



Directorate for Geosciences (GEO)

Sonia Esperança

Program Director

Petrology and Geochemistry

Division of Earth Sciences

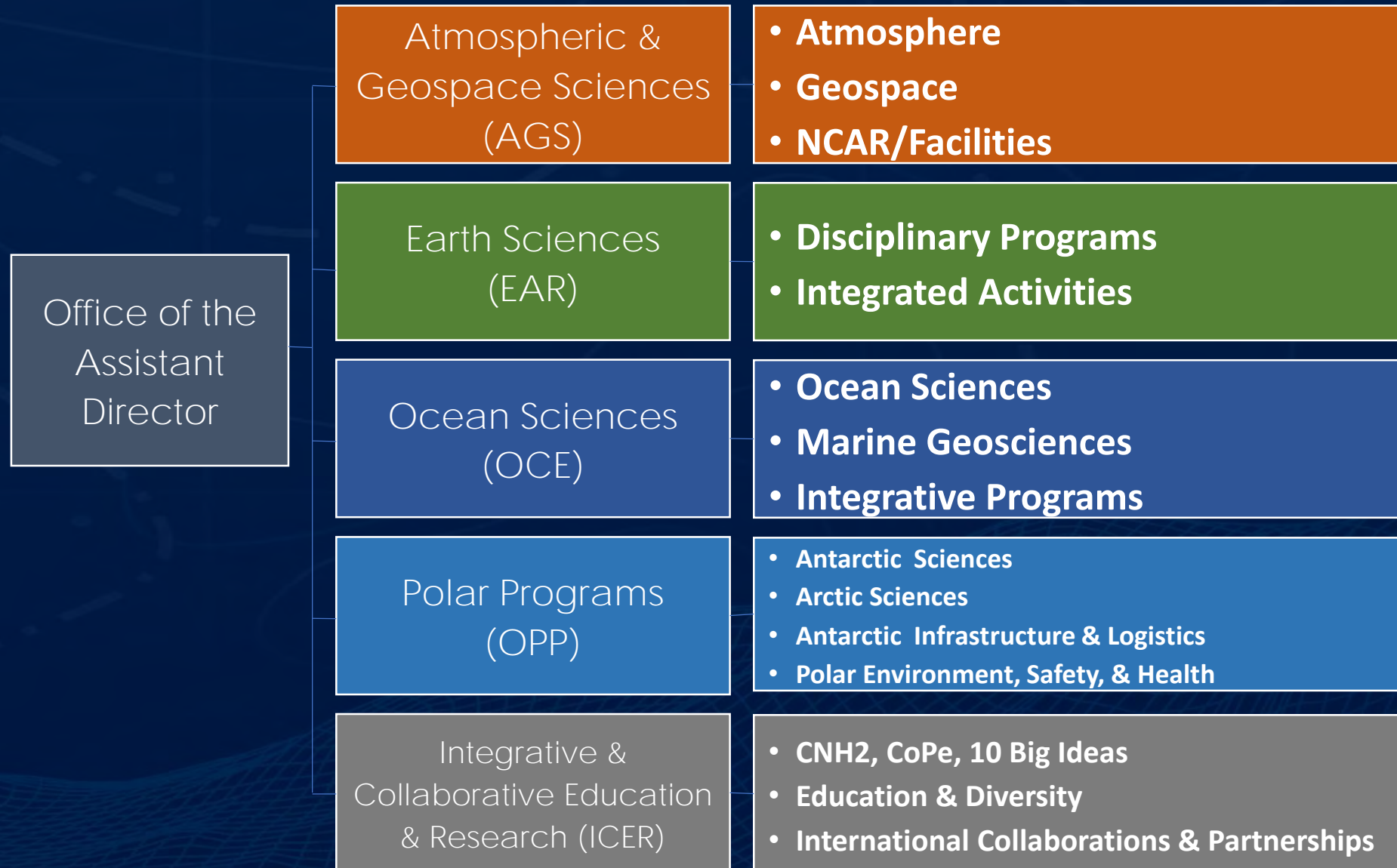
OUR MISSION

- To support research in atmospheric, earth, polar and ocean sciences
- To address the Nation's need to understand, predict and respond to environmental events and changes in order to use the Earth's resources wisely

