OFFICE OF POLAR PROGRAMS $386,930,000

The FY 2006 Budget Request for the Office of Polar Programs (OPP) is $386.93 million, an increase of $42.57 million, or 12.4 percent, over the FY 2005 Current Plan of $344.36 million. The increase includes a transfer of $48.0 million for U.S. icebreaking operations in polar regions, formerly the responsibility of the U.S. Coast Guard.

Office of Polar Programs Funding

(Dollars in Millions)

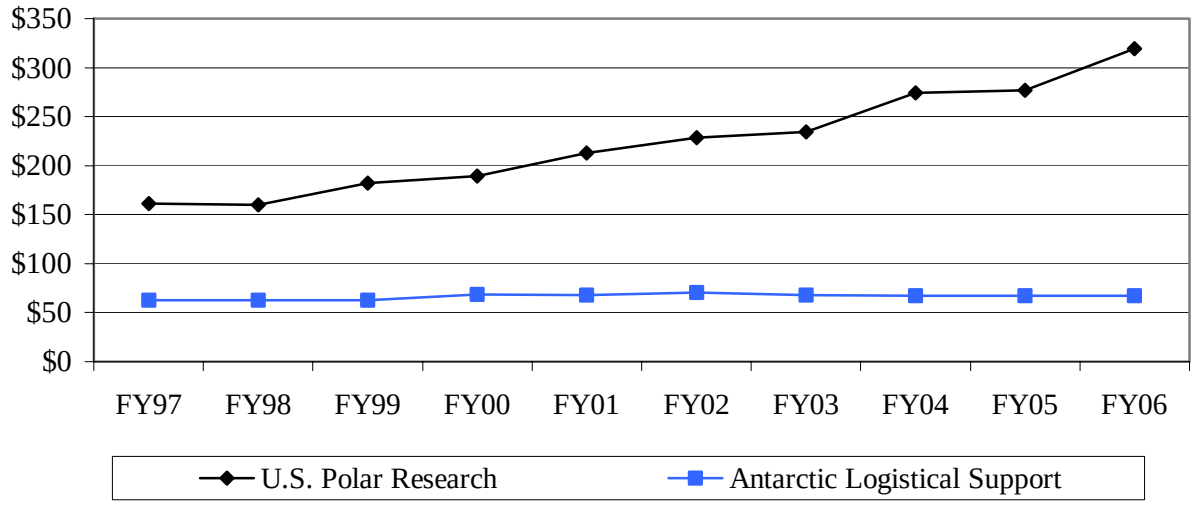
	FY 2004 Actual	FY 2005 Current Plan	FY 2006 Request	Change over FY 2005 Amount	Change over FY 2005 Percent
U.S.Polar Research Programs	274.18	276.84	319.41	42.57	15.4%
U.S. Antarctic Logistical Support	67.54	67.52	67.52	0.00	0.0%
Total, OPP	341.72	$344.36	$386.93	$42.57	12.4%

Totals may not add due to rounding.

The Office of Polar Programs supports most of the research in polar regions funded by the National Science Foundation. The Arctic and Antarctic are premier natural laboratories whose extreme environments and geographically unique settings enable research on phenomena and processes not feasible elsewhere. For example, the cold dry environment and high altitude at the South Pole make it the world's best location for certain astrophysics measurements. Polar regions also offer unusual opportunities for environmental research both because polar ecosystems' sensitivity to small changes in climate renders them important bellwethers for potential future change and also because the polar regions provide information about how organisms adapt to environmental change. With this Budget Request, NSF will assume the responsibility from the U.S. Coast Guard for funding the costs of icebreakers that support scientific research in polar regions.

