



# NSF Regional Grants Conference

Omaha, NE – October 20-21, 2008  
Directorate for Geosciences

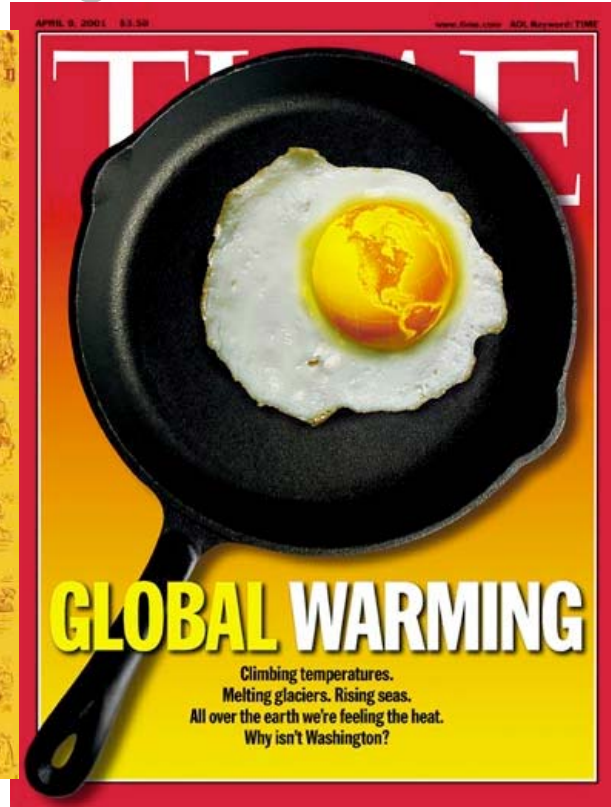
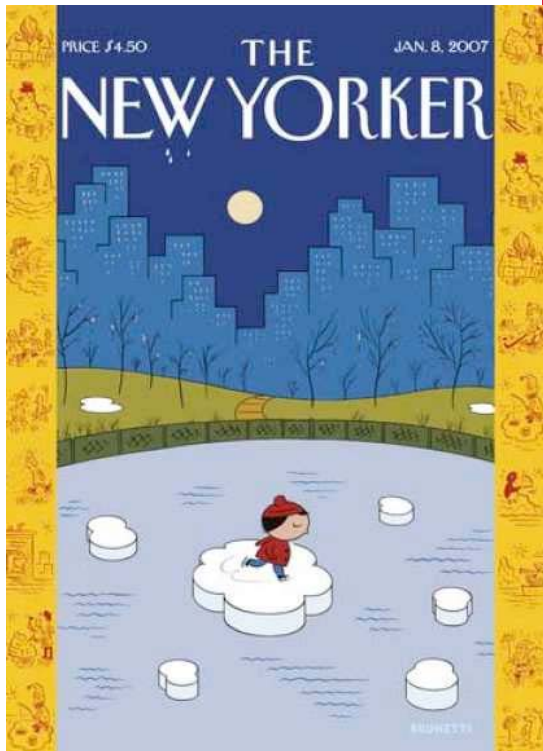
Sarah Ruth  
Division of Atmospheric Sciences

Advancing scientific knowledge of  
Earth's environment





Society demands reliable projections of coming environmental changes...



...yet forecasting is challenging.

Earth's future has no analogs in its recent past.