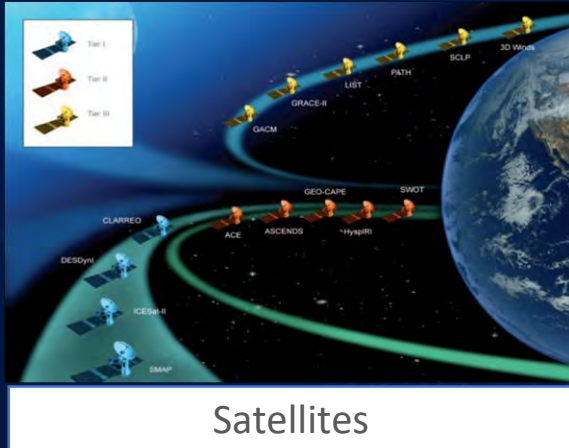
GEO SUPPORTS

- Unsolicited proposals from all scientists with interests in the geosciences
- Special competitions, often interdisciplinary
- Integration of research and education in geosciences
- Support for infrastructure, instrumentation, facilities
- Post-doctoral fellowship programs and workforce development programs

NSF Directorate of Geosciences



Division of Atmospheric and Geospace Sciences (AGS)



- Further our understanding of weather, climate and the solar-terrestrial system by expanding the fundamental knowledge of the composition and dynamics of the Earth's atmosphere and geospace environment
- Support large, complex facilities required for research in the atmospheric and solar-terrestrial sciences

Division of Atmospheric and Geospace Sciences (AGS)

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graph TD; AGS[Division of Atmospheric and Geospace Sciences (AGS)] --> NCAR[NCAR and Facilities Section]; AGS --> Atmosphere[Atmosphere Section]; AGS --> Geospace[Geospace Section]; NCAR --> LAOF[Lower Atmospheric Observing Facilities]; NCAR --> NCAR_C[National Center for Atmospheric Research]; NCAR --> CDA[Cross-Disciplinary Activities (UCAR, REU, AGS PRF)]; Atmosphere --> AC[Atmospheric Chemistry]; Atmosphere --> PDM[Physical & Dynamic Meteorology]; Atmosphere --> CLSD[Climate & Large-Scale Dynamics]; Atmosphere --> Paleoclim[Paleoclimate]; Geospace --> Aeronomy[Aeronomy]; Geospace --> MP[Magnetospheric Physics]; Geospace --> ST[Solar Terrestrial]; Geospace --> SWR[Space Weather Research]; Geospace --> GF[Geospace Facilities];
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NCAR and Facilities Section

Lower Atmospheric Observing Facilities

National Center for Atmospheric Research

Cross-Disciplinary Activities (UCAR, REU, AGS PRF)

