



**EPSCoR PDPA Meeting
Arlington
May 19, 2014**

NSF Directorate for Geosciences

Sarah Ruth, DPhil

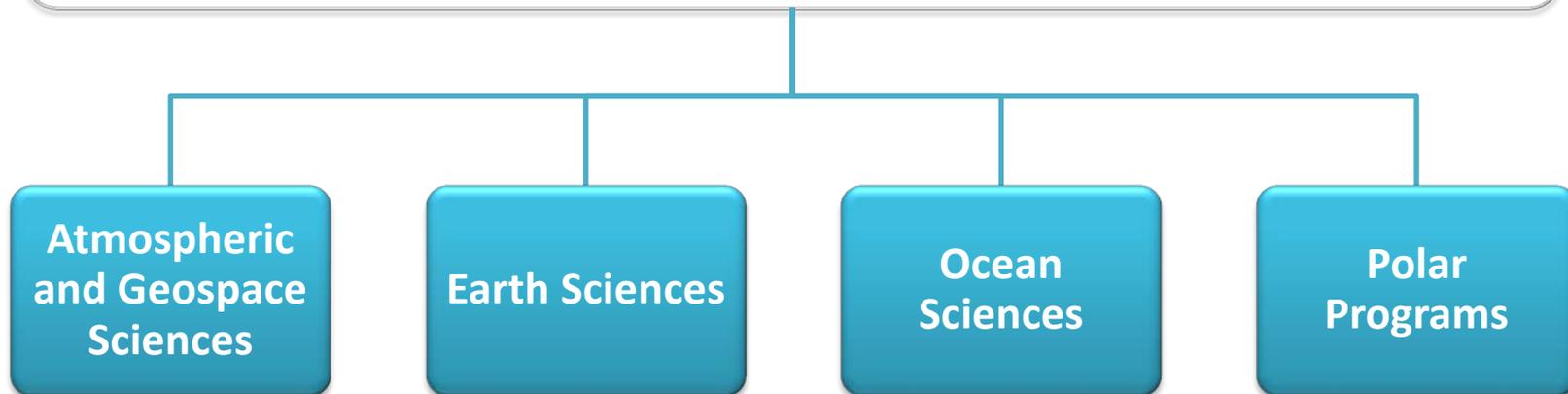
Division of Atmospheric and Geospace Sciences

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GEO Directorate (GEO)



Includes Polar Programs since Oct 1, 2012

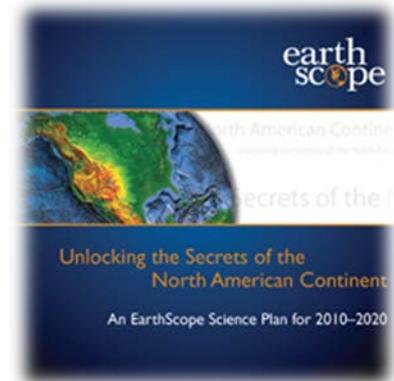
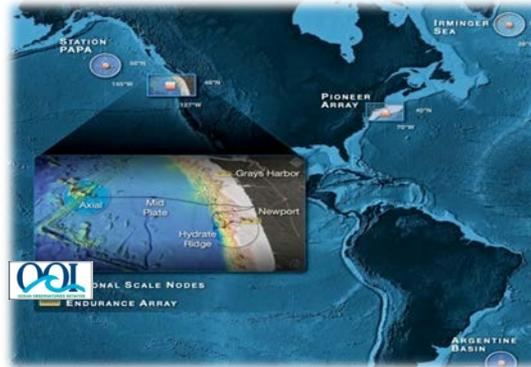




Directorate for Geosciences: Our Mission

- Support research in atmospheric, earth, polar 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





Arctic Sea Ice

Oceans

EarthScope Observatory

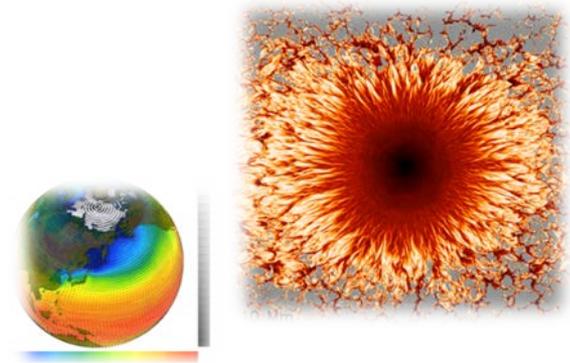
Era of Observation and Simulation



Water



Satellites



Earth System Modeling



Division of Atmospheric and Geospace Sciences (AGS)

