



# **NSF Regional Grants Conference Chicago, IL**

## **Directorate for Geosciences**

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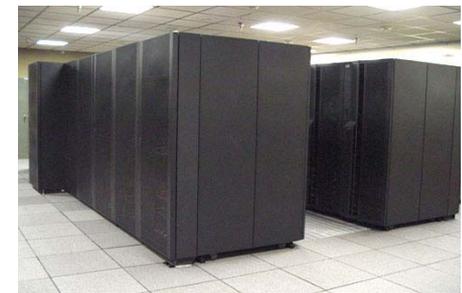
# The Mission of the Directorate for Geosciences

- 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**

**Cross-Disciplinary Activities  
Program**

**Physical & Dynamic  
Meteorology Program**

**Climate & Large-Scale Dynamics  
Program**

**Paleoclimate Program**

**Aeronomy Program**

**Magnetospheric Physics  
Program**

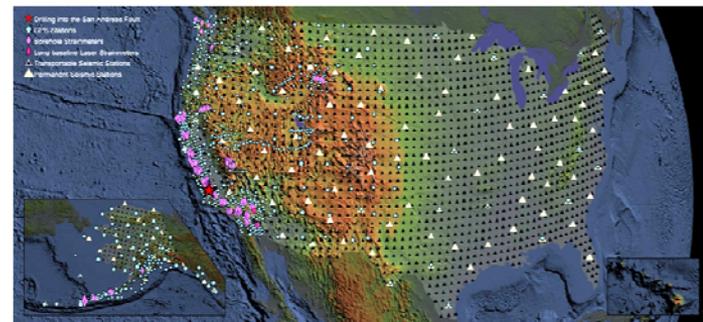
**Solar Terrestrial Research  
Program**