Atmosphere Section

Atmospheric Chemistry

Physical & Dynamic Meteorology

Climate & Large-Scale Dynamics

Paleoclimate

Geospace Section

Aeronomy

Magnetospheric Physics

Solar Terrestrial

Space Weather Research

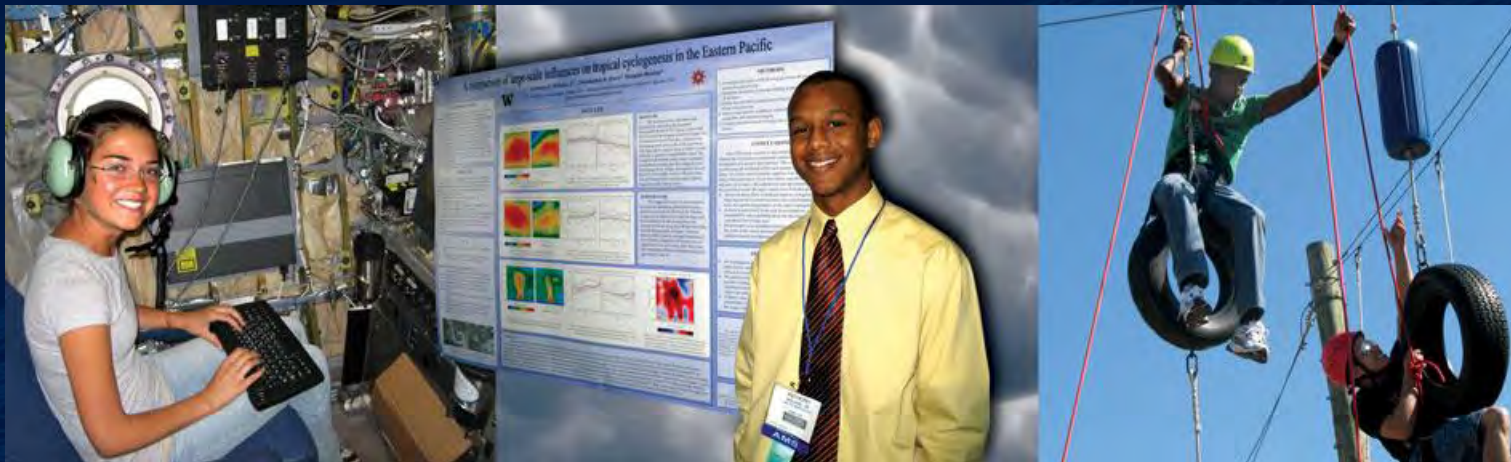
Geospace Facilities

Significant Opportunities in Atmospheric Research and Science: SOAR

<https://www.soars.ucar.edu/about/>

SOARS is an undergraduate-to-graduate bridge program designed to broaden participation in the atmospheric and related sciences.

- Built around a summer research internship, mentoring by top scientists, and a supportive learning community, that is dedicated to broadening participation in the atmospheric and related sciences.
- 10-week summer program typically starts at the end of May and continues through mid-August. SOARS protégés spend up to four summers in the program.



Division of Earth Sciences (EAR)

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graph TD; A[Division of Earth Sciences (EAR)] --> B[Disciplinary Programs Section]; A --> C[Integrated Activities Section]; B --> B1[Geobiology & Low-Temperature Geochemistry]; B --> B2[Geomorphology & Land Use Dynamics]; B --> B3[Geophysics]; B --> B4[Hydrologic Sciences]; B --> B5[Petrology & Geochemistry]; B --> B6[Sedimentary Geology & Paleobiology]; B --> B7[Tectonics]; C --> C1[Critical Zone Observatories]; C --> C2[Instrumentation & Facilities]; C --> C3[Education & Human Resources]; C --> C4[Frontier Research in Earth Sciences]; C --> C5[Geoinformatics];
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Disciplinary Programs Section

**Geobiology & Low-Temperature
Geochemistry**

**Geomorphology &
Land Use Dynamics**

Geophysics

Hydrologic Sciences

Petrology & Geochemistry

**Sedimentary Geology
& Paleobiology**

Tectonics

Integrated Activities Section

Critical Zone Observatories

Instrumentation & Facilities

Education & Human Resources

Frontier Research in Earth Sciences

Geoinformatics

Division of Earth Sciences (EAR)



- Improve the understanding of the structure, composition, and evolution and the processes that govern the formation and behavior of the Earth
- Support theoretical, computational, laboratories, field stations, and state-of-the-art scientific infrastructure

GEO EAR Postdoc Fellowship

Goals:

- Recognize investigators with significant potential
- fund research on topics supported by EAR and implementation of a professional development plan
- Theme of research proposed must be “issues relating to scale”
- enable and establish leaders within the community
- support fellows at any appropriate U.S. or foreign host institution

Program Solicitation: NSF 18-565

Deadline: September 11, 2019

More info: earpf@nsf.gov

Support:

- 24 months grant period
- \$174K total directly to fellows

Eligibility:

