu.edu/signature-programs/china-us-science-at-the-poles>) has been developed to coordinate follow-on activities. The presentations provided during the Roundtable are available at the web site.