OPP Subactivity Funding

(Dollars in Millions)



RELEVANCE

Polar research addresses the solid earth, glacial and sea ice, terrestrial and marine ecosystems, the oceans, atmosphere and the universe. Key OPP support will broaden and deepen the fundamental observations of Arctic and Antarctic systems, including land, ice, atmosphere, ocean, and social/human systems, as well as natural records of those systems, in order to understand the components, interrelationships, and overall functioning of these systems. Increased observations, analysis and research on polar systems is critical for understanding global climate phenomena and will have ready applicability to Arctic residents, many of whom are currently experiencing a changing natural environment. OPP-sponsored research in polar regions also accesses disciplinary phenomena that cannot be studied as effectively elsewhere. The study of such phenomena in polar regions is changing the forefront of research in many fields of study. NSF is one of twelve federal agencies supporting Arctic research and logistics and provides interagency leadership for research planning as directed by the Arctic Research Policy Act of 1984. In addition, NSF is responsible for managing all U.S. activities in the Antarctic as a single, integrated program, making possible research in Antarctica by scientists supported by NSF and by U.S. mission agencies including National Aeronautics and Space Administration, National Oceanic and Atmospheric Administration, U. S. Geological Survey and Department of Energy. The U.S. Antarctic Program supports the U.S. governance role through the Antarctic Treaty.

In FY 2006, U.S. federal agencies will initiate funding for research to be conducted during the International Polar Year (IPY), 2007-2008. The National Academy of Sciences/Polar Research Board has commented that, "The International Polar Year (2007-2008) is envisioned to be an intense, coordinated campaign of polar observations, research and analysis that will be multidisciplinary in scope and international in participation….IPY 2007-2008 will benefit society by exploring new frontiers and increasing understanding of the key roles of the polar regions in globally linked systems."

As the lead agency supporting polar research NSF will be expected to provide U.S. leadership in this activity, and the FY 2006 Budget Request empowers that leadership. FY 2006 will see the first installment of funding in preparation for International Polar Year activities. Major emphasis will be placed on studies of Polar Ice Sheet Dynamics and Stability and on the Study of Environmental Arctic Change (SEARCH). Both projects will be conducted in coordination with other federal agencies. A special program solicitation is planned to provide support for such work.

Much of the research supported under IPY will be consistent and supportive of the goals of the U.S. Climate Change Science Program, particularly Goal 1, "Extend knowledge of the Earth's past and present climate and environment, including its natural variability, and improve understanding of the causes of observed changes," and Goal 2, "Improve understanding of the forces bringing about changes in the Earth's climate and related systems." Climate change research is also highlighted as a FY 2006 Research and Development Budget Priority by the Administration.

In concert with IPY efforts, support will be provided for a special Polar Genomics effort. The National Academy of Sciences/Polar Research Board report *Frontiers in Polar Biology in the Genomic Era* frames this activity, which will enable aspects such as functional genomics for overall ecosystem understanding. Research on genomics is another of the Administration's FY 2006 Research and Development Priorities under Biology of Complex Systems.

Priorities for FY 2006:

- FY 2006 activities implementing the federal research program SEARCH will include Arctic/Subarctic Ocean Fluxes, the Arctic Freshwater Cycle: Upper Ocean Linkages, and the initial

phase of the Bering Sea Ecosystem Study (BEST). These research studies will provide new insight into the causes of climate change and their impacts. A special solicitation will call for proposals to implement an Arctic Observing System consistent with recommendations emerging from the National Academy of Sciences.

- Research and infrastructure to better understand how the large polar ice sheets have and will impact global systems will be initiated under the IPY Ice Sheet Dynamics and Stability project. Activities under this program will include the West Antarctic Ice Sheet Divide Drill (ice core) Project. In addition, the climate history of the Antarctic continent will be sampled through the ANDRILL sediment core project.
- The FY 2006 budget will also provide funding for IPY research addressing new research opportunities identified in the report by the National Academy of Sciences/Polar Research Board entitled *Frontiers in Polar Biology in the Genomic Era.* Through studies uniquely possible in polar regions this research will take advantage of newly developed techniques for biological research to provide an understanding at a fundamental level of how organisms cope with life in the cold and dark. This activity aligns with the Biocomplexity in the Environment priority area, and may be done as an OPP-wide partnership in collaboration with the Directorates for Biological Sciences, Geosciences, and others.