# 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 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





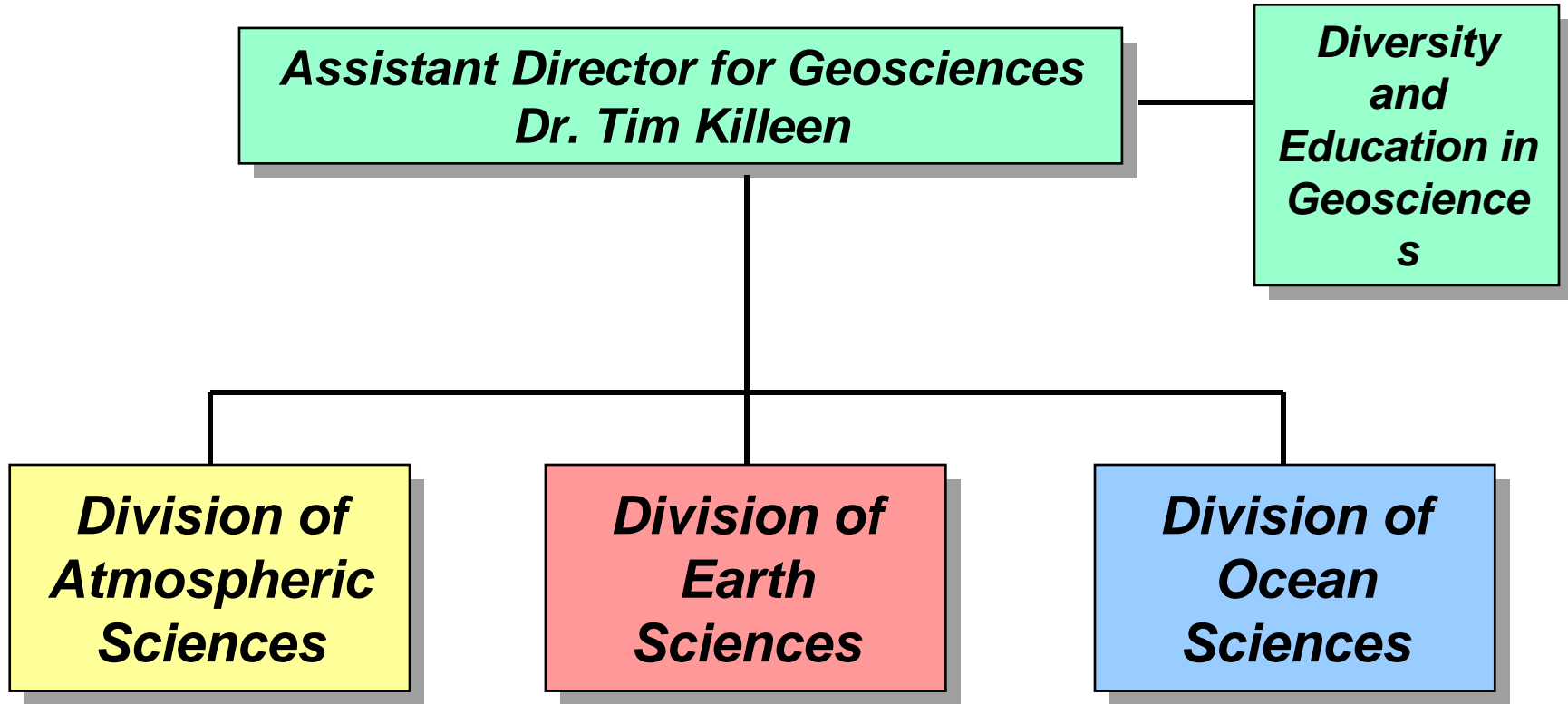
# The Directorate for Geosciences

- 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 facilities and other shared resources
- seeks to promote collaborations with scientists in other disciplines, funding agencies, and Nations
- seeks to promote the integration of research and education





# Directorate for Geosciences





## 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 (Academic Fleet, etc.)





**Division of Ocean Sciences: Dr. Julie Morris**

**Ocean Sciences Section**

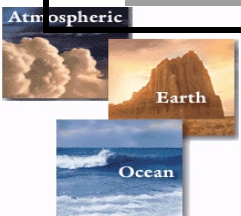
- Chemical Oceanography**
- Biological Oceanography**
- Physical Oceanography**

**Marine Geosciences Section**

- Marine Geology & Geophysics**
- Ocean Drilling**

**Integrative Programs Section**

- Ocean Sciences Education**
- Oceanographic Instrumentation & Technical Services**
- Oceanographic Technology & Interdisciplinary Coordination**
- Ship Facilities & Support**
- Ship Operations**







