

OPP Funding
(Dollars in Millions)

| | FY 2022 Actual | FY 2023 Estimate Base | Disaster Relief | | FY 2023 Estimate Total | Change over FY 2023 Base Total ¹ | | |
|----------------|-------------------|-----------------------------|----------------------|------|------------------------------|---|----------------|-------------|
| | | | Supplemental Base | Base | | FY 2024 Request | Amount | Percent |
| Total | \$544.68 | \$545.16 | - | | \$545.16 | \$565.60 | \$20.44 | 3.7% |
| Research | 110.78 | 115.61 | - | | 115.61 | 106.82 | -8.79 | -7.6% |
| Education | 3.71 | 3.92 | - | | 3.92 | 3.93 | 0.01 | 0.3% |
| Infrastructure | 430.19 | 425.63 | - | | 425.63 | 454.85 | 29.22 | 6.9% |
| USALS | 85.00 | 94.20 | - | | 94.20 | 102.00 | 7.80 | 8.3% |

¹ Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

About OPP

OPP is the primary U.S. supporter of fundamental research in the polar regions. In the Arctic, NSF helps coordinate research planning as directed by the Arctic Research Policy Act of 1984, and the NSF Director chairs the Interagency Arctic Research Policy Committee (IARPC) created for this purpose. In the Antarctic, per Presidential Memorandum 6646, NSF manages all U.S. activities as a single, integrated program, making Antarctic research possible for scientists supported by NSF and by other U.S. agencies. The latter include the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the Smithsonian Institution, the Department of Energy, and the National Institute of Standards and Technology. NSF’s U.S. Antarctic Program (USAP) research activity also supports leadership by the U.S. Department of State in the governance of the continent and Southern Ocean under the aegis of the Antarctic Treaty System.

OPP invests in polar scientific research and education and provides research support and logistics, including infrastructure, such as permanent stations and temporary field camps in the Antarctic and the Arctic. OPP’s FY 2024 Request is influenced by three key priorities: (1) maintaining strong research investments that provide the basis for cross-disciplinary system science; (2) supporting critical facilities that enable research in Earth’s polar regions; and (3) the Antarctic Infrastructure Recapitalization (AIR) program (discussed in the MREFC portion of the Research Infrastructure theme). These priorities create opportunities to investigate the causes and future trajectory of environmental, biological, and human systems being observed in the polar regions that are tightly coupled to the global Earth system.

Beginning in FY 2020 and continuing through FY 2023, Antarctic field science, infrastructure construction, and Arctic field science were substantially deferred due to global pandemic travel restrictions and the need to manage the health and safety concerns in remote enclosed settings that have limited medical capacities. In FY 2024, OPP is planning for an increase in operating tempo relative to FY 2022-23, particularly in the Antarctic.

In addition to shared cross-directorate basic research objectives, OPP investments will be guided by

recent sponsored studies, as noted below, to identify priority areas and ensure effective polar research programs.

Highlights of OPP's activities and collaborations include:

- In FY 2024, OPP research funding is \$106.82 million. To accommodate its core research priorities, OPP will continue to leverage intra-agency, interagency, and international partnerships.
- OPP will continue to support three Long-Term Ecological Research projects, two in the Antarctic and one in the Arctic, at \$3.38 million.
- The Interagency Arctic Research Policy Committee (IARPC) five-year Arctic Research Plan,¹ released in December 2021, will continue to inform Arctic science investment priorities and efforts to build an integrated research capacity to address the opportunities and challenges of Arctic change for the Nation's security and economics and for the well-being of Arctic residents.
- Arctic research support and logistics funding is increased by \$1.32 million to \$75.32 million to support Arctic field science programs as the deployment tempo is anticipated to rise as travel restrictions are lifted. Also included in the increase is funding for deferred maintenance needs at Summit and Toolik Stations in Greenland and Alaska respectively.
- Research will continue as part of the Center for Oldest Ice Exploration (COLDEX) an NSF Science and Technology Center launched in FY 2021 with the goals of finding and studying the oldest possible ice core records of Earth's climate and environmental history, and to help make polar science more inclusive and diverse.
- In Greenland, OPP will fund and provide field support to the GreenDrill project which will sample bedrock under the ice sheet for evidence of ice-free conditions. The project will also collect data to inform models predicting ice sheet behavior, including disintegration, and sea-level rise.
- Two major land-based field seasons are being planned for the international Thwaites Glacier project in the FY 2024 season. This project, initiated in 2018, is jointly supported, including shared logistics, with the Natural Environment Research Council of the U.K. Fieldwork was largely suspended in FY 2021 and resumed with a marine cruise and some land-based work in FY 2022.
- Aligned with USGCRP, in FY 2024, OPP continues investment in the Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) project. SOCCOM is now an integral component of the Global Ocean Biogeochemical Array (GO-BGC), a global network of chemical and biological sensors used to monitor ocean health.
- In FY 2024 OPP will continue its investment in shipboard observations as part of the Arctic Observing Network program (AON) through support of two new AON projects, one in the Beaufort Sea and the other in the Davis Strait (between Greenland and Canada). These activities are supported by the Academic Research Fleet.
- In FY 2024 OPP will initiate a re-build of its aging Ice Core Facility located within the Denver Federal Center and managed by the U.S. Geological Survey. Construction will be completed in FY 2025. The facility stores and preserves ice cores sourced from polar and alpine environments. These cores are one of the most important high-resolution archives of past temperature and carbon dioxide change over the past million years and are critical for supporting climate change and USGCRP research.
- Education activities across OPP will continue to be supported through existing programs including Research Experiences for Undergraduates (REU) Supplements, REU sites, and other polar education activities.
- In FY 2024 OPP will continue to invest in cutting edge biotechnology and