Summary of Major Changes in Office-Wide Investments *(Dollars in Millions)*

Polar Programs FY 2005 Current Plan…….	**$344.36**
U.S. Polar Research Programs	
NSF will assume the responsibility, from the U.S. Coast Guard, for funding the costs of icebreakers that support scientific research in polar regions.	+$48.00
Program offsets made in other areas provide funding for the above activities. If costs for icebreaking operations exceed what is currently budgeted, additional offsets will become necessary:	
• Reallocated funds and funding made available from completed research projects	-$2.43
• Defer procurement of vehicles for full traverse, the Williams Field Relocation Project and replacement of the Trades/Carpentry Shops at McMurdo Station.	-$3.00
U.S. Antarctic Logistical Support	
Level with FY 2005 Current Plan	---
Subtotal, Changes	+$42.57
FY 2006 Request, OPP…….	**$386.93**

Polar Programs Funding by Major Area

(Dollars in Millions)

	FY 2004 Actual	FY 2005 Current Plan	FY 2006 Request	Change over FY 2005 Amount	Change over FY 2005 Percent
Arctic Sciences	75.32	75.89	74.37	-1.52	-2.0%
Antarctic Sciences	45.06	45.50	44.59	-0.91	-2.0%
Antarctic Operations, Science Support, Logistics	214.58	216.58	213.58	-3.00	-1.4%
Polar Environment, Safety, and Health	5.10	5.20	5.20	-	0.0%
Polar Icebreaking Base Budget Transfer[1/]	-	-	48.00	48.00	N/A
Arctic Research Commission	1.66	1.19	1.19	-	0.0%
Total, Office of Polar Programs	$341.72	$344.36	$386.93	$42.57	12.4%

[1/] Polar Icebreaking Base Budget Transfer represents new funds for icebreaking. Other icebreaking costs are included in Antarctic Operations, Science Support, Logistics.

Summary of Major Changes by Section *(Dollars in Millions)*

Polar Programs FY 2005 Current Plan..... **$344.36**

NSF/OPP +$48.00

- Assume the responsibility, from the U.S. Coast Guard, for funding the costs of icebreakers that support scientific research in polar regions.

Arctic Sciences -$1.52

- Initiate International Polar Year Activities at a moderate level;
- Initiate planning for science facilities at Barrow, Alaska;
- Reallocate funds from program base, including funding made available from completed research projects.

Antarctic Sciences -$0.91

- Initiate International Polar Year Activities at a moderate level;
- Slow progress on the 10-meter telescope at the South Pole, preventing researchers from beginning their work exploring the origin and structure of the universe via the Sunyaev-Zel'dovich effect. This instrument contributes to the study of Dark Energy, one of the highest priorities in the National Science and Technology Council report "A 21st Century Frontier of Discovery: The Physics of the Universe" a report of the Interagency Working Group on the Physics of the Universe;
- Reallocate funds from program base, including from completed research projects.

Antarctic Operations and Science Support -$3.00

- Provide infrastructure and operational support for the U.S. WAIS-Divide Drill project, 10m telescope at the South Pole, and ANDRILL;
- Complete the "proof of concept" for the South Pole Traverse that will diversify Antarctic transportation and logistics;
- Complete the McMurdo Power Plant;
- Procure equipment to enable initial traverse cargo resupply mission to the South Pole;
- Building on preliminary studies, fund design for additional fuel storage at McMurdo Station to enable two-years' storage;
- Upgrade the Long Duration Balloon facilities in support of NASA missions. These facilities support research such as the project called Boomerang, which was one of the first two experiments (the other was the DASI telescope at South Pole Station) to provide convincing evidence that the geometry of the universe is flat. This research is considered "ready for immediate investment and direction known" by the National Science and Technology Council Interagency Working Group on the Physics of the Universe report "A 21st Century Frontier of Discovery: The Physics of the Universe."
- Enhance security in the U.S. Antarctic Program network;
- Defer procurement of vehicles for full traverse; and
- Defer Williams Field Relocation Project and replacement of the Trades/Carpentry Shops at McMurdo Station.

Polar Environment, Safety, and Health ---

This section was established in FY 2005 to manage and oversee the environmental, safety, and health (ES&H) aspects of research and operations conducted in polar regions. The ES&H Section will have overall responsibility for guiding the implementation of: OPP research, operational, and logistic activities from an environmental perspective that provides appropriate protection and stewardship of the environment; and research and operational activities in polar regions from a safety and health perspective, including oversight of medical activities. The exact ES&H funding requirements will be reviewed during the coming months, but are not estimated to vary radically from FY 2004 and FY 2005. ---

U.S. Antarctic Logistical Support

Level with FY 2005 Current Plan ---

Subtotal Changes +$42.57

FY 2006 Request, OPP…….. **$386.93**

PRIORITY AREAS

In FY 2006, OPP will support research and education efforts related to broad, Foundation-wide priority areas in Biocomplexity in the Environment, Mathematical Sciences, and Human and Social Dynamics.