# NSF GEO: Who We Are

## NSF GEO Staff (FY 2008)

- Managerial Staff: 15
- Science Staff: 70
- Administrative Staff: 37
- Technical Staff: 5

## GEO Budget (FY 2008 est.)

- Total: \$752.66 million
- ATM: \$229.30 million
- EAR: \$156.08 million
- OCE: \$310.46 million
- GEO-wide: \$56.82 million

## GEO External Community (FY 2007)

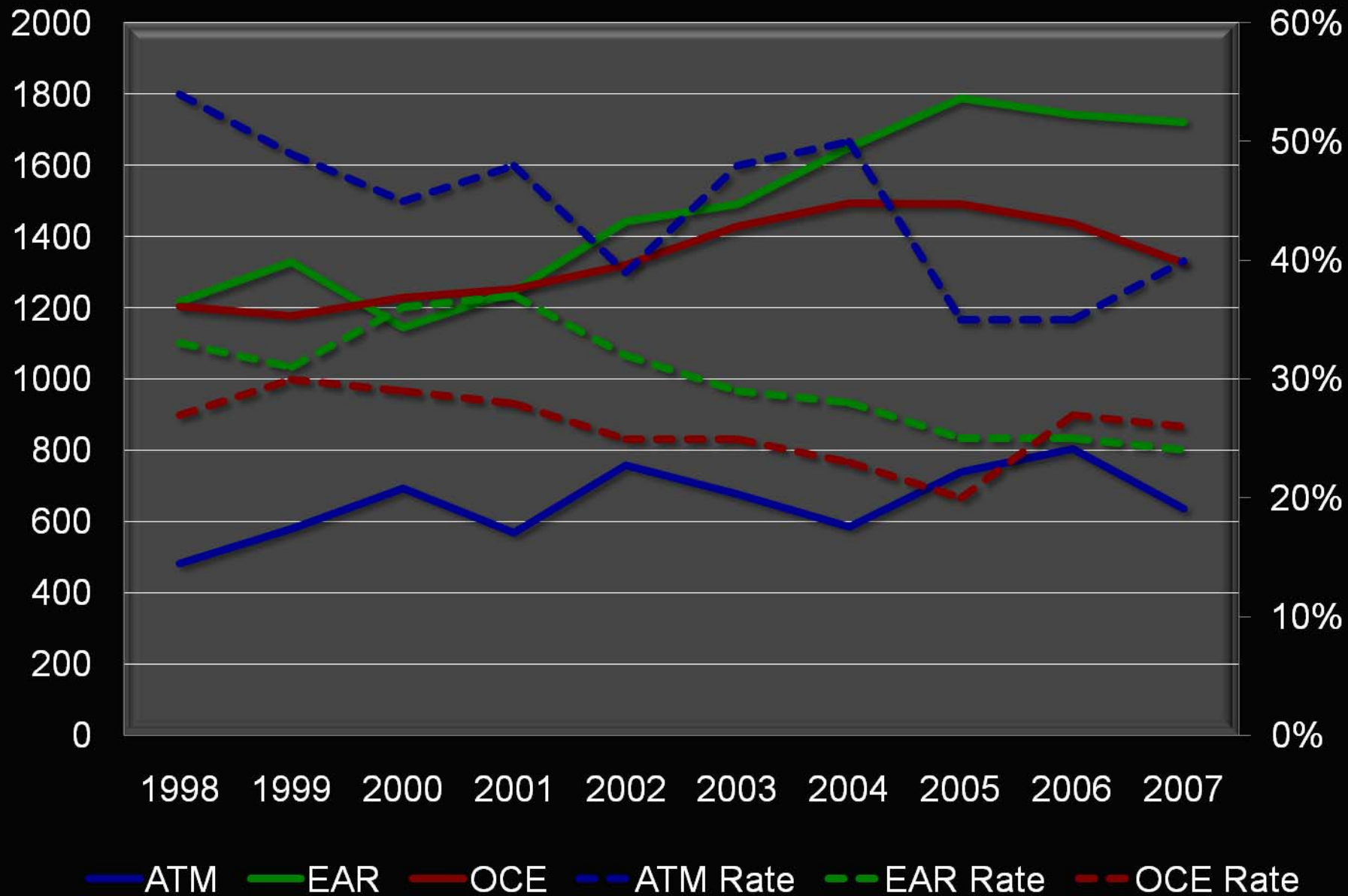
- Principal Investigators: 1,243
- Co-PI's: 709
- Post-doctorates: 265
- Graduate Students: 1,109
- Undergraduate Students: 647

