NSF Grants Conference
Denver
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NSF Directorate for Geosciences

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Division of Atmospheric and Geospace Sciences

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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

GEO Profile

Office of the Assistant Director

Atmospheric & Geospace Sciences
- Lower & Upper Atmosphere Research
- Lower Atmosphere & Geospace Facilities
- NCAR

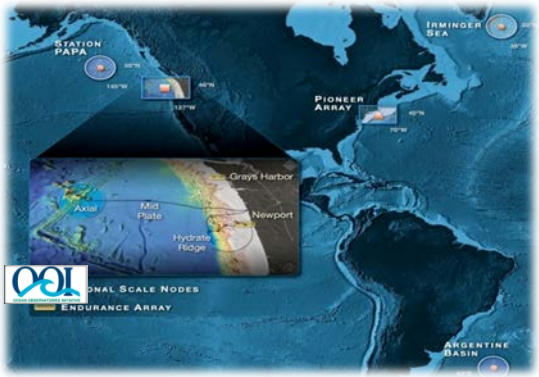
Earth Sciences
- Seismology & Deep Earth Processes
- Hydrology & Surface Earth Processes
- Infrastructure & Facilities

Ocean Sciences
- Biological, Chemical & Physical Oceanography
- Marine Geology & Geophysics
- Ocean Observational Infrastructure

Polar Programs
- Antarctic & Arctic Research
- Antarctic Logistics
- Polar Infrastructure

Integrative & Collaborative Education & Research
- SEES, CIF21 & Cross-Foundation Programs
- Education & Diversity
- International Collaborations & Partnerships

Arctic Sea Ice

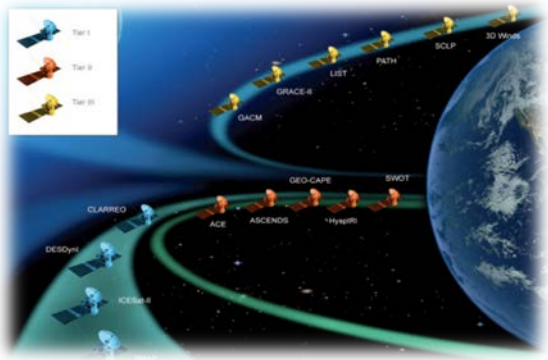


Oceans

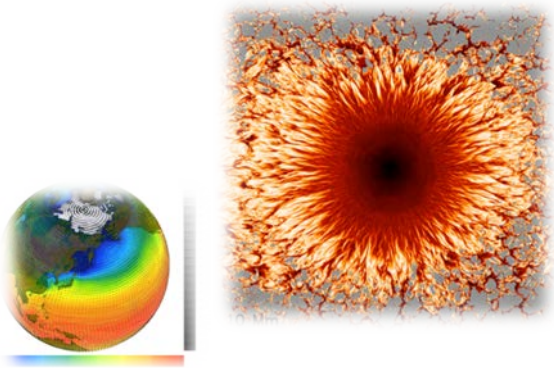
EarthScope Observatory

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

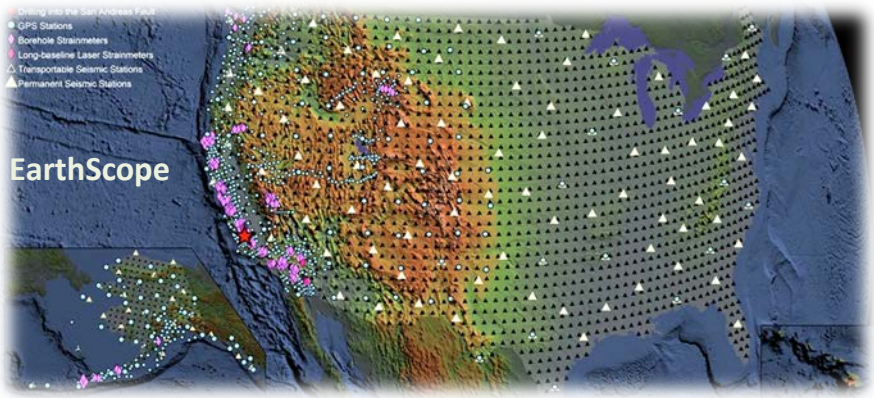
- Atmospheric Chemistry
- Physical & Dynamic Meteorology
- Climate & Large-Scale Dynamics
- Paleoclimate

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

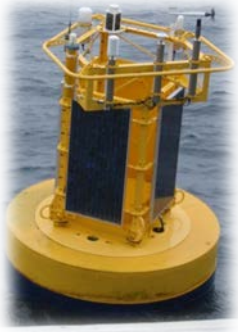
- Education & Human Resources
- Hydrologic Sciences
- Geomorphology & Land Use Dynamics
- Sedimentary Geology & Paleobiology
- Geobiology & Environmental Geochemistry