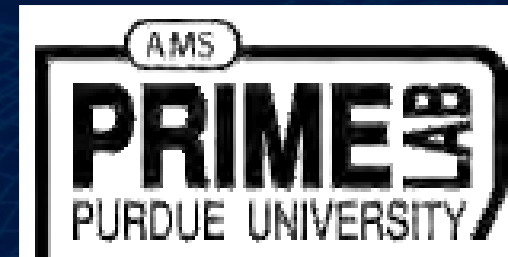
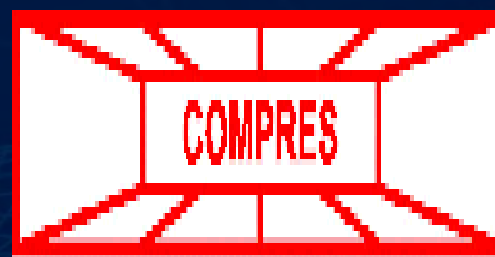
- Be US citizen, national, or permanent resident
- Have or will receive PhD by start of fellowship
- Not have worked more than 18 FTE months in positions requiring PhD
- Research within EAR purview

Instrumentation & Facilities

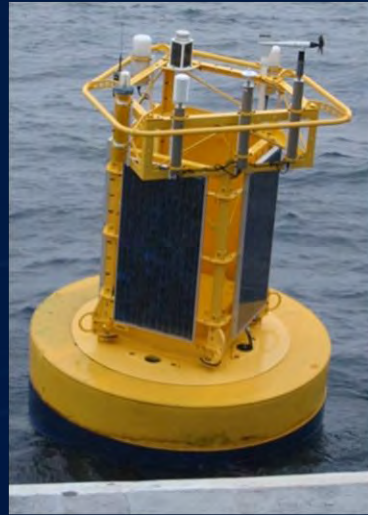
- Major Research Instrumentation (MRI)
 - \$100,000 to \$6Million for Ph.D. granting institutions
 - Proposals requesting < \$100,000 will be considered only from non-Ph.D. granting organizations
- Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories (FSML)
- Earth Sciences: Instrumentation and Facilities (EAR/IF)
- EPSCoR Research Infrastructure Improvement Program: Inter-Campus and Intra-Campus Cyber Connectivity (RII FEC)



Multi-User Facilities in Earth Sciences



Division of Ocean Sciences (OCE)



- Enhance understanding of all aspects of the global oceans and their interactions with the solid Earth and the atmosphere
- Support major shared-use oceanographic facilities including research vessels and manned deep diving submersibles

Division of Ocean Sciences (OCE)

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graph TD; OCE[Division of Ocean Sciences (OCE)] --> MGS[Marine Geosciences Section]; OCE --> IPS[Integrative Programs Section]; OCE --> OSS[Ocean Sciences Section]; MGS --> MGG[Marine Geology & Geophysics]; MGS --> CO[Chemical Oceanography]; IPS --> SO[Ship Operations]; IPS --> OF[Oceanographic Facilities]; IPS --> OITS[Oceanographic Instrumentation & Technical Services]; IPS --> OTIC[Oceanographic Technology & Interdisciplinary Coordination]; IPS --> OSE[Ocean Sciences Education]; IPS --> OD[Ocean Drilling]; OSS --> BO[Biological Oceanography]; OSS --> PO[Physical Oceanography];
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Marine Geosciences Section

Marine Geology & Geophysics

Chemical Oceanography

Integrative Programs Section

Ship Operations

Oceanographic Facilities

**Oceanographic Instrumentation &
Technical Services**

**Oceanographic Technology &
Interdisciplinary Coordination**

Ocean Sciences Education

Ocean Drilling

Ocean Sciences Section

Biological Oceanography

Physical Oceanography



University-National Oceanographic Laboratory System (UNOLS)

Early Career Initiatives

UNOLS hosts and assists in the coordination of several early career programs each year. The goal of our early career programs is to nurture the next generation of sea-going scientists.



