



Directorate for Geosciences

Your name here
date





Atmospheric Sciences

- Meteorology
- Climate Dynamics and Paleoclimate
- Atmospheric Chemistry
- Aeronomy
- Magnetospheric Physics
- Solar-Terrestrial Physics
- Major Facilities (NCAR, Incoherent Scatter Radars, etc.)

Earth Sciences

- Paleobiology, Sedimentary Geology
- Geophysics & Geochemistry
- Tectonics & Continental Dynamics
- Hydrologic Sciences & Geomorphology
- Geobiology
- EarthScope Program
- Major Facilities (COMPRESS, IRIS, etc.)

Ocean Sciences

- Physical Oceanography
- Biological Oceanography
- Chemical Oceanography
- Marine Geology and Geophysics
- Oceanographic Technology
- Ocean Drilling Program
- Major Facilities (Ships, ALVIN, etc.)





Directorate for Geosciences (GEO)

Our mission is to support research in the atmospheric, earth, and ocean sciences. As the principal source of federal funding for university-based fundamental research in the geosciences, GEO addresses the nation's need to understand, predict, and respond to environmental events and changes to use Earth's resources wisely.





The Directorate for Geosciences

- invites unsolicited proposals from all scientists with interests in the geosciences
- sponsors special competitions, often interdisciplinary, in areas identified by the community as deserving special attention
- provides long-term support for shared resources
- seeks to promote collaborations with scientists in other disciplines, funding agencies, and Nations
- seeks to promote the integration of research and education





The Directorate for Geosciences Supports

- individual investigator-initiated research projects
- investigator-initiated collaborative research programs
- shared resources
 - observational platforms
 - analytic facilities
 - computational facilities
- projects that foster the education and training of the next generation of geoscientists





NSF Geosciences Beyond 2000

The Directorate for Geosciences, with input from the Advisory Committee for Geosciences and the broader research community, prepares long-range plans.

- *NSF Geosciences Beyond 2000: Understanding and Predicting Earth's Environment and Habitability* can be found at <http://www.nsf.gov/geo/adgeo/geo2000.jsp>
- *Facilities to Empower Geosciences Discovery 2004-2008* can be found at <http://www.nsf.gov/geo/facilities/>
- In late 2006, AC-GEO formed the GEOVison Working Group and charged it with developing a plan for the Geosciences Directorate. The plan is intended to provide a comprehensive view of the geosciences that will serve the Directorate as it interacts with NSF management, other government agencies, and the research and education communities. <http://www.nsf.gov/geo/acgeo/geovision/start.jsp>





Division of Atmospheric Sciences (ATM)

- furthers 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, including
 - studies of the physics, chemistry, and dynamics of earth's upper and lower atmosphere and its space environment
 - research on climate processes and variations
 - studies to understand the natural global cycles of gases and particles in earth's atmosphere
- supports large, complex facilities required for research in the atmospheric and solar-terrestrial sciences





Division of Atmospheric Sciences (ATM)

Lower Atmosphere Research Section

Phone: (703) 292-8523

- Atmospheric Chemistry (703) 292-8522
- Climate and Large-scale Dynamics (703) 292-8527
- Physical and Dynamic Meteorology (703) 292-8524
- Paleoclimate (703) 292-8527

UCAR and Lower Atmospheric Facilities Section

Phone: (703) 292-8521

Upper Atmosphere Research Section

Phone: (703) 292-8518

- Aeronomy (703) 292-8519
- Magnetospheric Physics (703) 292-8519
- Solar Terrestrial Research (703) 292-8519
- Upper Atmospheric Facilities (703) 292-8529





Division of Earth Sciences (EAR)

- improves the understanding of the structure, composition, and evolution of the Earth and the processes that govern the formation and behavior of the solid Earth, including
 - research to gain a better understanding of the Earth's changing environments, and the natural distribution of its mineral, water, and energy resources
 - methods for predicting and mitigating the effects of geologic hazards such as earthquakes, volcanic eruptions, floods, and landslides
 - dynamic modeling of earth system processes
- supports theoretical, computational, laboratories and field stations and state-of-the-art scientific infrastructure





Division of Earth Sciences (EAR)



Surface Earth Processes Section

Phone (703) 292-8553

- Sedimentary Geology and Paleobiology (703) 292-8551
- Geobiology and Environmental Geochemistry (703) 292-8551
- Geomorphology and Land Use Dynamics (703) 292-8551
- Hydrological Sciences (703) 292-8549
- Education and Human Resources (703) 292-8557

