



NSF Regional Grants Conference Nashville, Tennessee

Directorate for Geosciences

Sonia Esperança, Ph.D.

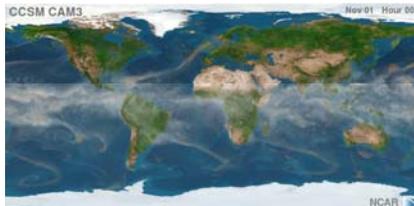
Division of Earth Sciences

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The Mission of the Directorate for Geosciences

- Support research in the atmospheric, earth and ocean sciences
- Address the nation's need to understand, predict and respond to environmental events and changes in order to use the Earth's resources wisely



Division of Atmospheric and Geospace Sciences (AGS)

- 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
- Supports large, complex facilities required for research in the atmospheric and solar-terrestrial sciences



Division of Atmospheric and Geospace Sciences

**UCAR & Lower Atmospheric
Facilities Oversight Section**

**Lower Atmosphere Research
Section**

**Upper Atmosphere Research
Section**

Atmospheric Research Program

Aeronomy Program

**Cross-Disciplinary Activities
Program**

**Magnetospheric Physics
Program**

**Physical & Dynamic
Meteorology Program**

**Solar Terrestrial Research
Program**

**Climate & Large-Scale Dynamics
Program**

Upper Atmospheric Facilities

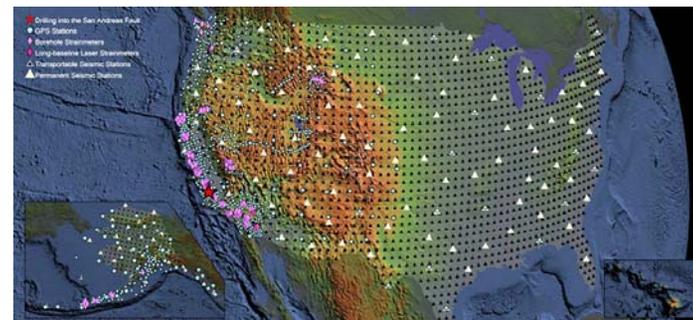
Paleoclimate Program

**Major Research Instrumentation
Program**



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
- Supports theoretical, computational, laboratories and field stations and state-of-the-art scientific infrastructure



Division of Earth Sciences

Surface Earth Processes Section

Education & Human Resources

Hydrologic Sciences

Geomorphology & Land Use Dynamics

Sedimentary Geology & Paleobiology

Geobiology & Environmental
Geochemistry

Deep Earth Processes Section

Instrumentation & Facilities

Continental Dynamics

EarthScope

Geophysics

Petrology & Geochemistry

Tectonics



Division of Ocean Sciences (OCE)

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



Division of Ocean Sciences

Marine Geosciences Section

Ocean Drilling Program

Marine Geology and Geophysics Program

Integrative Programs Section

Ship Operations Program

Oceanographic Facilities Program

Oceanographic Instrumentation and Technical Services

Oceanographic Technology and Interdisciplinary Coordination Program

Ocean Sciences Education

Ocean Section

Biological Oceanography Program

Physical Oceanography Program

Chemical Oceanography Program



Modes of support

- unsolicited proposals from all scientists with interests in the geosciences

- collaborative and individual proposals
- special competitions, often interdisciplinary
- promote collaborations with scientists in other disciplines, funding agencies, and nations
- promote the integration of research and education

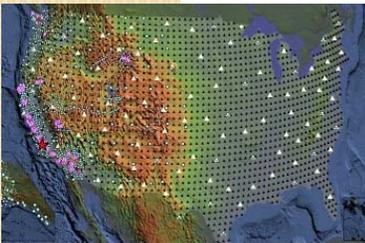


Long-term support for shared resources

- Observational platforms
- Analytic facilities
- Computational facilities
- Data archiving
- Experimental facilities



Recent and Ongoing Major Facility Investments



- HIAPER: Operations began in 2005
- AMISR: Poker Flat, AK: operational; Resolute Bay, Canada: under construction.
- EarthScope: Operational
- Scientific Ocean Drilling Vessel: Operational
- Ocean Observatories Investment: under construction
- R/V Sikiliaq (formerly Alaska Regional Research Vessel): under construction