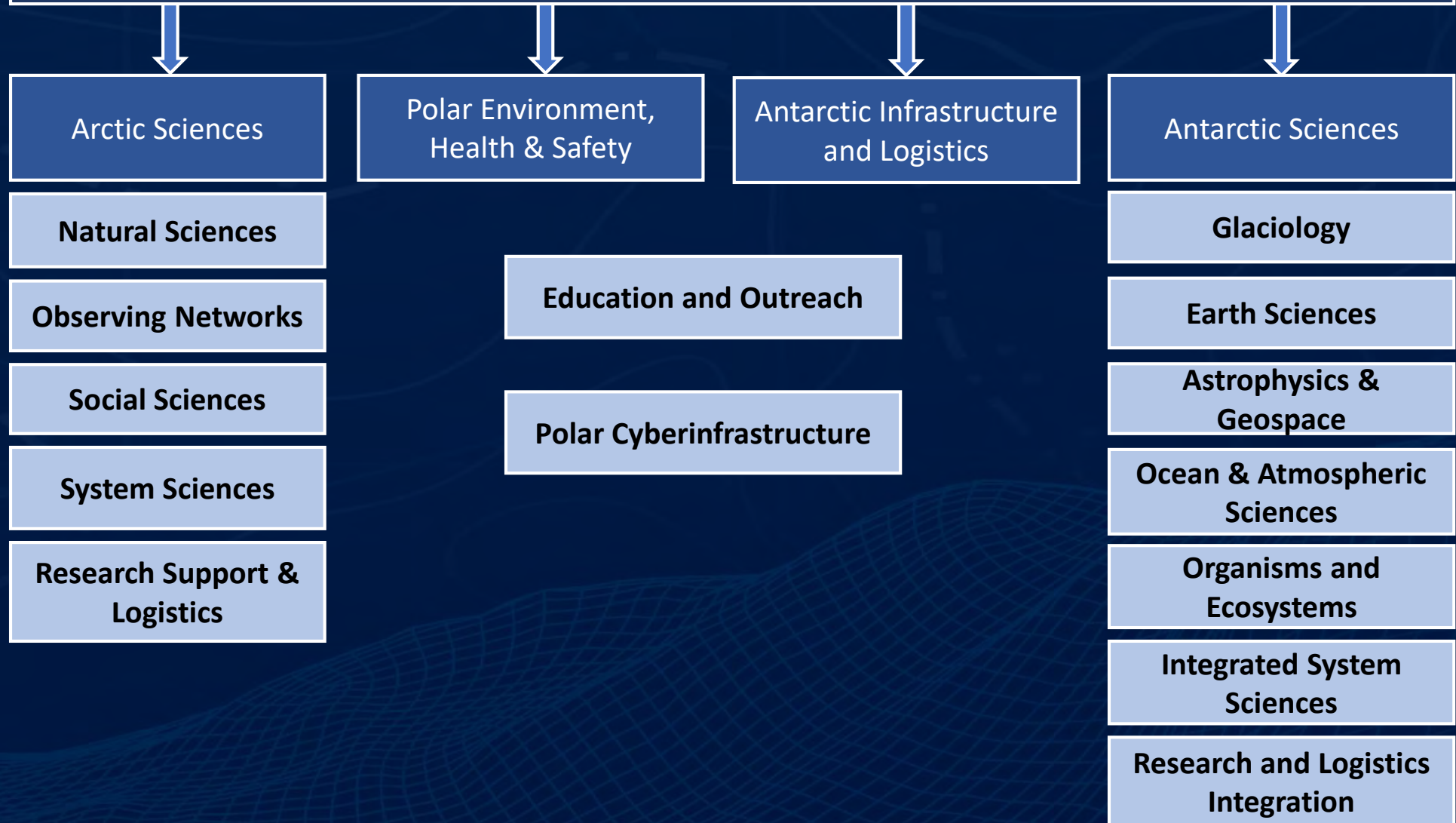
Office of Polar Programs (OPP)



- Polar regions are unique natural laboratories to investigate Earth, its systems, perform science in extreme conditions and explore this geographical frontier.
- Support basic research and operational activities in the Arctic and the Antarctic.