Office of Polar Programs Investments in NSF Priority Areas
(Dollars in Millions)

	FY 2004 Actual	FY 2005 Current Plan	FY 2006 Request	Change over FY 2005 Amount	Change over FY 2005 Percent
Biocomplexity in the Environment	1.55	1.55	1.55	0.00	0.0%
Mathematical Sciences	0.18	0.20	0.20	0.00	0.0%
Human and Social Dynamics	-	-	0.20	0.20	N/A

Biocomplexity in the Environment will include support for polar genomics consistent with areas of research identified in the National Academy of Sciences/Polar Research Board report *Frontiers in Polar Biology in the Genomic Era*, including enabling aspects such as functional genomics for overall ecosystem understanding.

Mathematical Sciences will include support for modeling activities associated with polar research.

Human and Social Dynamics will support innovative research on the dynamics of human social-cultural systems and individual behavior, as well as, human decision making and risk in the polar regions.

QUALITY

OPP maximizes the quality of the R&D it supports through the use of a competitive, merit-based review process. The share of research funds that were allocated to projects that undergo external merit review was approximately 86 percent in FY 2004, the last year for which complete data exist. OMB's definition of competitive, merit-based review does not include contracts, therefore support for the U.S. Antarctic Program support contract, although a competitively bid contract that undergoes a high degree of review, both internal and external, is not considered competitive, merit-based review for this calculation. If included, the support contract would raise the percentage significantly.

To ensure the highest quality in processing and recommending proposals for awards, OPP convenes Committees of Visitors, composed of qualified external evaluators, to review each program every three years. These experts assess the integrity and efficiency of the processes for proposal review and provide a retrospective assessment of the quality of results of NSF's investments.

OPP also receives advice from the OPP Advisory Committee on such issues as: the mission, programs, and goals that can best serve the scientific community; how OPP can promote quality graduate and undergraduate education in the sciences it supports; and priority investment areas in polar research. The Advisory Committee meets twice a year. Members represent a cross section of polar research with representatives from different disciplines and include a balanced representation of gender, members of under-represented minorities and geographic regions.

PERFORMANCE

In developing the FY 2006 Budget Request, NSF completed the PART for the investment category of Polar Tools, Facilities and Logistics. Overall, the PART assessment found Polar Tools, Logistics and Facilities to be an "effective" program, the highest rating, with recommendations to perform a targeted review through a Committee of Visitors (completed), continue to improve performance targets and monitoring, and further promote the use of Earned Value Management in facilities construction. Additional information on major OPP-supported facilities is available in the Major Multi-User Research Facilities Chapter of this document.

Office of Polar Programs
By Strategic Outcome Goal and Investment Category
(Dollars in Millions)

	FY 2004 Actual	FY 2005 Current Plan	FY 2006 Request	Change over FY 2005 Amount	Change over FY 2005 Percent
People					
Individuals	5.15	5.15	5.15	0.00	0.0%
Institutions	1.18	1.18	1.18	0.00	0.0%
Collaborations	0.00	0.00	1.00	1.00	N/A
	6.33	6.33	7.33	1.00	15.8%
Ideas					
Fundamental Science and Engineering	76.29	77.61	76.01	-1.60	-2.1%
Centers Programs	1.52	1.42	1.42	0.00	0.0%
	77.81	79.03	77.43	-1.60	-2.0%
Tools					
Polar Tools, Facilities and Logistics	256.04	257.46	300.63	43.17	16.8%
	256.04	257.46	300.63	43.17	16.8%
Organizational Excellence	1.53	1.53	1.53	0.00	0.0%
Total, OPP	$341.72	$344.36	$386.93	$42.57	12.4%

Totals may not add due to rounding.

Recent Research Highlights

Evidence of a "Lost World": Antarctica Yields Two Unknown Dinosaur Species.

Against incredible odds, researchers working in separate sites, thousands of miles apart in Antarctica found within the same week the fossilized remains of what they believe are two species of dinosaurs previously unknown to science. One of the finds is an early carnivore that would have lived many millions of years after the other, a plant-eating beast, roamed the Earth. One was found at the sea bottom, the other on a mountaintop.