Cross-Cutting Activities in GEO

- Paleo Perspectives on Climate Change (P2C2)
- Geoscience Education (GeoEd)
- Opportunities for Enhancing Diversity in the Geosciences (OEDG)
- Frontiers in Earth System Dynamics (FESD)
- Water, Sustainability and Climate (WSC)
- GeoPrisms



Paleo Perspectives on Climate Change (P2C2)

- Program Solicitation 10-574
- Annual deadlines for 2010-2012: October 18th

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Candace Major cmajor@nsf.gov

OPP Contact:

William Wiseman wwiseman@nsf.gov



GEO Education (GEO Ed)

<http://www.nsf.gov/geo/adgeo/education.jsp>

GEO has Directorate-wide programs to fund formal (K-16) and informal geosciences education activities.

- Program Solicitation – NSF 10-512

- Deadline - October 12, 2011

- Directorate for Geosciences

Contact: Jill Karsten

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- Division of Atmospheric and Geospace Sciences

Contact: Sue Weiler

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- Division of Earth Sciences

Contact: Lina Patino

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- Division of Ocean Sciences (including the Centers for Ocean Science Education Excellence--COSEE)

Contact: Lisa Rom

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Opportunities for Enhancing Diversity in the Geosciences (OEDG)

<http://www.nsf.gov/geo/adgeo/education.jsp>

- Designed to address the fact that certain groups are underrepresented in the geosciences relative to their proportions in the general population.
- Program Solicitation: 10-599
- Deadlines:
 - October 05, 2011 - Planning Grant Proposals Only (Letter of Intent Not Required)
 - October 10, 2012 - Track 1 and Track 2 Proposals Only (LOI required by Sept 3, 2012)
- GEO Contact: Jill Karsten jkarsten@nsf.gov



Frontiers in Earth System Dynamics (FESD)

Old Program Solicitation NSF 10-577

- GEO-wide program involving AGS, EAR and/or OCE
- Intra- or Inter- Divisional scope, but beyond purview of a single discipline
- Complements science funded through GEO's core programs;
- Provides support for 'mid-sized' activities that fall between core program and STC/MREFC scales
- Where appropriate, capitalizes on major facility investments NSF is already making;
- Promotes interdisciplinary study of interactive dynamics within the Earth system over a wide range of space and time scales
- Program budget: Planning for \$28M per competition
- 3 competitions FY11, FY13, FY15



Water Sustainability and Climate (WSC)

- Old Program Solicitation (NSF 10-524)
- The goal of the Water Sustainability and Climate (WSC) solicitation is to understand and predict the interactions between the water system and climate change, land use, the built environment, and ecosystem function and services through place-based research and integrative models.
- GEO, BIO, ENG cross disciplinary collaborations (+EPA)
- Successful proposals expected to study water systems to enable a new interdisciplinary paradigm in water research.
- New Solicitation expected in April 2011 for a deadline in September- October 2011



Science plan was approved by NSF early March, 2011

Read it here! <http://www.geoprisms.org/science-plan.html>

The federal continuing resolution means no new solicitation until FY12 (July 1 MARGINS deadline stands)

Meanwhile, GeoPRISMS is focused on site-specific planning meetings for the high-priority 'primary sites' outlined in the Science Plan

Planning workshops may be held in conjunction with EarthScope and other meetings, to facilitate collaboration with ES scientists, USGS, etc.



Subduction Cycles and Deformation

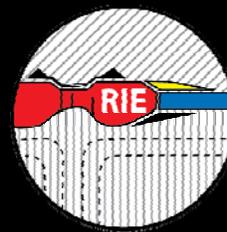
Alaska/Aleutians

Cascadia

New Zealand

(planning deferred 1 year)

(plus comparative & thematic studies)



Rift Initiation and Evolution

East African Rift System

Eastern North American Margin

(planning deferred 1 year)

(plus comparative & thematic studies)

Join the Listserv: <http://www.geoprisms.org/contact-us.html>

Info: info@geoprisms.org or jwade@nsf.gov or bhaq@nsf.gov

Check the website (www.geoprisms.org) and look for an upcoming EOS article for more!