## Funding Profile (FY 2007)

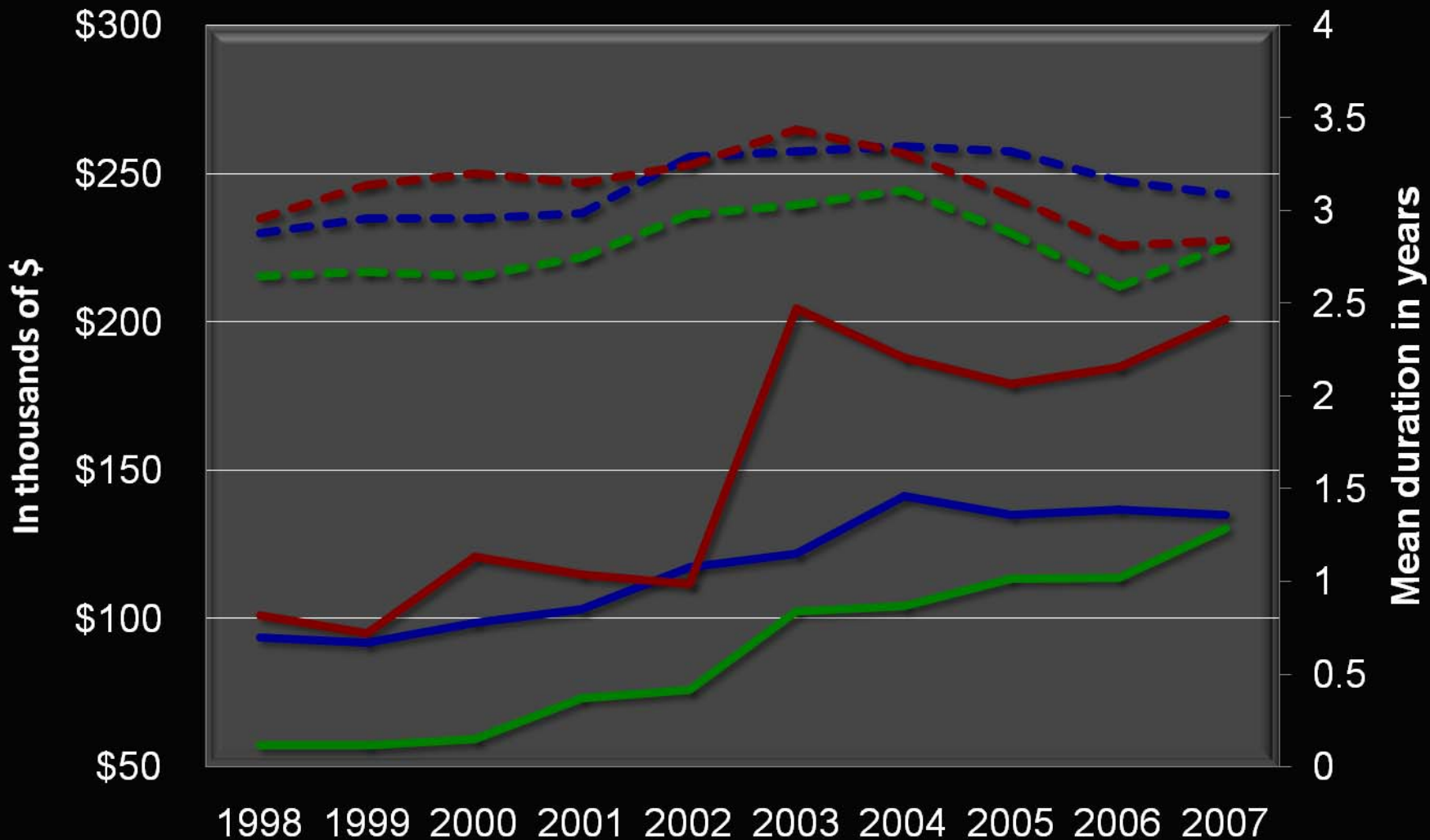
- Competitive Proposals: 3,804
- Competitive Awards: 1,038
- Funding Rate: 27%