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
  - Natural Sciences
  - Observing Networks
  - Social Sciences
  - System Sciences
  - Research Support & Logistics
- Polar Environment, Health & Safety
- Antarctic Infrastructure and Logistics
- Antarctic Sciences
  - Glaciology
  - Earth Sciences
  - Astrophysics & Geospace
  - Ocean & Atmospheric Sciences
  - Organisms and Ecosystems
  - Integrated System Sciences

Polar Cyberinfrastructure

Education and Outreach

Fiscal Year 2015 Budget Request

R&RA Funding
(Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change over FY 2014 Estimate Amount	Percent
Biological Sciences	$679.21	$721.27	$708.52	-$12.75	-1.8%
Computer & Information Science & Engineering	858.13	894.00	893.35	-0.65	-0.1%
Engineering	820.18	851.07	858.17	7.10	0.8%
Geosciences	1,273.77	1,303.03	1,304.39	1.36	0.1%
Mathematical & Physical Sciences	1,249.34	1,299.80	1,295.56	-4.24	-0.3%
Social, Behavioral & Economic Sciences	242.62	256.85	272.20	15.35	6.0%
International and Integrative Activities	434.28	481.59	473.86	-7.73	-1.6%
U.S. Arctic Research Commission	1.39	1.30	1.41	0.11	8.1%
Total, R&RA	**$5,558.88**	**$5,808.92**	**$5,807.46**	**-$1.46**	**-**

Totals may not add due to rounding.

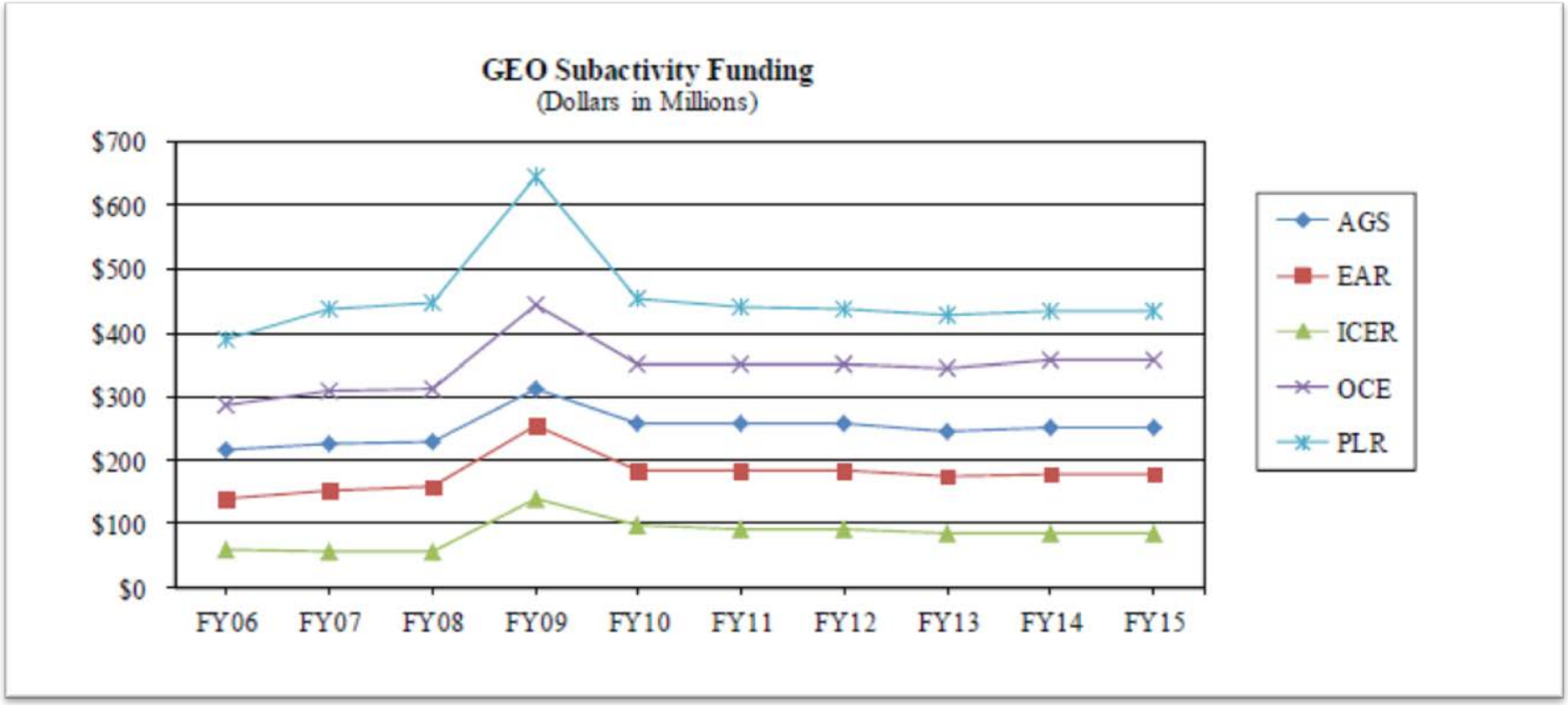
Fiscal Year 2015 Budget Request by Division