Earth Sciences Post-Doctoral Fellowships (EAR-PF)

- Program Solicitation – NSF 10-500
- ***Deadline: July 1 annually***
- Fellowship program may be conducted at any appropriate U.S. or foreign host institution
- 2 year long fellowships, \$170k/2years
- Eligibility within 3 years of PhD
- Fellowships are awards to individuals, not institutions, and are administered by the Fellows.
- 2 months parental leave can be requested
- Contact – Lina Patino (lpatino@nsf.gov)



AGS Post-Doctoral Research Fellowships

- Program Solicitation - NSF 11-521
- ***Deadlines:***
 - ***April 11, 2011***
 - ***February 02, 2012***
 - ***February 02, 2013***
- \$86,000/yr for up to 2 years
- Contact: Susan Weiler (sweiler@nsf.gov)



Other NSF Activities of Interest

“Crosscutting and NSF-wide”

- CAREER
- Research in Undergraduate Institutions (RUI)
- Research Experiences for Undergraduates (REU)
- Early Concept Grants for Exploratory Research (EAGER)
- Grants for Rapid Response Research (RAPID)
- ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers
- CNH: Dynamics of Coupled Natural and Human Systems



Other NSF Activities of Interest: Instrumentation and Facilities

- Major Research Instrumentation (MRI and MRI-R2)
\$100,000 to \$6M -- 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.
- Improvements in Facilities, Communications, and Equipment at Biological Field Stations and Marine Laboratories (FSML)
- EPSCoR Research Infrastructure Improvement Program: Inter-Campus and Intra-Campus Cyber Connectivity (RII C2)
- Earth Sciences: Instrumentation and Facilities (EAR/IF)