Working on James Ross Island off the coast of the Antarctic Peninsula, veteran dinosaur hunters Judd Case, James Martin, and their research team believe they have found the fossilized bones of an entirely new species of carnivorous dinosaur related to the enormous meat-eating tyrannosaurs and the equally voracious, but smaller and swifter, velociraptors that terrified movie-goers in the film "Jurassic Park." Features of the animal's bones and teeth led the researchers to surmise the animal may represent a

population of carnivores that survived in the Antarctic long after they had been succeeded by other predators elsewhere on the globe.

At the same time, thousands of miles away, a research team led by William Hammer of Augustana College in Rock Island, Illinois, was working in the Antarctic interior on a mountaintop roughly 3,900 meters (13,000 feet) high and near the Beardmore Glacier. They found embedded in solid rock what they believe to be the pelvis of a primitive sauropod, a four-legged, plant-eating dinosaur similar to better-known creatures such as brachiosaurus and diplodocus. Now known as Mt. Kirkpatrick, the area was once a soft riverbed before millions of years of tectonic activity elevated it skyward.

A research team at work on James Ross Island, near the Antarctica Peninsula, where the bones of what scientists believe is a previously unknown carnivorous dinosaur were found. *Credit: NSF Photo*

The pelvis of what researchers believe is a previously unknown plant-eating dinosaur exposed on the rock where it was preserved. *Credit: William Hammer / NSF*

Hammer said several lines of evidence point to the conclusion that his and the discovery by Case and Martin represent two new species yielded up by the rocks of the "Harsh Continent." "This site is so far removed geographically from any site near its age, it's clearly a new dinosaur to Antarctica," Hammer said. "We have so few dinosaur specimens from the whole continent, compared to any other place, that almost anything we find down there is new to science."

The Alaska Lake Ice and Snow Observatory Network (ALISON): A Statewide K-12 and University Science Education and Research Partnership.

The Alaska Lake Ice and Snow Observatory Network (ALISON) is a science education and scientific research partnership between the University of Alaska Fairbanks and K-12 education community in Alaska. The project is a blending of science and science education in rural and urban classrooms throughout Alaska. Utilizing a planning grant from NSF, Dr. Martin Jeffries has created a network of classroom observatories in seven Alaskan communities, four in rural regions serving primarily Alaska Native students. The results of the pilot network may be reviewed at the very comprehensive ALISON web site http://www.gi.alaska.edu/alison/. This project continues and expands the very innovative concept of research scientists partnering with science and math teachers and their students by facilitating the students themselves collecting, analyzing and interpreting data that is used in the Principal Investigator's (PI's) continuing research project on ice, snow and water. The PI's research is to determine variability and change of ice, snow, and water over the course of one winter and of multiple winters. In this way, students and their teachers learn about the nature of scientific inquiry involving questions, simple investigation, data gathering, data analysis, explanation, and communication of investigations and explanations.

The ALISON project brings an innovative science project to rural Alaskan schools where the population is primarily Alaska Native students. In this way, the project attracts students from underrepresented groups to science and engineering, prepares students for the workforce, provides both students and

teachers with opportunities in continuous learning and career development, and promotes public understanding of science and engineering fields.

An Ice-Tethered Profiling Instrument for Sustained Observation of the Arctic Ocean.

The PIs of this GEO/OPP-supported project designed and built an automated, easily deployed Ice-Tethered Profiler (ITP) capable of returning daily high-vertical-resolution measurements of upper ocean temperature and salinity in the Arctic Ocean during all seasons over a three-year lifetime. The first prototype Ice-Tethered Profiler has now been deployed and appears to be working very well. Installation was made in late August in a ~4-m thick multi-year ice floe. The unit is operating on a fast sample schedule of six one-way profiles between 10-m and 750-m depth each day so the researchers can test endurance. Once operational, they plan on setting up ITPs to average one profile per day in order to achieve multi-year endurance. At the completion of each one-way traverse, data are sent from the underwater unit to the surface controller via an inductive modem, and then to a data server at Woods Hole Oceanographic Institution (WHOI) using the Iridium communications satellite system. Measurements taken so far clearly show the shallow temperature maximum due to the Pacific waters entering the Arctic through Bering Strait and the deeper maximum of the Atlantic Water. When completely operational, the buoy will transmit data in near-real time and be low-cost, allowing systems to be considered expendable, avoiding the need for expensive recovery operations.