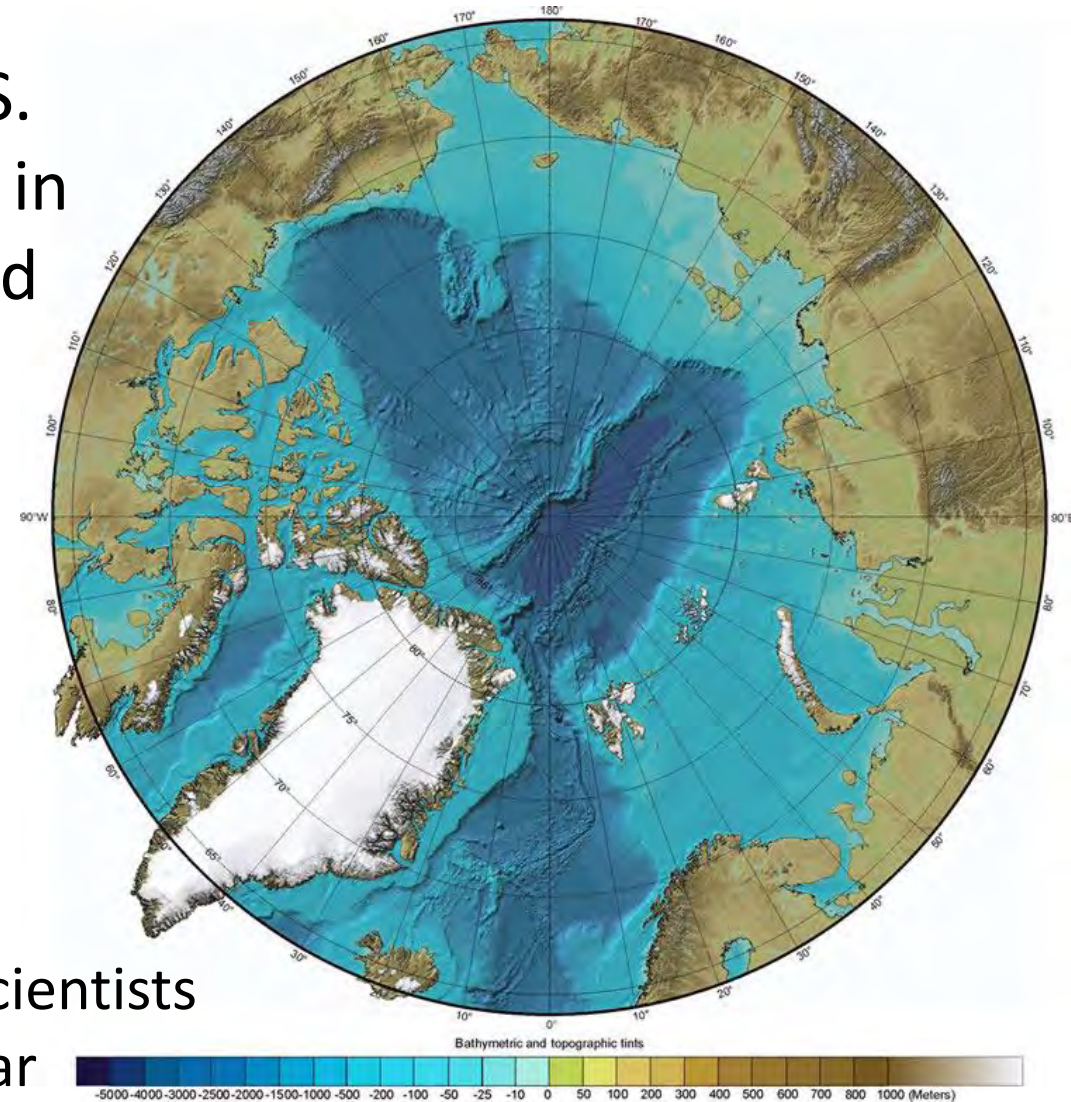