- **Further 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

NCAR and Facilities Section

Lower Atmospheric
Observing Facilities

NCAR

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

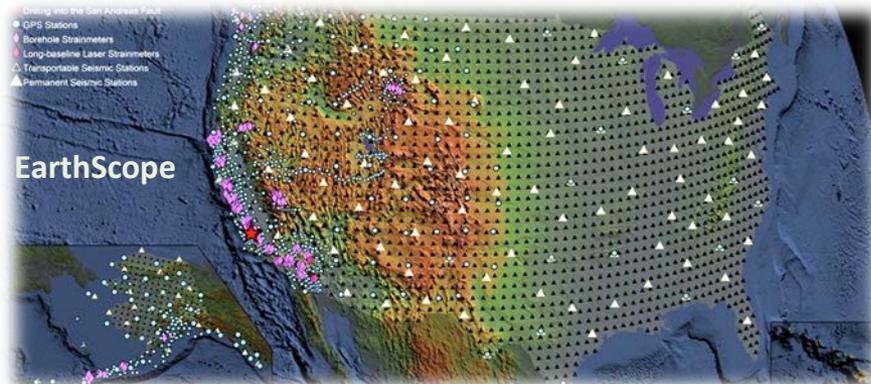
Space Weather Research

Geospace Facilities



Division of Earth Sciences (EAR)

- Improve the understanding of the structure, composition, and evolution of the Earth and the processes that govern the formation and behavior of the solid Earth
- Support 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

Integrated Earth Systems

EarthScope

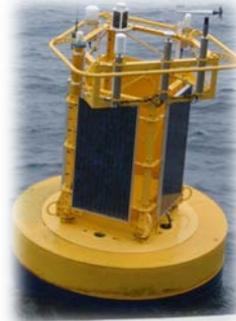
Geophysics

Petrology & Geochemistry

Tectonics

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

Marine Geosciences Section

Marine Geology & Geophysics

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

Chemical Oceanography

Division of Polar Programs (PLR)

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



Division of Polar Programs

Arctic Sciences

Polar Environment,
Health & Safety

Antarctic
Infrastructure and
Logistics

Antarctic Sciences

Natural Sciences

Observing Networks

Social Sciences

System Sciences

Research Support &
Logistics

Glaciology

Earth Sciences

Astrophysics & Geospace

Ocean & Atmospheric Sciences

Organisms and Ecosystems

Integrated System Sciences

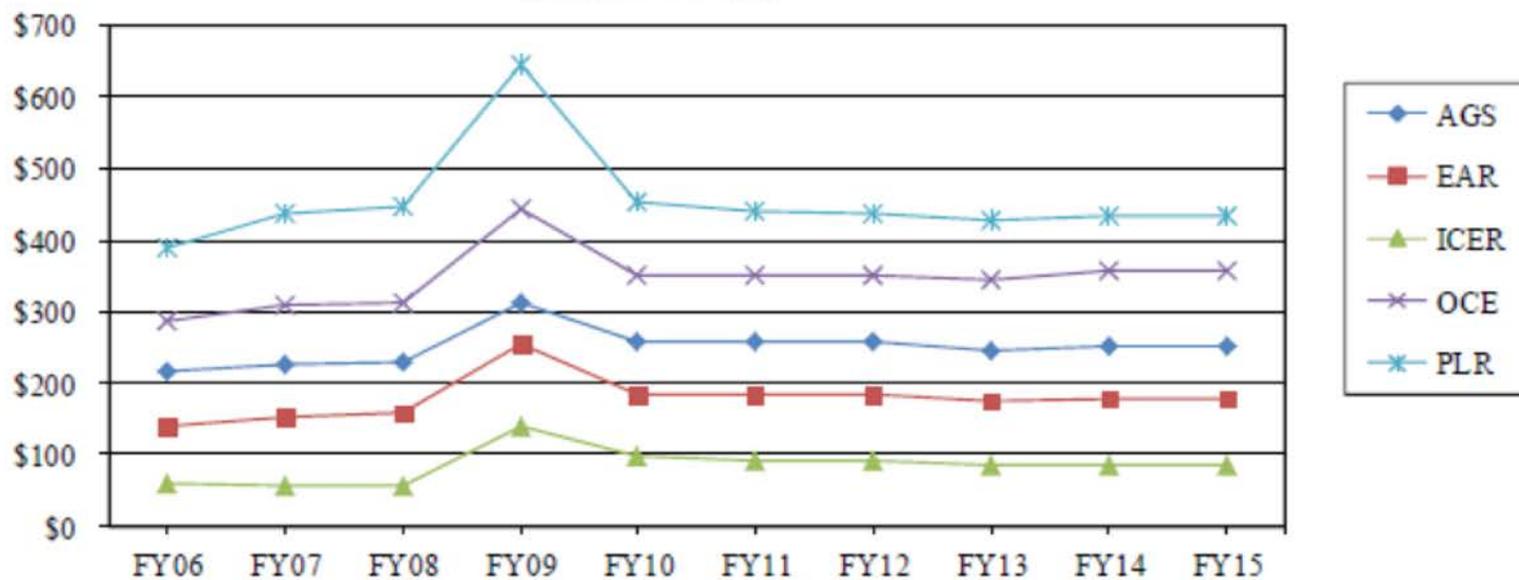
Polar Cyberinfrastructure

Education and Outreach



GEO Funding Trend

GEO Subactivity Funding
(Dollars in Millions)