GEO Funding
(Dollars in Millions)

	FY 2013 Actual	FY 2014 Estimate	FY 2015 Request	Change Over FY 2014 Estimate Amount	Percent
Atmospheric and Geospace Sciences (AGS)	$245.03	$250.46	$250.61	$0.15	0.1%
Earth Sciences (EAR)	173.80	177.60	177.75	0.15	0.1%
Integrative and Collaborative Research and Education (ICER)	84.73	83.86	83.96	0.10	0.1%
Ocean Sciences (OCE)	343.76	356.50	356.96	0.46	0.1%
Polar Programs (PLR)	426.45	434.61	435.11	0.50	0.1%
U.S. Antarctic Logistical Support (USALS)	*[64.51]*	*[67.52]*	*[67.52]*	-	-
Total, GEO	**$1,273.77**	**$1,303.03**	**$1,304.39**	**$1.36**	**0.1%**

Totals may not add due to rounding.

GEO Funding Trend



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

NSF-wide Cross-cutting Programs

- Faculty Early Career Program (**CAREER**)*
- Research in Undergraduate Institutions (**RUI**)
- Research Experiences for Undergraduates (**REU**)*
- Early Concept Grants for Exploratory Research (**EAGER**) *
- Grants for Rapid Response Research (**RAPID**) *

*contact Program Director before submitting

GEO Education and Diversity

NSF 14-015 (posted 21 Nov 2013)

Dear Colleague Letter: Advancing Recruitment and Retention in Geosciences (ARRG) - Supplemental Funding to Advance Recruitment and Retention in the Geosciences

- **GEO encourages Supplemental Funding Requests for currently active GEO awards that address the following goals.**
- **Augmentation of Existing REU Site**
- **Leveraging Large GEO Facilities, Centers, Programs and Networks for Educational Purposes**
- **Dissemination of Best Practices for Geoscience Education and Diversity**
- **Capacity Building Through Partnerships**

NSF 14-014 (posted 21 Nov 2013)

Dear Colleague Letter: Supplemental Funding to Broaden Participation in the Geosciences - AMP-SRS

GEO Program Due Dates*

- **<u>Atmospheric Sciences</u>: no due dates; proposal may be submitted any time**
- **<u>Earth Sciences</u>: January and July**
- **<u>Ocean Sciences</u>: February and August**
- **<u>Polar Programs</u>: ARC, ANT different due dates**
- **<u>Cross-cutting/special programs</u>: 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-R^2)**

  $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, analytical 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

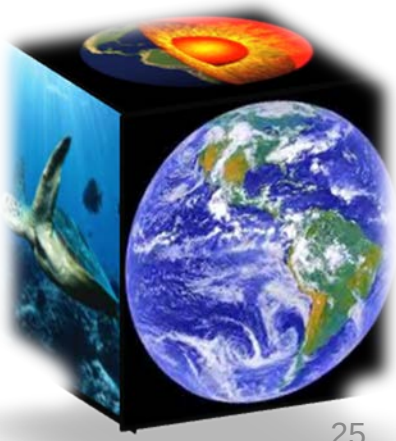
NSF 13-603 Due: January 12, 2015

More info: gpugh@nsf.gov

EarthCube

- In partnership with CISE, EarthCube creates an integrated data management infrastructure across the geosciences
- Workshops and community events to broaden user base and scientific breadth
- Coordination and community governance
- Part of NSF-wide CI thrust ('CIF21')