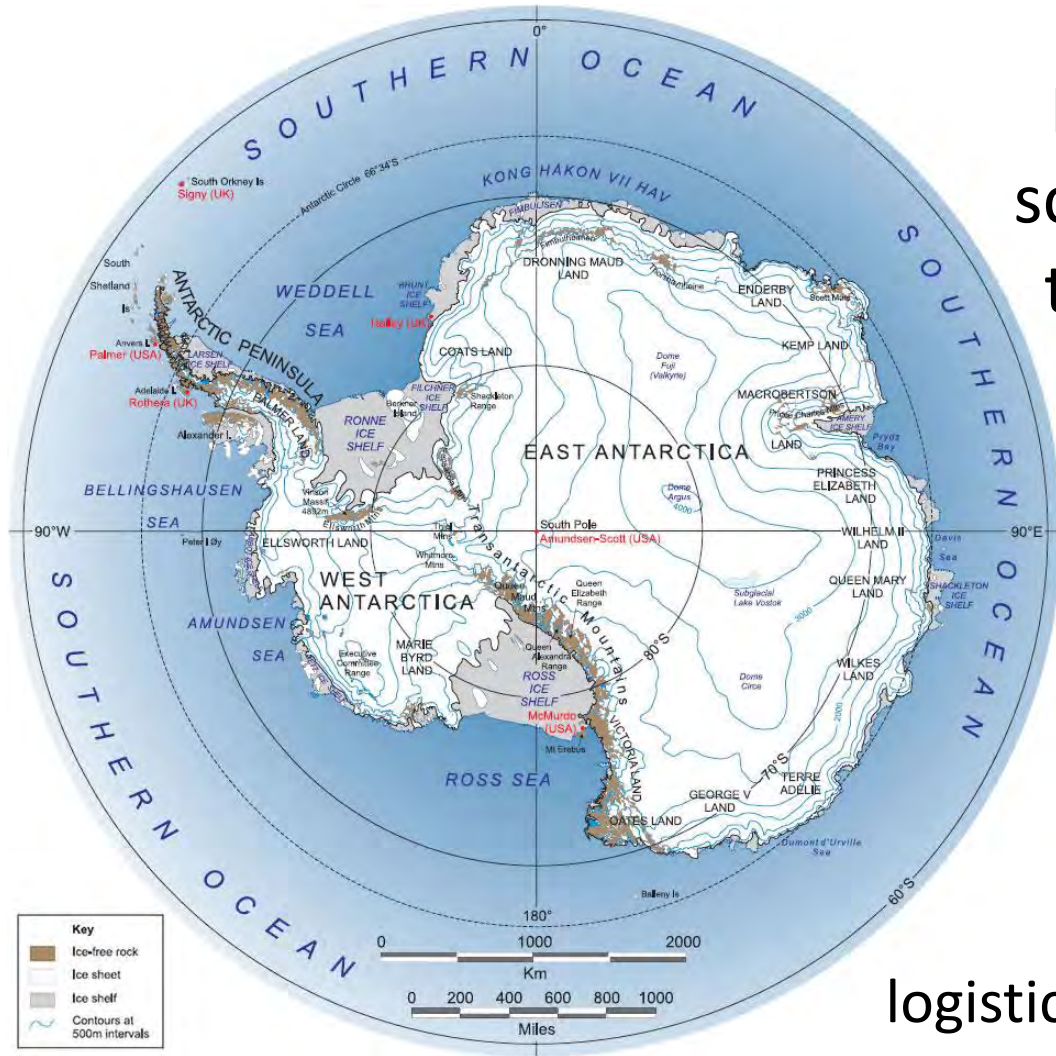


