



Office of Polar Programs National Science Foundation

Overview of Activities

Michael Van Woert

Executive Officer



NSF Roles in Polar Science



- Chairs the interagency arctic research policy committee [Arctic Research and Policy Act of 1990], which coordinates federal arctic research.
- Manages the U.S. Antarctic program on behalf of the U. S. Government and Support State Dept. on AA Treaty (includes meeting ACA requirements)
- Supports fundamental polar research and education and associated infrastructure



OPP FY07 Budget Request



Arctic Science	–	\$52.5 M
Antarctic Science	–	\$52.5 M
Arctic Logistics	–	\$37.0 M
Antarctic Logistics	–	\$228.6 M
Safety and Health	–	\$5.9 M
Ice Sheets Center (STC)	–	\$4.5 M
USCG Polar Icebreaking	–	\$57.0 M
Total	–	\$438.1 M



Antarctic Sciences Section



- **Aeronomy and Astrophysics**
- **Biology and Medicine**
- **Geology and Geophysics**
- **Glaciology**
- **Ocean and Climate Systems**
- **Antarctic Artists and Writers**



Arctic Sciences Section



- **Arctic Natural Science**
disciplinary research
- **Arctic Social Science**
humans in the Arctic
- **Arctic System Science**
interdisciplinary “systems” research
- **Research Support and Logistics**
supports field projects in the Arctic



Research Solicitations



- **Arctic Solicitation**
Nov/Dec Deadline
- **Antarctic Solicitation**
June Deadline

- **Synthesis of Arctic System Science**
March Deadline
- **OPP IPY Solicitation**
May Deadline
- **Postdoctoral Fellowships in Polar Regions**
April Deadline



Major Study Sites in the Arctic





Toolik Field Station



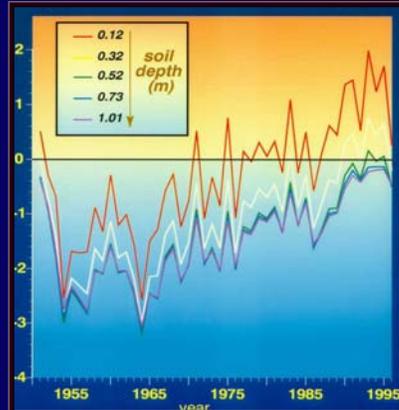
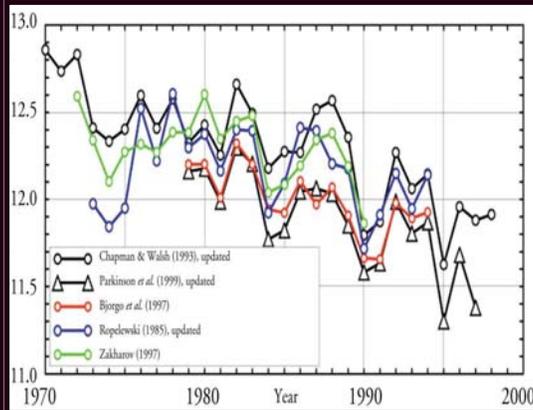
Arctic Warming Affects Marine and Terrestrial Environments



