

Directorate for Geosciences Fiscal Year 2016 Request

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GEO Advances NSF Priorities

- Empowering Discovery
 - Core research programs
 - Prediction of and Resilience Against Extreme Events (PREEVENTS) – *New in FY16*
 - Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) – *New in FY16*
 - Science, Engineering, and Education for Sustainability (SEES)
 - Cyberinfrastructure Framework for 21st Century Science, Engineering, and Education (CIF21) through EarthCube and Data Science Pilots

GEO Advances NSF Priorities

- Preparing Students for Tomorrow
 - Improving Undergraduate STEM Education (IUSE)
 - Research Experiences for Undergraduates (REU)
- Infrastructure
 - Regional Class Research Vessels (RCRV)
 - Antarctic Infrastructure Modernization for Science (AIMS)
- Improving Effectiveness and Efficiency
 - Responding to Antarctic Blue Ribbon Panel Report
 - Decadal Survey of Ocean Sciences (DSOS)



DYNAMIC EARTH:

GEO IMPERATIVES & FRONTIERS 2015-2020



NSF Advisory Committee for Geosciences

**Public release –
December 16, 2014**

Fiscal Year 2016 Budget Request

GEO fits within NSF's Research and Related Activities Account

R&RA Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change over FY 2015 Estimate	
				Amount	Percent
Biological Sciences	\$720.84	\$731.03	\$747.92	\$16.89	2.3%
Computer & Information Science & Engineering	892.60	921.73	954.41	32.68	3.5%
Engineering	833.12	892.31	949.22	56.91	6.4%
Geosciences	1,321.32	1,304.39	1,365.41	61.02	4.7%
Mathematical & Physical Sciences	1,267.86	1,336.72	1,366.23	29.51	2.2%
Social, Behavioral & Economic Sciences	256.84	272.20	291.46	19.26	7.1%
Office of International Science and Engineering	48.31	48.52	51.02	2.50	5.2%
Integrative Activities	433.12	425.34	459.15	33.81	7.9%
U.S. Arctic Research Commission	1.30	1.41	1.48	0.07	5.0%
Total, R&RA	\$5,775.32	\$5,933.65	\$6,186.30	\$252.66	4.3%

Totals may not add due to rounding.

Fiscal Year 2016 Budget Request by Division

GEO Funding (Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate	
				Amount	Percent
Atmospheric and Geospace Sciences (AGS)	\$250.85	\$251.15	\$262.88	\$11.73	4.7%
Earth Sciences (EAR)	177.81	177.20	188.21	11.01	6.2%
Integrative and Collaborative Education and Research (ICER)	83.53	83.74	95.20	11.46	13.7%
Ocean Science (OCE)	356.27	355.95	369.61	13.66	3.8%
Polar Programs (PLR)	452.87	436.35	449.51	13.16	3.0%
<i>U.S. Antarctic Logistical Support (USALS)</i>	<i>[68.94]</i>	<i>[67.52]</i>	<i>[67.52]</i>	-	-
Total, GEO	\$1,321.32	\$1,304.39	\$1,365.41	\$61.02	4.7%

Totals may not add due to rounding.

Research Highlights



- PREEVENTS

- GEO's part of NSF's Risk and Resilience activity. (\$23.50 million)

- INFEWS

- New interdisciplinary investment to study the food-energy-water nexus. (\$14.78 million)



- SEES

- GEO has been a leader in NSF's SEES priority area. 2016 continues sunseting for this investment. (\$34M, \$25M below FY15)

Infrastructure Highlights

- Regional Class Research Vessels – Planning continues for the possible construction of up to three RCRVs. Pending continued progress on ship design and oversight plans, construction could start as early as FY 2017 with support from NSF's MREFC Account. Recommendations from the Decadal Survey of Ocean Sciences are being reviewed.
- Antarctic Infrastructure Modernization for Science – Related to the recommendations of the Blue Ribbon Panel which highlighted improving Antarctic infrastructure. Polar Programs has started initial planning for a possible MREFC project to redevelop significant parts of the research infrastructure in Antarctica at McMurdo and Palmer stations.

Education Highlights

- Improving Undergraduate STEM Education (IUSE) is a major NSF effort to improve undergraduate education. In 2016 GEO support decreases \$4.9M to \$6.0M, reflecting a broadening of GEO's efforts.
- GEO is increasing support for Research Experiences for Undergraduates and is participating in NSF's new broadening participation program INCLUDES (Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science).

Effectiveness and Efficiency

- Blue Ribbon Panel
 - Continuing to invest \$18.5M to address short-term needs in Antarctica. Planning effort underway for large-scale reinvestment in Antarctic infrastructure.
- Decadal Survey of Ocean Sciences
 - Released by NRC on January 23
 - Contains many recommendations on future research directions and infrastructure needs, which GEO is reviewing.

In FY 2016, GEO...

- Effectively engages the community (Dynamic Earth, DSOS)
- Strategically manages investment in NSF-wide priority areas with SEES ramping down and INFEWS and PREEVENTS starting
- Supports key infrastructure investments
- Promotes the training of the next generation of geoscientists
- Increases long-standing GEO divisional research programs over 2015

Questions?