GEO Modes of support

- **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**



GEO Program Due Dates*



- Atmospheric Sciences: no due dates; proposal may be submitted any time
- Earth Sciences: January and July
- Ocean Sciences: February and August
- Polar Programs: ARC, ANT different due dates
- Cross-cutting/special programs: see solicitation or Dear Colleague Letter

*Check the NSF web site for actual dates and updates to requirements when developing a proposal





GEO Instrumentation and Facilities

- Funding opportunities

- **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
- **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 C2)**



GEO Instrumentation & Facilities

- Access



- GEO observing and supercomputing facilities are available to NSF PIs, students, and sometimes researchers funded by other sources.
- Each facility has its own application and review process.
- Users range from individual PIs and students to large international field campaigns.
- E.g. NCAR supercomputers, aircraft, radar.



GEO AGS Postdoc Fellowship

Support

- 24 months grant period
- \$172K total directly to fellows

Eligibility

- Be US citizen, national, or permanent resident
- within 3 years of PhD
- work to be undertaken at an academic institution or national facility of their choice

GOALS

- recognize investigators with significant potential
- provide research experience, broaden perspective
- facilitate interdisciplinary interactions as appropriate
- enable and establish leaders within the community

Proposals must describe a research plan that addresses scientific questions that lie within the scope of the AGS programs

NSF 14-509 Due: January 12, 2015

More information: swarren@nsf.gov



GEO EAR Postdoc Fellowship

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

GOALS

- recognize investigators with significant potential
- fund research on topics supported by EAR and implementation of a broadening participation plan
- enable and establish leaders within the community
- support fellows at any appropriate U.S. or foreign host institution

NSF 13-948 Due: July 18, 2014

More info: lpatino@nsf.gov



GEO OCE Postdoctoral Research Fellowships

Track 1: Broadening Participation

Track 2: International

Support

- Up to 24 FTE months
- \$62K/yr stipend
- \$25K/yr expenses & benefits
- Up to \$10K/yr for international

Eligibility

- US citizen, national, or permanent resident
- Have or will receive PhD by start of fellowship
- Not have worked more than 24 FTE months in positions requiring PhD
- Research within OCE purview

Proposals must describe:

- Research plan
- Host organization(s) and sponsoring scientist(s)
- Expected broader impacts
- Candidate's long-term career goals
- For Track 1: Specific plans for broadening participation of under-represented groups in ocean sciences in the US
- For Track 2: True intellectual collaboration with foreign scientists

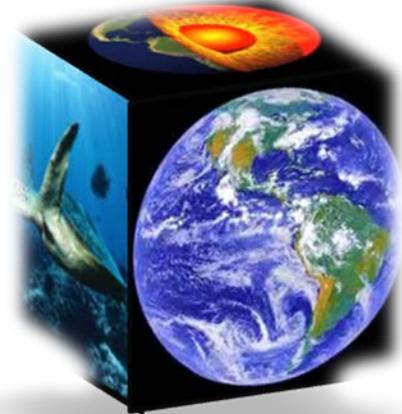
NSF 13-603 Due: January 12, 2015

More info: gpugh@nsf.gov



Cyber-infrastructure Framework for 21st Century Science & Engineering - CIF21

- In partnership with CISE, continuing support for EarthCube to create an integrated data management infrastructure across the geosciences
- Workshops and community events to broaden user base and scientific breadth
- Integration and coordination



SEES: Science, Engineering and Education for Sustainability



Mission: Advance science, engineering, and education to inform the societal actions needed for environmental and economic sustainability and sustainable human well-being

- Established in Fiscal Year 2010
- Portfolio of existing and new programs
- All NSF Directorates and offices involved
- Partnerships (e.g. other agencies, CNRS, Belmont Forum)



SEES Characteristics



Systems Thinking

- Holistic approaches that link human, built and natural systems, and reach across disciplines

Partnerships & Networks

- Connect intellectually and spatially disparate communities, institutions and organizations

Workforce & Education

- Development and education of new researchers and students on critical aspects and issues of sustainability

SEES in FY 14/15



Solicitations (see SEES webpage for latest information)
ArcSEES (Arctic)
CNH (Dynamics of Coupled Natural and Human Systems)
Coastal SEES
CyberSEES
Dimensions of Biodiversity
Earth Systems Modeling (EaSM)
Hazards
Ocean Acidification
SEES Fellows
SusChEM (Sustainable Chemistry, Engineering and Materials)
Sustainability Research Networks (Urban)

Open/ongoing

Considering/planning

Ended

SEES – Future Plans



Evaluation: Program-wide evaluation began April 2014

Other activities: PI Meetings, workshops; presentations & other outreach

Transition: Planning for long-term support for sustainability research in NSF after 2017