**Upper Atmospheric Facilities**

**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

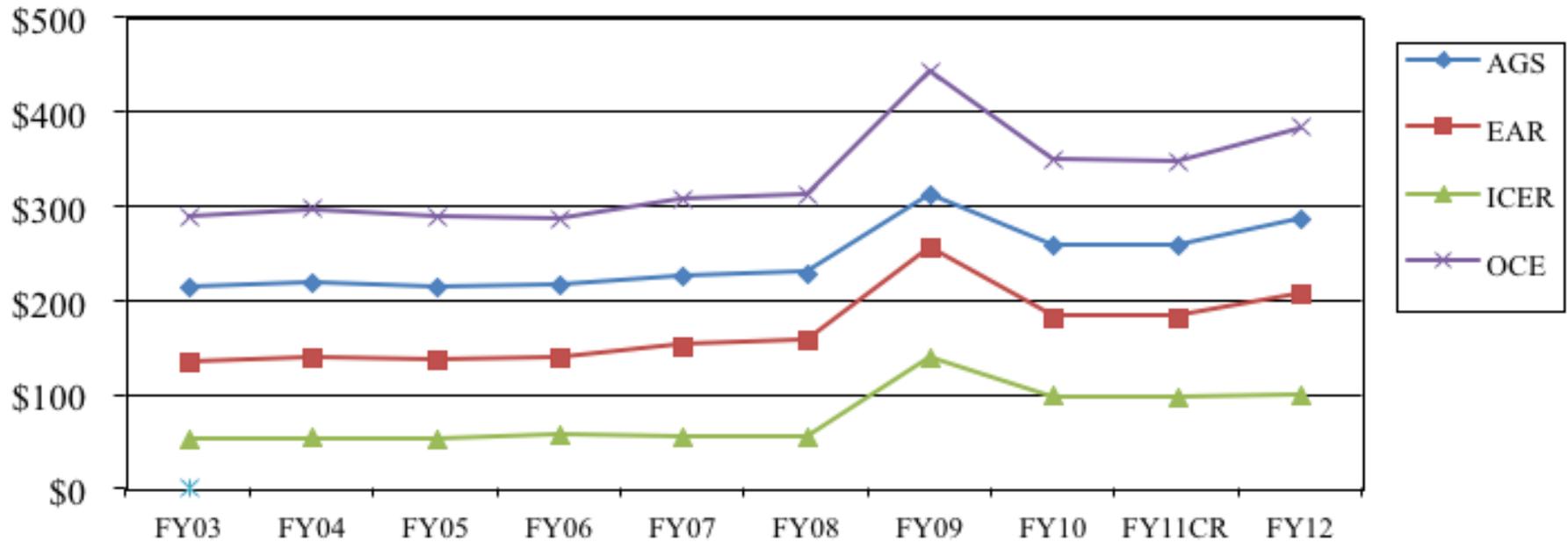
Physical Oceanography Program

Chemical Oceanography Program



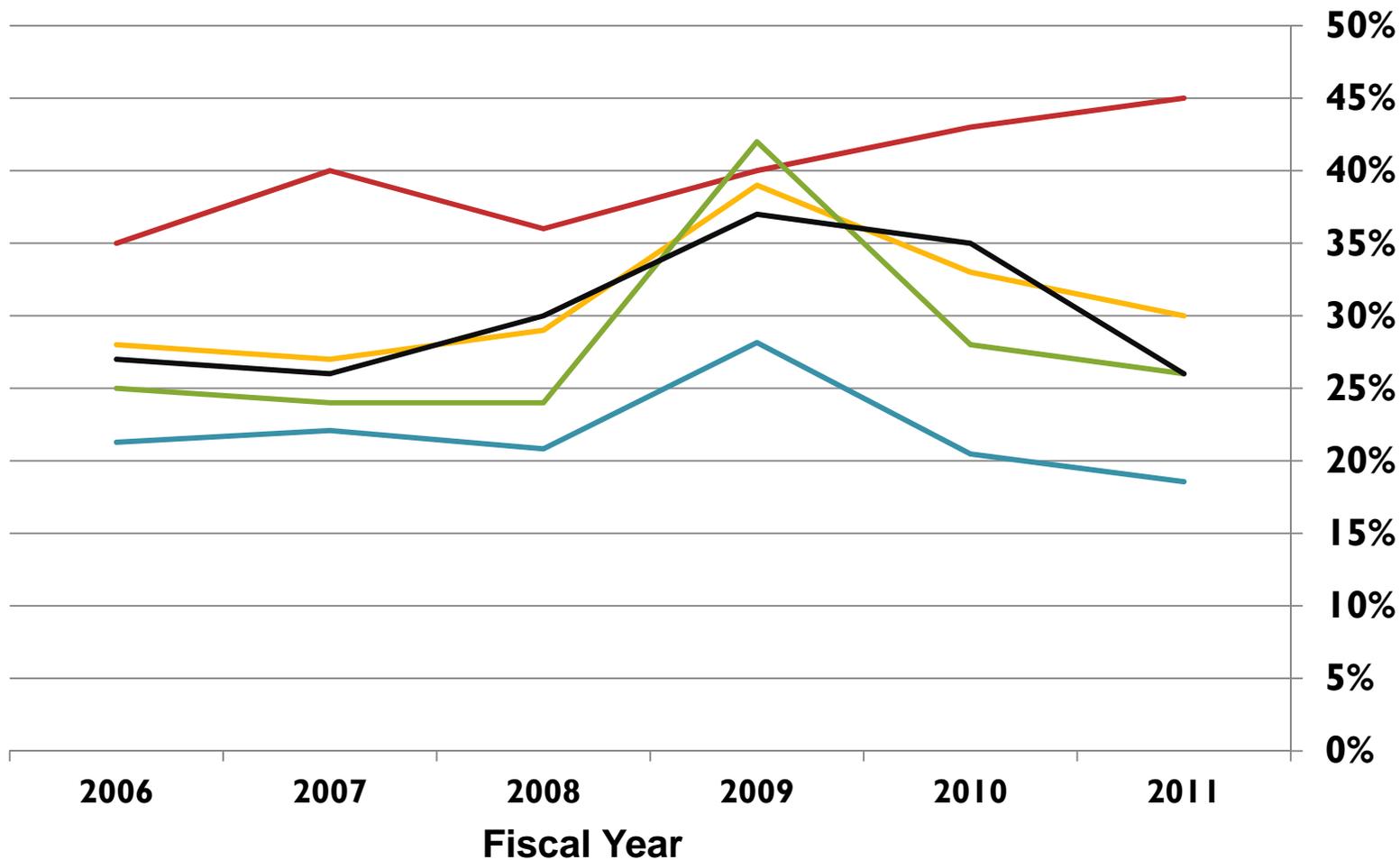
# GEO Yearly Budget History

**GEO Subactivity Funding**  
(Dollars in Millions)



# GEO Funding Rates (Research Grants)

— NSF — GEO — AGS — EAR — OCE



# Modes of support

- unsolicited proposals from all scientists with interests in the geosciences
- special competitions, often interdisciplinary
- promote the integration of research and education
- support for infrastructure, instrumentation, facilities
- post-doctoral fellowship programs and workforce development programs



# Earth Sciences Post-Doctoral Fellowship Program (EAR-PRF)

- 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)



# Atmospheric and Geospace Science Post-Doctoral Research Fellowships

- Program Solicitation - NSF 11-521
  - ***Deadlines: February 02, 2012 and 2013***
- \$86,000/yr for up to 2 years
- Similar to the EAR-PRF
- Contact: C. Susan Weiler (cweiler@nsf.gov)



# Ocean Sciences Postdoctoral Research Fellowships (OCE-PRF)

- Program Solicitation – NSF 11-586
- Goal – Awards are intended to support the individual fellows' research and increase the diversity of the U.S. ocean sciences research community. In this solicitation, the term underrepresented groups will refer to and include the following: women, persons with disabilities, African Americans, Hispanics, Native Americans, Alaska Natives, and Pacific Islanders.
  - ***Deadline: January 13, 2012***