¹ www.iarpcollaborations.org/uploads/cms/documents/final-arp-2022-2026-20211214.pdf

computational/bioinformatic cross-disciplinary studies to understand the interplay between future changes in the environment and the unique physical and genetic adaptations of polar organisms.

- To maintain U.S. leadership in the Southern Ocean marine science, OPP will invest \$15.11 million in design studies of a future state-of-the-art ice-breaking research vessel.
- The U.S. Antarctic Logistical Support funding is increased by \$7.80 million to \$102.0 million. This will support field work in the Antarctic and reflects increases in heavy airlift flying hour rates, tanker and cargo ship charter rates, and bulk fuel prices.

In general, about 12 percent of the division portfolio is available to support new research grants. The remaining 88 percent supports awards made in prior years.

Major Investments

OPP Major Investments

(Dollars in Millions)

| Area of Investment ^{1,2} | FY 2022 Actual | FY 2023 Estimate Base Total ³ | FY 2024 Request | Change over FY 2023 Estimate Base Total ³ | |
|-----------------------------------|-------------------|--|--------------------|--|---------|
| | | | | Amount | Percent |
| Biotechnology | \$1.60 | \$1.60 | \$2.00 | \$0.40 | 25.0% |
| Climate: USGCRP ⁴ | 236.00 | 197.26 | 197.26 | - | - |

¹ Major investments may have funding overlap and thus should not be summed.

² This table reflects this directorate's support for selected areas of investment. In other directorate narratives, areas of investment displayed in this table may differ and thus should not be summed across narratives.

³ Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

⁴ FY 2022 Actual may be greater than future fiscal years due to the receipt of more meritorious proposals than expected.

To learn more about cross-agency themes and initiatives supported by OPP, such as Biotechnology and Climate: USGCRP, see individual narratives in the NSF-Wide Investments chapter.

OPP Funding for Centers Programs

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| | FY 2022 Actual | FY 2023 Estimate Base Total ¹ | FY 2024 Request | Change over FY 2023 Estimate Base Total ¹ | |
|---|-------------------|--|--------------------|--|---------|
| | | | | Amount | Percent |
| STC: Center for Oldest Ice Exploaration | \$5.02 | \$5.00 | \$5.00 | - | - |

¹ Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

For detailed information on individual centers programs, please see the Cross Theme Topics section of the NSF-Wide Investments chapter.

OPP Funding for Major Facilities

OPP Funding for Major Facilities

(Dollars in Millions)

| | FY 2022 Actual | FY 2023 Estimate Base Total ¹ | FY 2024 Request | Change over FY 2023 Estimate Base Total ¹ | |
|---|-------------------|--|--------------------|--|-------------|
| | | | | Amount | Percent |
| Geodetic Facility for the Advancement of GEoscience (GAGE) | \$1.19 | \$1.30 | \$1.36 | \$0.06 | 4.6% |
| IceCube Neutrino Observatory (ICNO) | 3.66 | 3.83 | 3.99 | 0.16 | 4.2% |
| Seismological Facility for the Advancement of GEoscience (SAGE) | 0.87 | 0.87 | 0.91 | 0.04 | 4.6% |
| U.S. Antarctic Facilities and Operations (AFO) ² | \$244.67 | 237.14 | 256.66 | 19.52 | 8.2% |
| Total | \$250.39 | \$243.14 | \$262.92 | \$19.78 | 8.1% |

¹ Captures both the FY 2023 Omnibus appropriation and the Disaster Relief Supplemental base.

² Includes development and design costs for the Antarctic Research Vessel of \$7.44 million \$12.43 million, and \$15.11 million in FY 2022, FY 2023, and FY 2024, respectively.

For detailed information on individual facilities and construction projects, please see the Research Infrastructure section of the NSF-Wide Investments chapter.

People and Funding Profiles

For info on NSF's People Numbers and Funding Profile tables, please see the Summary Tables chapter.