Landscapes on Buried Glaciers in Antarctica's Dry Valleys Help Decipher Recent Ice Ages on Mars.

Studies of the unique landscape in the Dry Valleys of Antarctica provide new insights into the origin of similar features on Mars and provide one line of evidence that suggests the Red Planet has recently experienced an ice age, according to a paper published in the journal *Nature*. The distribution of hexagonal mounds and other features on the Martian surface at mid-latitudes similar to those in the Dry Valleys also supports previous scientific assertions that a significant amount of ice lies trapped beneath the Red Planet's surface.

Buried glacier ice in the Beacon Valley, Antarctica. *Credit: David Marchant / NSF*

A debris-covered glacier on Mars

The floor of Antarctica's Beacon Valley, in particular, is covered with hexagonal mounds that, from the air, resemble the patterns of cracked mud on a dry lakebed. The Dry Valleys mounds, however, often measure meters in diameter. Although these polygon-shaped features occur throughout the Arctic and Antarctic, an unusual variety found in the western Dry Valleys region has received particular attention because it forms only in perennially frozen soils with significant ice content. These polygons form as sub-freezing temperatures fluctuate, causing the underlying ice to contract in a hexagonal pattern. As the ice contracts, fine sediments sift down into the cracks, leaving a coarse-grained deposit covering the ice.

The research reported in *Nature* shows that similar mounds and other formations that appear in the mid-to-high latitudes on Mars could indicate ice buried near the planet's surface as well. If the analogy between the geologic processes on Mars and

those in the Dry Valleys holds true, then Mars may be more hospitable to microbial life than previously suspected. Biologists continue to make discoveries that push back the boundaries at which conditions are too extreme to support life. NSF-funded researchers, for example, have offered evidence that microbes can survive in extremes of cold and darkness between ice crystals at the South Pole. Although the Dry Valleys were thought to be a virtual dead zone when first explored a century ago, new evidence suggests that the lakes and other landscape features support microscopic life.

Other Performance Indicators

The tables below show the change in the number of people benefiting from OPP funding, and trends in award size, duration, number of awards and funding rate.

Number of People Involved in OPP Activities

	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate
Senior Researchers	843	845	840
Other Professionals	643	645	640
Postdoctorates	153	155	155
Graduate Students	395	395	395
Undergraduate Students	270	270	270
Total Number of People	2,304	2,310	2,300

OPP Funding Profile

	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate
Statistics for Competitive Awards:			
Number	267	270	265
Funding Rate	39%	39%	39%
Statistics for Research Grants:			
Number of Research Grants	219	220	215
Funding Rate	35%	35%	37%
Median Annualized Award Size	$141,229	$141,200	$141,200
Average Annualized Award Size	$189,193	$189,200	$189,200
Average Award Duration, in years	2.7	2.7	2.7

U.S. POLAR RESEARCH PROGRAMS $319,410,000

The FY 2006 Request for the U.S. Polar Research Programs Subactivity is $319.41 million, an increase of $42.57 million, or 15.4 percent, over the FY 2005 Current Plan of $276.84 million. The increase includes a transfer of $48.0 million and responsibility, from the U.S. Coast Guard, for funding the costs of icebreakers that support scientific research in polar regions.

U. S. Polar Programs Funding
(Dollars in Millions)

	FY 2004 Actual	FY 2005 Current Plan	FY 2006 Request	Change over FY 2005 Amount	Change over FY 2005 Percent
Arctic Research Program	37.93	38.49	37.72	-0.77	-2.0%
Arctic Research Support and Logistics	37.39	37.40	36.65	-0.75	-2.0%
Arctic Research Commission	1.66	1.19	1.19	0.00	0.0%
Antarctic Research Grants Program	45.06	45.50	44.59	-0.91	-2.0%
Antarctic Operations and Science Support	147.04	149.06	146.06	-3.00	-2.0%
Polar Environment, Safety, and Health	5.10	5.20	5.20	0.00	0.0%
Polar Icebreaking Base Budget Transfer[1/]			48.00	48.00	N/A
Total, U.S. Polar Research Programs	$274.18	$276.84	$319.41	$42.57	15.4%

Totals may not add due to rounding.