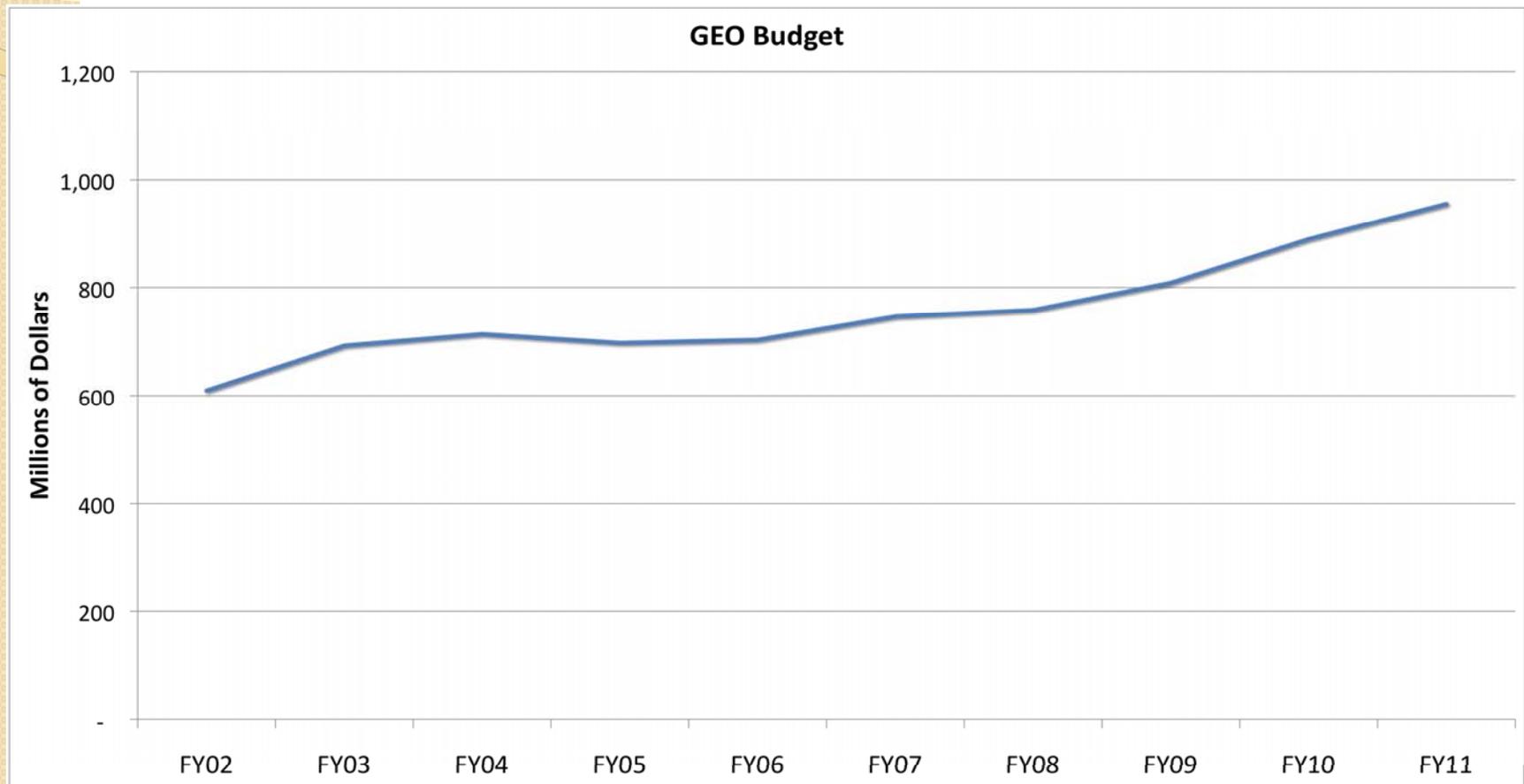


GEO Budgets

- FY 09: \$808M (+\$50/FY 08)
- FY 09 ARRA (American Reinvestment & Recovery Act) : \$601M (~20% of NSF funds)
(\$347M for Research and Education grants and \$254M for MREFC projects)
- FY 10 estimated: \$890M (+\$82/FY 09)
- FY 11 request: \$955M (+\$65M/FY 10)