Deep Earth Processes Section

Phone (703) 292-8553

- Geophysics (703) 292-8556
- Petrology and Geochemistry (703) 292-8554
- Tectonics (703) 292-8552
- EarthScope (703) 292-8556
- Instrumentation and Facilities (703) 292-8558
- Continental Dynamics (703) 292-8559





Division of Ocean Sciences (OCE)



- enhances understanding of all aspects of the global oceans and their interactions with the solid earth and the atmosphere, including
 - biological, chemical and physical processes that characterize both coastal seas and deep ocean basins
 - geological and geophysical processes that shape the continental shelves and deep sea floor
 - resource and hazard assessment and the health of the oceans' complex and diverse ecological systems
- supports major shared-use oceanographic facilities including research vessels and manned deep diving submersibles





Division of Ocean Sciences (OCE)

Integrative Programs Section

Phone (703) 292-8583

- Ship Operations
- Oceanographic Instrumentation and Technical Services
- Oceanographic Technology and Interdisciplinary Coordination
- Ocean Education
- Ship Facilities and Support

Marine Geosciences Section

Phone (703) 292-8581

- Marine Geology and Geophysics
- Ocean Drilling Program

Ocean Section

Phone (703) 292-8582

- Biological Oceanography
- Physical Oceanography
- Chemical Oceanography





Cross-Cutting Activities in GEO

- Emerging Topics in Biogeochemical Cycles
- Paleo Perspectives on Climate Change
- Geoscience Education & Diversity





Emerging Topics in Biogeochemical Cycles

- Dear Colleague Letter issued on September 19, 2007
- Quantitative or mechanistic understanding of biogeochemical cycles that integrate physical-chemical-biological processes over the range of temporal and/or spatial scales in Earth's environments.
- Proposals must cross the disciplinary boundaries of two or more divisions in Geosciences (e.g. ATM, EAR, OCE) or of at least one division in Geosciences and a division in another NSF directorate.
- Not a special competition or new program. Relevant proposals are to be submitted to an existing GEO program according to the program's regular target or deadline dates.

GEO Contact:

Barbara Ransom (OCE) bransom@nsf.gov





Paleo Perspectives on Climate Change

- Solicitation issued in Fall 2007
- 2008 Deadlines: February 4, October 15
- Re-issuance of Earth System History solicitation

GEO Contacts:

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GEO Diversity and Education

The Directorate for Geosciences recognizes that active support of geoscience education must be a significant element of GEO's mission to promote the overall health of the geoscience enterprise. This commitment extends beyond the familiar tradition of support for the training of graduate students to embrace geoscience education reform at the undergraduate and precollege levels and active outreach to the public.

The Directorate for Geosciences has several programs to address diversity and education activities within the geosciences.





GEO Education



- Division of Atmospheric Sciences
Contact: Walt Robinson wrobinso@nsf.gov
- Division of Earth Sciences
Contact: Lina Patino lpatino@nsf.gov
- Division of Ocean Sciences
including Centers for Ocean Science Education Excellence (COSEE)
Contact: Lisa Rom erom@nsf.gov

GEO has a Directorate-wide program to fund formal (K-16) and informal geoscience education activities.

Contact: Jill Karsten jkarsten@nsf.gov





Opportunities for Enhancing Diversity in the Geosciences (OEDG)

The Opportunities for Enhancing Diversity in the Geosciences (OEDG) program addresses the problem of underrepresentation of certain groups across the geosciences as compared to their proportion of the general population. The primary goal of the OEDG program is to increase the participation in geoscience education and research by students from these groups.

Contact Jill Karsten for further information at
(703) 292-8500 or at jkarsten@nsf.gov





GEO Budget



GEO Budget Breakdown in Millions of Dollars	FY 2007 Actual	FY 2008 Estimate	FY 2009 Request
Atmospheric Sciences	\$227.44	\$229.30	\$260.58
Earth Sciences	\$152.83	\$156.08	\$177.73
Innovate & Collaborative Education & Research	\$56.82	\$56.82	\$56.82
Ocean Sciences	\$308.76	\$310.46	\$353.54
Total, GEO	\$745.85	\$752.66	\$848.67





FY 2009: Research Activities

- Continue strong support for climate change science
- Research on Dynamics of Water Processes in the Environment
 - Initial GEO funding will focus on defining frontier research opportunities and advancing activities in foundational water systems research.
- Support near-term priorities of the Ocean Research Priorities Program
- Cyber-enabled Discovery and Innovation
 - GEO investments in CDI will focus on enhancing our ability to study natural phenomena involving large numbers of interacting elements, non-linear interactions, and emergent phenomenon observed at diverse spatial and temporal scales in order to improve both predictive and deductive capabilities for a better understanding of the complex world in which we live.