# Number of Proposals and Funding Rate by GEO Division



# Average Annual Award Size and Duration by GEO Division



— ATM   
 — EAR   
 — OCE   
 - - - ATM Duration   
 - - - EAR Duration   
 - - - OCE Duration



# Some Cross-cutting GEO Research Activities

- Dynamics of Coupled Natural and Human Systems
- Emerging Topics in Biogeochemical Cycles
- Paleo Perspectives on Climate Change

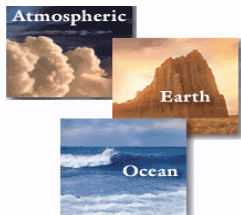






# Dynamics of Coupled Natural and Human Systems

- Promotes quantitative, interdisciplinary analyses of relevant human and natural system processes and complex interactions among human and natural systems at diverse scales
- Provides educational opportunities for Undergraduate Students, Graduate Students, K-12 Educators
- Partnership between GEO, BIO, & SBE
- Total budget of approximately \$9 M in FY 2008
- Deadline: Annually on Third Tuesday in November





# Emerging Topics in Biogeochemical Cycles (ETBC)



- 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.
- Dear Colleague Letter issued on September 19, 2007
- Not a special competition or new program.





# Paleo Perspectives on Climate Change (P2C2)

- Utilize key geological, chemical, and biological records of climate system variability to provide insights into
  - Mechanisms and rate of change that characterized Earth's past climate variability
  - Sensitivity of Earth's climate system to changes in forcing
  - Response of key components of the Earth system to these changes.
- Re-issuance of Earth System History solicitation
- Annual Deadline: October 15







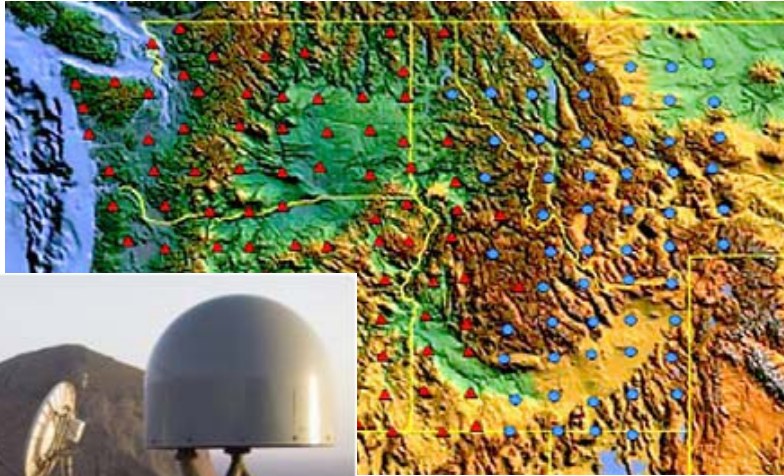
# FY 2009: Research Activities

- 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.