www.earthcube.org



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

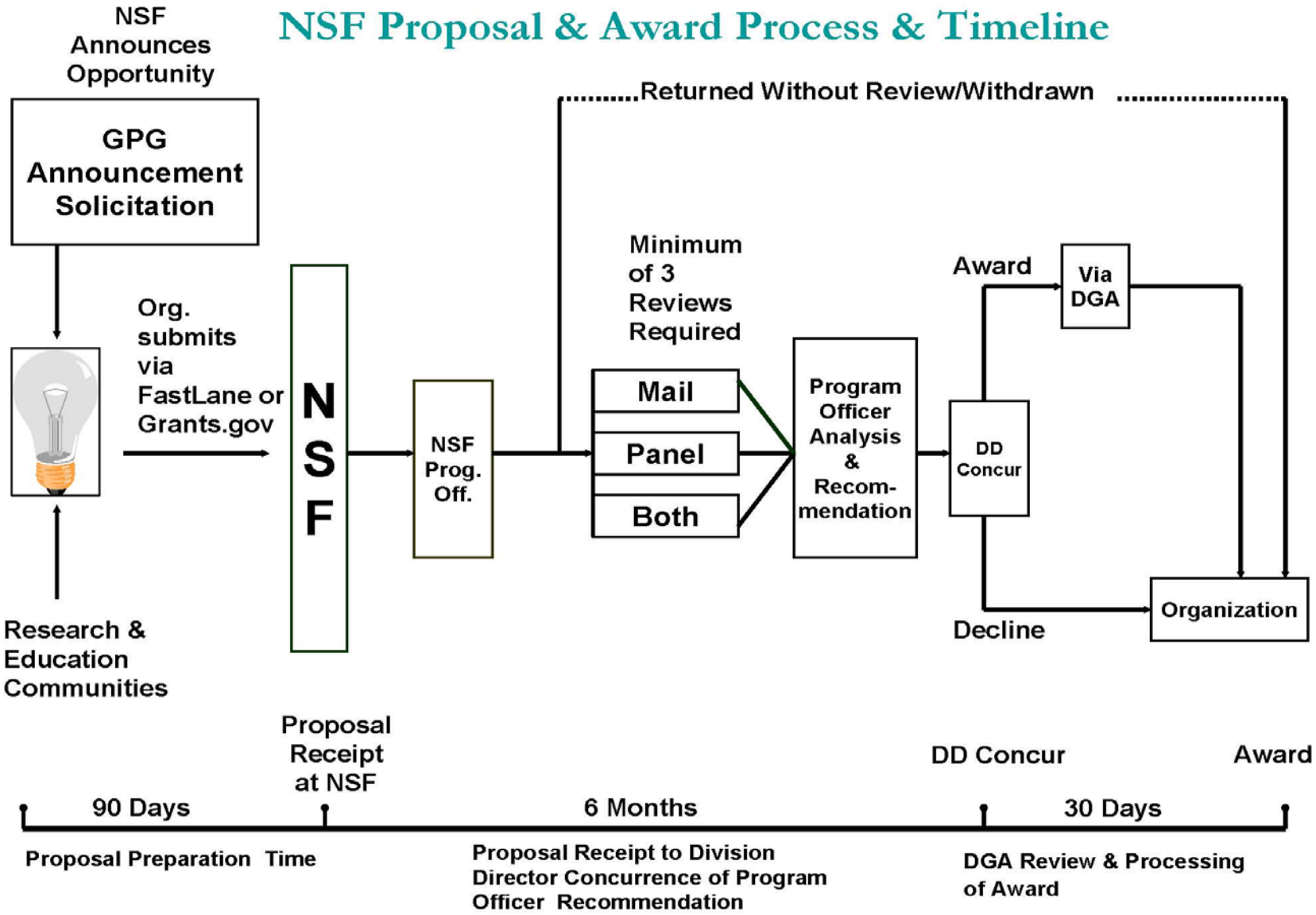
SEES – Future Plans

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

NSF Proposal & Award Process & Timeline



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

Which Program?

- **www.nsf.gov**
- **Read the funding opportunity** (program descriptions, solicitations) carefully, and ask a Program Officer for clarifications if needed
- **Learn the culture**- each Division/solicitation is different
- Look at what has been funded:

  Award Abstracts at *http://www.nsf.gov/awardsearch*

Some reasons we decline proposals

Poor fit to program

No clear statement of the research question(s) / hypothesis

Unlikely to result in theoretical advances

Duplicates existing work

Missing relevant literature in …

Design does not address research question(s)

Methodology is not clear / important details are missing

Team lacks expertise in …

Tool development, not research

Driven by agenda, not scientific enquiry

Proposal is poorly written / is confusing / has errors / is hard to navigate

Proposal is not compliant

Your Proposal

- Consider your audience
- **Know and follow** the ***current*** Grant Proposal Guide (GPG) AND the **solicitation-specific requirements** – ALL of them
- **Separately** address Intellectual Merit and Broader Impacts in both the Project Summary and Project Description.
- Match **and justify** the budget to the scope of the proposed work - ask for what you need.
- Don't submit your proposal at the last minute
- Download your completed proposal back to you to check it's what you sent