FY 2009: Education & Diversity Investments

GEO has built a robust portfolio of education and diversity investments. In FY 2009, support for these programs is maintained.

- Opportunities for Enhancement of Diversity in the Geosciences
 - \$4.6 million
- Geoscience Education
 - \$2.5 million including \$1 million to foster linkages with LSAMP
- GEO Teach
 - \$3.0 million
- Global Learning and Observations to Benefit the Environment (GLOBE)
 - \$1.1 million
- Centers for Ocean Science Education Excellence
 - \$5.55 million

In addition, most facilities, centers, and many individual investigator awards include strong education and outreach programs.





FY 2009: Recent and Ongoing Major Facility Investments

- HIAPER: Construction complete, initial operations began in 2005
- AMISR: Construction nearing completion, operations ramping up
- EarthScope: Construction continues through 2008, currently on time and on budget
- Scientific Ocean Drilling Vessel: FY 2007 funds complete construction, operations to start in 2008





FY 2009 New MREFC Investments

- Ocean Observatories Investment: \$5.99 million appropriated in 2008
- Alaska Region Research Vessel: \$9.49 million appropriated in 2007 with an additional \$42.0 million in 2008

Both projects undergoing design and cost reviews prior to start of major construction and continuation of funding.





Other NSF Activities of Interest

- CAREER
- Major Research Instrumentation (MRI)

Awards for instrumentation will range from \$100,000 to \$2 million. Proposals requesting less than \$100,000 will be considered only from non-Ph.D. granting organizations or from the disciplines of mathematical science or social, behavioral, and economic science at any eligible organization.
- Research in Undergraduate Institutions (RUI)
- Research Experiences for Undergraduates (REU)
- Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories (FSML)
- Small Grants for Exploratory Research (SGER)





NSF Proposal Statistics FY 2007

	NSF	GEO
Competitive Proposal Actions	44,593	4,373
Competitive Awards	11,484	1,347
Funding Rate	15%	21%
Average Research Award Duration (Years)	2.48	2.52
Average Annual Research Award Size	\$148,189	\$156,110
Individual Panel Reviews	146,984	6,645
Panel Summaries	43,241	4,171
Mail Reviews	68,055	19,575





Proposal Preparation

Resources

- Proposal and Award Policies and Procedures
http://www.nsf.gov/publications/pub_summ.jsp?ods_key=papp
- NSF HomePage -- Guide to Programs
- Program Solicitations – eligibility, goals, special requirements
- Program Officers – current or former rotators
- NSF Custom News Service – what's new





A Good Proposal

- is a good idea, well expressed, with a clear indication of methods for pursuing the idea, evaluating the findings, and making them known to all who need to know
- includes realistic and well justified budgets that are in line with program guidelines





NSF Merit Review

NSF Review Criteria

- Intellectual Merit
- Broader Impacts

Programs can also have additional review criteria
– read the Program Solicitation!

Merit Review is conducted through ad hoc peer review and/or panel review





Words of Wisdom

- Talk to your Program Directors
Ask us early, ask us often!!
- Learn the culture – each Division and Directorate has a different *modus operandi*
- Volunteer to be a reviewer
- Don't forget to address "Broader Impacts"





On the World Wide Web



The screenshot shows a Microsoft Internet Explorer browser window displaying the NSF Directorate for Geosciences (GEO) website. The address bar shows the URL <http://www.nsf.gov/dir/index.jsp?org=GEO>. The website header includes navigation links for HOME, FUNDING, AWARDS, DISCOVERIES, NEWS, PUBLICATIONS, STATISTICS, ABOUT, and FastLane. The main content area features a large banner with the text "Advancing scientific knowledge of Earth's environment" and a search box. Below the banner, there are several columns of information, including "GEO Organizations" (Atmospheric Sciences (ATM), Earth Sciences (EAR), Ocean Sciences (OCE)), "Recently Announced Funding Opportunities" (listing various programs and their dates), "Additional GEO Resources", and "Publications". The browser's status bar at the bottom shows the URL <http://www.nsf.gov/index.jsp> and a "Local intranet" icon.



www.nsf.gov/dir/index.jsp?org=GEO