Office of Polar Programs (OPP)



Office of Polar Programs

Manages U.S.
science bases in
the Arctic and
Antarctic



OPP provides
logistic support for scientists
working in polar
regions via contractors

GEO Core Programs **

- **Atmospheric Sciences:** no deadlines; proposal may be submitted any time
- **Earth Sciences:** no deadlines in Disciplinary programs or Instrumentation and Facilities program
- **Ocean Sciences:** February and August target dates, no deadline in Marine Geology & Geophysics program
- **Polar Programs:** ARC & ANT sections – no deadlines

**Always check program solicitations, announcements, descriptions and Dear Colleague Letters (DCL) for latest updates.

Other GEO Programs

- **Paleo Perspectives on Climate Change (P2C2):** NSF 17-582
- **Geodynamic Processes at Rifting and Subducting Margins (GeoPRISMS)** Program: NSF 18-559
- **Improving Undergraduate STEM Education: Pathways into Geoscience (IUSE:GEOPATHS):** NSF 18-583



IUSE: GEOPATHS NSF 18-583

(updated annually)

- Letter of Intent due (required) ~ mid August
- Full proposal deadline ~mid October
- Two funding tracks:

GEOPATHS-EXTRA

Engaging students in the geosciences through extra-curricular experiences and training - research universities/very high research activity in Carnegie classification not eligible

GEOPATHS-IMPACT

Improving pathways into the geosciences through institutional collaborations – smooth transitions from high school to college, 2yr institutions to 4 yr. institutions, bachelors to grad school, or university to workforce

Coastlines and People (CoPe)

Dear Colleague Letter NSF 19-059



- CoPe builds on other successful activities:
 - Core programs
 - CNH
 - PREEVENTS
 - Coastal-SEES
 - CRISP
 - NHERI
- CoPe provides an Avenue for Convergence research and will engage with NSF INCLUDES
- Working group has participation from GEO, BIO, SBE, ENG, EHR and OIA

GEO FY 2019 Budget Request (in M\$)

Program	FY 2017 Actual	FY 2019 Request	Change Over FY 2017 Actual	
			Amount	Percent
AGS	\$253.37	\$239.30	-\$14.07	-5.6%
EAR	\$179.13	\$169.23	-\$9.90	-5.5%
ICER	\$76.38	\$104.95	-\$28.57	37.4%
OCE	\$316.74	\$339.50	22.76	-7.2%
OPP	\$467.85	\$534.54	66.69	14.3%

NSF's 10 BIG IDEAS FY 2019 REQUEST FUNDING

(Dollars in Millions)

FY 2019

Request

Research Ideas

\$180.00

Harnessing the Data Revolution for 21st- Century Science and Engineering - HDR (CISE/ITR)	30.00
Navigating the New Arctic - NNA (GEO/ICER)	30.00
The Future of Work at the Human-Technology Frontier - FW-HTF (ENG/EFMA)	30.00
The Quantum Leap - QL (MPS/OMA)	30.00
Understanding the Rules of Life - URoL (BIO/EF)	30.00
Windows on the Universe - WoU (MPS/OMA)	30.00

Process Ideas

\$102.50

Growing Convergence Research - GCR (IA)	16.00
NSF INCLUDES (EHR)	20.00
Mid-Scale Research Infrastructure (IA)	60.00
NSF 2026 Fund (IA)	6.50

Total, NSF Big Ideas

\$282.50

Navigating the New Arctic

10 Big Ideas

- Navigating the New Arctic (NNA) - NSF 19-511
- Goals:
 - Improved understanding of Arctic change;
 - New enhanced research communities;
 - Research outcomes that inform U.S. national security and economic development needs and enable resilient, sustainable Arctic communities
- Track 1: Research Grants with a budget of no more than \$3,000,000 and a maximum duration of 5 years.
- Track 2: Planning Grants with a total budget of no more than \$250,000 and a maximum duration of 24 months.
- Deadline: February 14, 2019



INTERN

NON-ACADEMIC RESEARCH INTERNSHIPS FOR GRADUATE STUDENTS



- Supplemental funding opportunity available through Sept. 2020
- Allows graduate students to pursue exciting professional development experiences at government agencies, national laboratories, non-governmental organizations, industry, etc.
- Open to NSF PIs supporting graduate students through active NSF awards
- Encourages underrepresented and underserved group participation in STEM



Questions?