[1/] Polar Icebreaking Base Budget Transfer represents new funds for icebreaking. Other icebreaking costs are included in Antarctic Operations, Science Support, Logistics.

About U.S. Polar Research Programs:

The U.S. Polar Research Programs Subactivity supports both Arctic and Antarctic research. The U.S. Arctic Research Program supports research on the Arctic Ocean, atmosphere, and land areas – including their people, and marine and terrestrial ecosystems. In addition to research in individual disciplines, an Arctic System Science component focuses on interdisciplinary approaches to understanding the Arctic region, including its role in global climate. It has become widely recognized that the Arctic is in the midst of a change over the last decade. Changes have been measured in the ice cover, atmosphere, some terrestrial parameters, and northern ecosystems. Residents of the North are seeing these environmental changes affecting their lives. It is important to determine whether these changes are correlated with a short-term shift in regional atmospheric circulation or whether they signal long-term global change.

Antarctic support includes funding for NSF-supported researchers as well as for meeting NSF responsibilities as manager of the entire federal Antarctic program, including special requirements for operations and science support. The program provides grants to fund scientific research related to Antarctica and to the Southern Ocean. This fundamental research will provide new information on the ozone hole, how extreme environments affect gene expression, the effects of ultraviolet radiation on living organisms, changes in the ice sheet and impacts on global sea level, global weather, climate, and ocean circulation, and on the early evolution of our universe as well as its current composition.

Polar Programs is also responsible for managing several activities funded out of the Major Research Equipment and Facilities Construction (MREFC) Account, including IceCube and South Pole Station Modernization. The new station will provide the infrastructure required for imaginative new science on

the drawing board. Taking full advantage of the new station will require new efficiencies in delivering scientists and science supplies to remote locations and the South Pole and fuel to the South Pole. See the MREFC Chapter for further information on these projects.

In general, approximately 45 percent of the U.S. Polar Research Programs portfolio is available for new awards and activities. The remaining 55 percent funds commitments to awards made in previous years.

U.S. Polar Research Programs has two major modes of support: research and education grants and polar facilities and logistics.

- OPP research and education grants range widely in scope and include individual-investigator awards for field research in the Arctic and Antarctica or the investigator's home institution; large collaborative awards with numerous investigators and institutions; awards for projects with international partners; awards for provision of science support in the polar regions; and agreements with other government agencies for logistic support in the polar regions. In FY 2004, OPP received 688 competitive proposals and funded 267, for a funding rate of 39 percent.

- OPP is also responsible for operating and maintaining the three U.S. stations in Antarctica as well as supporting research in the Arctic, making research possible in these remote, but scientifically unique regions. With the FY 2006 Budget Request, NSF will assume the responsibility, from the U.S. Coast Guard, for funding the costs of icebreakers that support scientific research in polar regions.

U.S. ANTARCTIC LOGISTICAL SUPPORT ACTIVITIES $67,520,000

The FY 2006 Budget Request for U.S. Antarctic Logistical Support Activities is $67.52 million, unchanged from the FY 2005 Current Plan.

U. S. Antarctic Logistical Support Activities Funding
(Dollars in Millions)

	FY 2004 Actual	FY 2005 Current Plan	FY 2006 Request	Change from FY 2005 Amount	Change from FY 2005 Percent
U.S. Antarctic Logistical Support	$67.54	$67.52	$67.52	$0.00	0.0%

U.S. Antarctic Logistical Support is provided by U.S. Department of Defense components. The major elements are:

- Military personnel of the 109th Airlift Wing (AW) of the New York Air National Guard.
- 109th AW LC-130 flight activity and aircraft maintenance.
- Transportation and training of personnel in connection with the U.S. Antarctic Program.
- Support for air traffic control, weather forecasting, and electronic equipment maintenance.
- The charter of Air Mobility Command Airlift and Military Sealift Command ships for the re-supply of McMurdo Station, as well as surface freight charges.
- Fuel purchased from the Defense Logistics Agency.
- Reimbursement for use of Department of Defense satellites for communications.