# Advanced Observing Facilities



Atmospheric



Earth



Ocean



# 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.

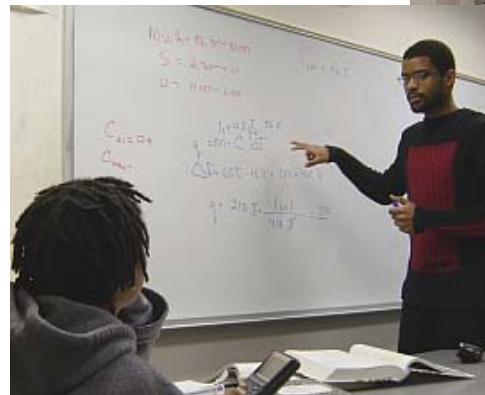




# Opportunities for Enhancing Diversity in the Geosciences (OEDG)

Primary goal is to increase participation in geoscience education and research by students from groups currently underrepresented in science, technology, engineering, and mathematics.

- About \$9 M per competition; held biennially
- New solicitation in Summer 2008
- Deadline in November 2008





# Geoscience Education (GeoEd)

- Current structure: initiate innovative GeoEd activities
  - Pilot projects: Innovative education activities, maximum award \$150K
  - Integrative collaborations: Integrate with LSAMP, AGEP or similar projects, maximum award \$500K
  - All educational levels
  - Dissemination and evaluation plans required
- Revised solicitation may modify this structure
  - Deadline: Expected in Fall 2009
  - Funds available: about \$1.5 million





# 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 features a navigation menu with links for HOME, FUNDING, AWARDS, DISCOVERIES, NEWS, PUBLICATIONS, STATISTICS, ABOUT, and FastLane. The main content area is titled "National Science Foundation Directorate for Geosciences (GEO)" and includes a search box. Below the header, there is a banner with the text "Advancing scientific knowledge of Earth's environment" and a landscape image. The page is organized into several columns of content:

- GEO Organizations:** Links to Atmospheric Sciences (ATM), Earth Sciences (EAR), and Ocean Sciences (OCE).
- About GEO:** Includes links for View GEO Staff Directory, Search GEO Staff Directory, General Information About GEO, Career Opportunities, Advisory Committee, and Budget Excerpt.
- How to Prepare Your Proposal:** Links to Grant Proposal Guide, Frequently Asked Questions, Other Types of Proposals, and Regional Grants Conferences.
- How to Manage Your Award:** Links to Grant Policy Manual, Grant General Conditions, Cooperative Agreement Conditions, Special Conditions, Federal Demonstration Partnership, and Policy Office Website.
- Recently Announced Funding Opportunities:** Lists several grants with their titles, NSF numbers, and posting dates, such as "Earth Sciences: Instrumentation and Facilities" (NSF 07-553) and "Competition for the Management and Operation of the National Center for Atmospheric Research" (NSF 07-542).
- Upcoming Due Dates:** Lists deadlines for various programs, including the "Integrative Graduate Education and Research Traineeship Program" (NSF 07-540) and "Ethics Education in Science and Engineering" (NSF 07-541).
- Additional GEO Resources:** Includes links to Geoscience Education and Diversity, GEO Education Program, GEO Diversity Program, GEO Data Policies, GEO 2000, Facilities to Empower Geosciences Discovery, U.S. Global Change Research Program, and Publications.
- Other Site Features:** Includes links to Special Reports, Research Overviews, Multimedia Gallery, Classroom Resources, and NSF-Wide Investments.

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](http://www.nsf.gov/dir/index.jsp?org=GEO)





# *GEO Contacts*



- Directorate-wide programs to fund formal and informal geoscience education activities (GeoEd)  
Contact: Jill Karsten (jkarsten@nsf.gov)
- Division of Atmospheric Sciences  
<http://www.nsf.gov/div/index.jsp?div=ATM>
- Division of Earth Sciences  
<http://www.nsf.gov/div/index.jsp?div=EAR>
- Division of Ocean Sciences  
<http://www.nsf.gov/div/index.jsp?div=OCE>





GEO is transforming the science of Earth-system change, creating new models to inter-relate observations and to improve predictions about the Earth's future.