Decreasing Sea Ice Extent, km²

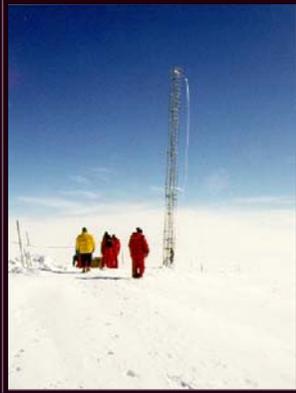


Warming Soil Temperature, °C

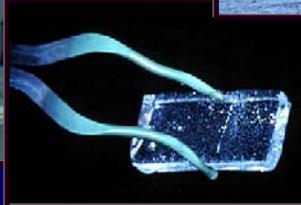




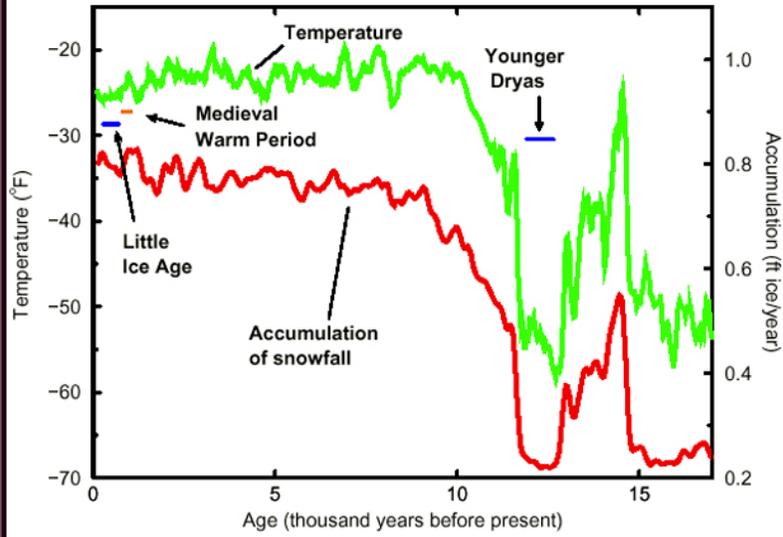
Summit Camp, Greenland



**Greenland
Ice Core
Research**



Central Greenland Climate



R.B. Alley, 2000
Two-Mile Time Machine



Arctic-Subarctic Ocean Flux Study (ASOF)



Measuring and modeling the variability of fluxes between the Arctic Ocean and the Atlantic Ocean; implementing long-term measurements of critical data for understanding the high-latitude ocean's steering role in decadal climate variability at mid-lower latitudes.



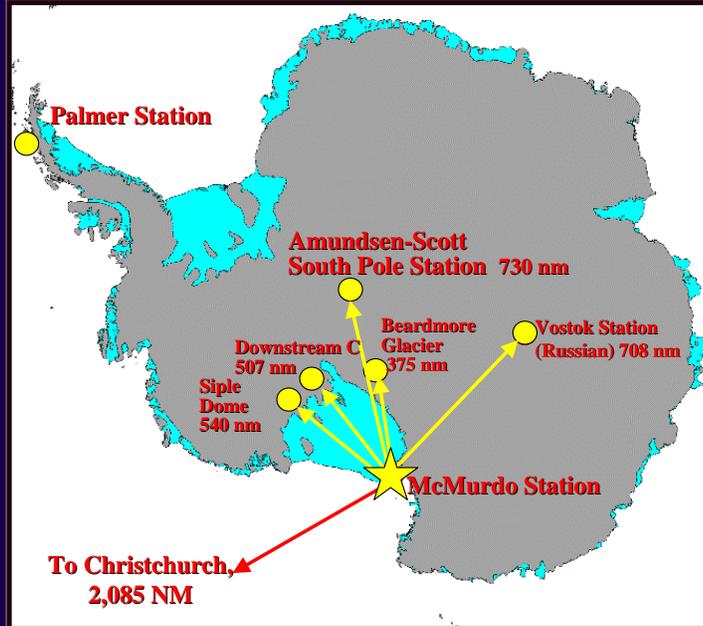


Antarctic Science



Science performed includes:

- Upper atmosphere studies
- Astrophysics
- Climate change
- Seismology
- Glaciology
- Volcanology
- Marine biology





McMurdo Station





Palmer Station





Antarctic fauna

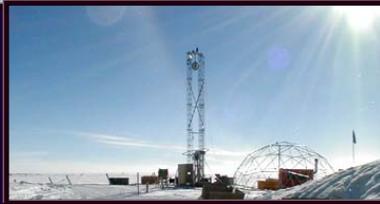




Amundsen-Scott South Pole Station, January 2006



Astrophysical Research





USAP Aircraft and Research Ships



Aircraft:

- 10 ski-equipped C-130 airplanes
 - provide inter- and intra-continental transportation and field support
- 4 contracted helicopters
 - provide support field operations and search-and-rescue operations
- 2 leased ski-equipped Twin Otter aircraft
 - provide field support

Research Ships:

- R/V *Nathaniel B. Palmer*
- R/V *Laurence M. Gould*
- Coast Guard icebreaker

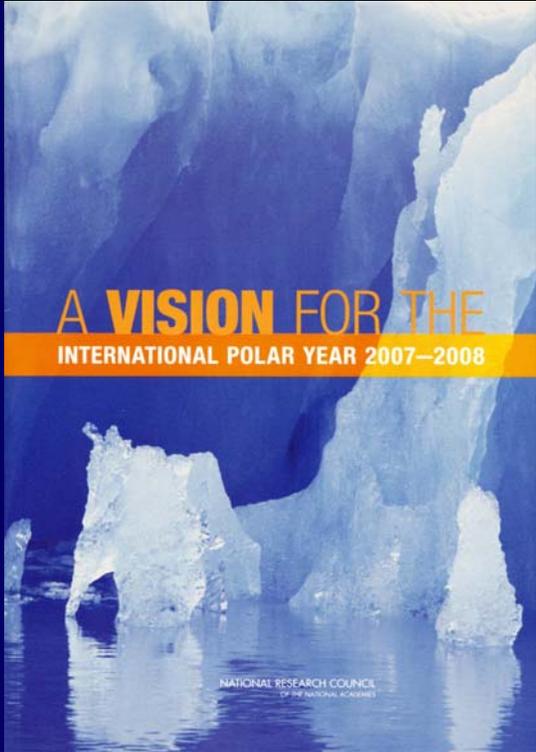
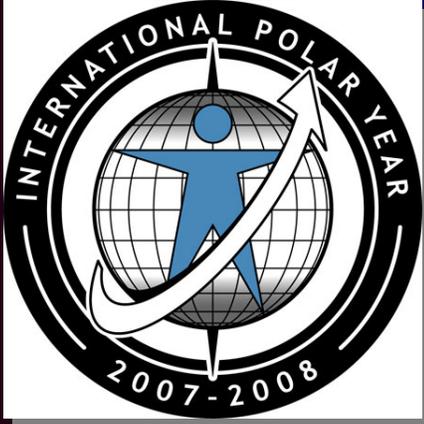


SHALDRIL



- Engineering trials – phase 1
- Successful: 100m bsf, 85% recovery







International Polar Year 2007-2008: Scope



- 30 Countries Actively Planning IPY
- 20 More Countries Expressing Interest
- NSF Designated as the Lead Agency for the U.S.
 - Approx. \$15 Million This Year
 - \$62 Million in FY 2007 Requests
- Strong OPP/OISE/EHR Partnership
- Unique Opportunity to Advance Frontiers in:
 - Research
 - International Partnerships
 - Education and Outreach



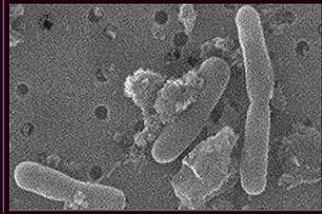
Special FY06 IPY Solicitation Emphasis Areas



- Arctic Climate Change Research
- Ice Sheet Dynamics and Stability Studies
- Studies of Life in the Cold and Dark
- Education about the Polar Regions and their Importance to the Global System



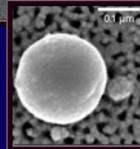
Life in the Cold and Dark



Snow Bacteria Found at the geographic South Pole



Bacteria Found in Melt Samples Taken from Ice Thought To Be Refrozen from the Waters of Lake Vostok.





SEARCH Strategy **(Study of Environmental ARctic CHange)**



- Long-term observations to detect and track the environmental changes
- Modeling to synthesize observations, test ideas and predict the future course
- Process studies to understand feedbacks
- Application of what is learned to understanding the ultimate impact of the physical changes on ecosystems and societies, and to distinguish between climate-related changes and those due to other factors

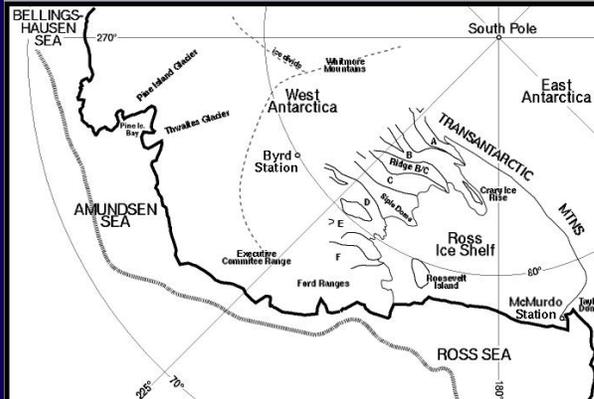


West Antarctic Ice Sheet Program (WAIS)



Ice Dynamics Studies of the Siple Coast Ice Streams

- How will the unstable West Antarctic ice sheet affect future sea level?
- How do rapid global climate changes occur?
- Future sea-level rise?





Teachers Experiencing Antarctica and the Arctic