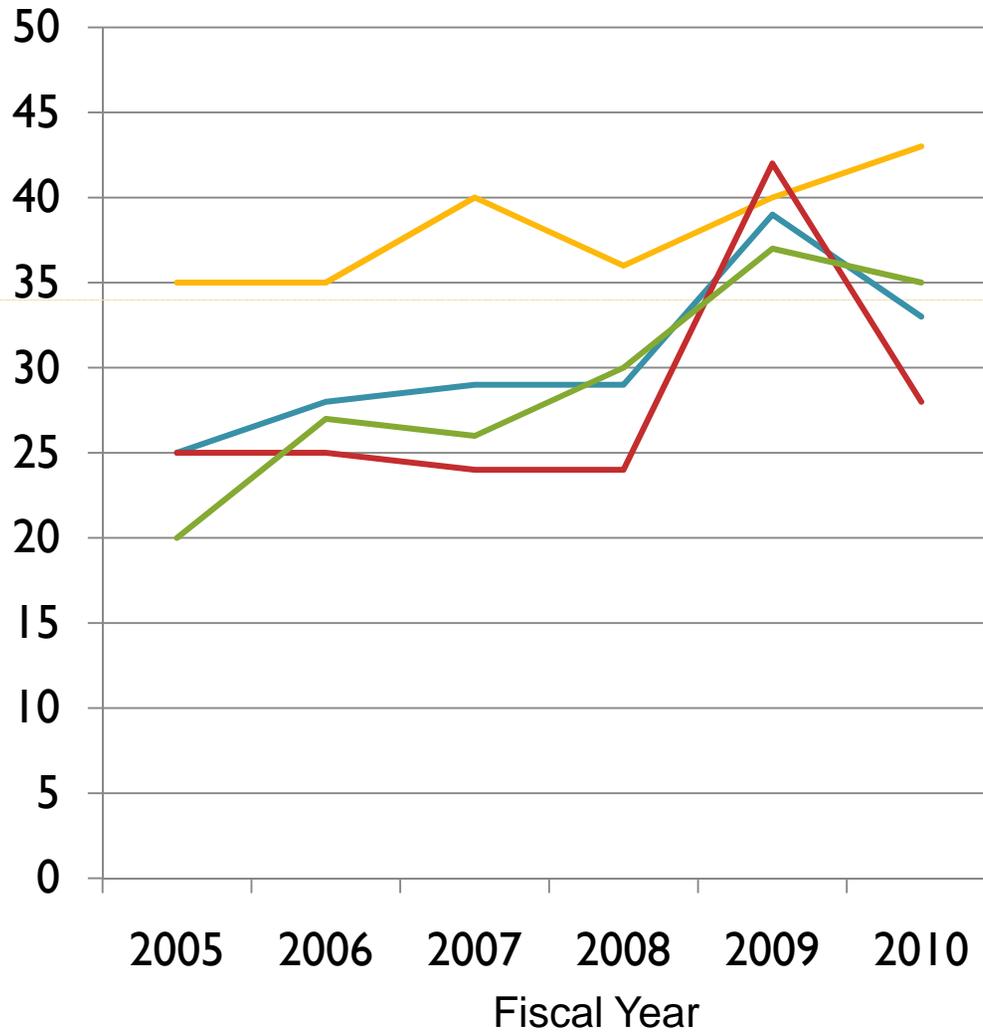


GEO Yearly Budget History



GEO Funding Rates (Research Grants)

Percent



— GEO TOTAL
— AGS
— EAR
— OCE



Budget by Division and Area

GEO Funding (Dollars in Millions)

	FY 2009	FY 2009	FY 2010 Estimate	FY 2011 Request	Change Over	
	Omnibus Actual	ARRA Actual			FY 2010 Estimate	FY 2011 Request
Atmospheric and Geospace Sciences (AGS)	\$245.54	\$68.20	\$259.80	\$280.80	\$21.00	8.1%
Earth Sciences (EAR)	171.01	85.22	183.00	199.00	16.00	8.7%
Integrative and Collaborative Education & Research (ICER)	61.47	79.58	97.92	97.60	-0.32	-0.3%
Ocean Sciences (OCE)	330.51	114.00	348.92	377.89	28.97	8.3%
Total, GEO	\$808.53	\$347.00	\$889.64	\$955.29	\$65.65	7.4%
Research	389.11	224.69	464.12	505.17	41.05	8.8%
Education	31.82	35.98	41.40	44.68	3.28	7.9%
Infrastructure	374.10	86.34	367.79	387.60	19.81	5.4%
Stewardship	13.51	-	16.33	17.84	1.51	9.2%

Totals may not add due to rounding.



2011 Budget

The 2011 Request represents an exciting opportunity for GEO to make advances on several important fronts:

- Research: new thrusts
- Infrastructure: advancement and renewal
- Education: expansion of programs



2011 Research Themes

- Science, Engineering, and Education for Sustainability (SEES + \$35M to \$230M)
 - Follow-on to 2010 Climate Research activity
 - In 2011, GEO will support research to study regions that are highly susceptible to the impacts of environmental changes, such as:
 - Coastal areas subject to sea-level rise
 - The Arctic, where warming temperatures and waning ice cover challenges communities and ecosystems



Science, Engineering, and Education for Sustainability

SEES will generate the discoveries in climate and energy science needed to inform societal actions for environmental and economic sustainability.

- Emergence of new areas of research that help close key gaps in the knowledge base.
- Development of new models for research, specifically employing integrative, systemic approaches.
- Generation of new integrated understanding of the interplay of environment, energy, and the economy.
- SEES portfolio totals \$765.5 million in 2011.

<http://www.nsf.gov/geo/sees>



2011 Infrastructure Investments

- OOI Operations and Management – 2011 brings a ramp-up in O&M support for the OOI
- Regional Class Research Vessels – 2011 will see continued planning for the construction of up to three Regional Class Research Vessels starting in 2012.
- NCAR-Wyoming Supercomputer Center – 2011 sees the continuation of support for the construction of a new community supercomputer center.



2011 Education & Diversity Themes

- Graduate Research Fellowships are increasing to \$2.74 million from \$1 million.
- GEO contribution to ADVANCE is increasing to \$4.28 million from \$3.46 million (fostering women in science).
- GEOEd: About 100 proposals received
- Diversity: new strategic planning effort and Opportunities for Diversity in the Geosciences



Questions ?