# GEO Education Activities

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

**Opportunities for Enhancing Diversity in the Geosciences (OEDG)** – Broadening participation in the Geosciences

- Contacts (GEO Directorate) - Jill Karsten [jkarsten@nsf.gov](mailto:jkarsten@nsf.gov)
- Division of Atmospheric and Geospace Sciences  
Contact: Sue Weiler [cweiler@nsf.gov](mailto:cweiler@nsf.gov)
- Division of Earth Sciences  
Contact: Lina Patino [lpatino@nsf.gov](mailto:lpatino@nsf.gov)
- Division of Ocean Sciences (including the Centers for Ocean Science Education Excellence--COSEE)  
Contact: Lisa Rom [erom@nsf.gov](mailto:erom@nsf.gov)

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



# Paleo Perspectives on Climate Change (P2C2)

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

## GEO Contacts:

David Verardo [dverardo@nsf.gov](mailto:dverardo@nsf.gov)

Paul Filmer [pfilmer@nsf.gov](mailto:pfilmer@nsf.gov)

Candace Major [cmajor@nsf.gov](mailto:cmajor@nsf.gov)

## OPP Contact:

William Wiseman [wwiseman@nsf.gov](mailto:wwiseman@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
- 2 additional competitions in FY13, FY15



# Science, Engineering, and Education for Sustainability (SEES)

[http://www.nsf.gov/funding/pgm\\_summ.jsp?pims\\_id=504707](http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504707)

## Mission Statement:

***To advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and sustainable human well-being***

- Goal 1: Support interdisciplinary research and education that can facilitate the move towards global sustainability.
- Goal 2: Build linkages among existing projects and partners and add new participants in the sustainability research enterprise.
- Goal 3: Develop a workforce trained in the interdisciplinary scholarship needed to understand and address the complex issues of sustainability.



# SEES FY 2012 and beyond



- ✧ Ocean Acidification (*NSF 12-500*)
- ✧ Climate Change Education (*NSF 12-523*)
- ✧ Decadal and Regional Climate Prediction using Earth System Models (EaSM) (*NSF 12-522*)
- ✧ Dimensions of Biodiversity (*NSF 12-528*)
- ✧ Water Sustainability and Climate (*NSF 11-551*)
- ✧ Statistics for original five competitions (FY 2011)
  - ✧ 16% overall success rate
  - ✧ 719 projects submitted, 113 awards, funding amount \$99M\*
  - ✧ USDA and DOE funds of \$19M additional for EaSM competition

# SEES FY 2012 and beyond

## ✧ Research Coordination Networks (RCN – SEES) - *NSF 11-531*

- ✧ 37 projects submitted, 11 awards, funding amount ~ \$8M
- ✧ Cross foundational support & coordination in review/panel process
- ✧ Interdisciplinary awards, network themes include:
  - ✧ Water and urban sustainability; Renewable resources, biofuels, bioenergy
  - ✧ Climate, energy, environment nexus; Human ecodynamics
- ✧ Several awards international and/or public-private partnerships

## ✧ Dynamics of Coupled Natural and Human Systems (CNH) - *NSF 10-612*

- ✧ Integration of human choice into models of biogeochemical cycling in urban ecosystems
- ✧ Direct and indirect coupling of fisheries through economic, regulatory, environmental and ecological linkages

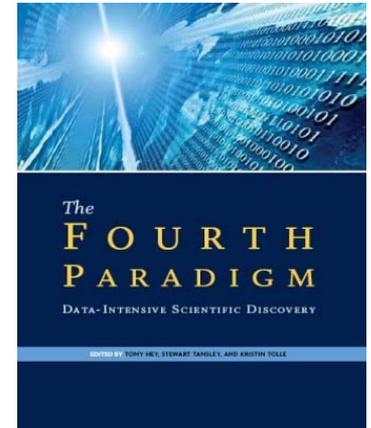
# SEES FY 2012 and beyond

- ✧ SEES Fellows (NSF 11-575)
- ✧ Sustainability Research Networks (NSF 11-574)
- ✧ Sustainable Energy Pathways (NSF 11-590)
- ✧ Partnerships for International Research and Education (PIRE) solicitation (NSF 11-564)
- **New activities expected for the future**
  - Arctic SEES
  - Hazards SEES
  - Coastal SEES
  - Role of Information Science and Engineering for Sustainability
  - Sustainable Chemistry, Engineering and Materials



# Cyberinfrastructure Framework for 21<sup>st</sup> Century Science and Engineering (CIF21)

- Comprehensive and integrated cyberinfrastructure to transform research, innovation and education
- Focus on computational and data-intensive science to address complex problems
- Four major components
  - Data-enabled science
  - New computational infrastructure
  - Community research networks
  - Access and connections to cyberinfrastructure facilities



# CIF2I – Geosciences Foci

- GEO investment is \$16 million in 2012
- Computational Infrastructure
  - acquisition and use of cyberinfrastructure for the conduct of geoscience research
- Data Enabled Science
  - geoinformatics – the tools and techniques that facilitate data-enabled geoscience
  - enhancement of access and connections to facilities and scientific instruments



# Questions ?

