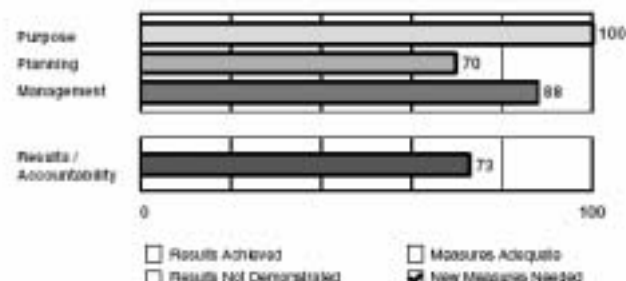


Program: Geosciences Directorate

Agency: National Science Foundation

Bureau:



Key Performance Measures

Key Performance Measures	Year	Target	Actual
Long-term Measure: Discovery across the frontier of science and engineering connected to learning, innovation, and service to society. Independent, external committees regularly assess NSF programs and the results of the awards made.	2001	Success	Success
	2002	Success	Success
	2003	Success	
	2004	Success	
Annual Measure: Partnerships connecting discovery to innovation, learning, and societal advancement. Independent, external committees assess whether programs succeed in meeting goals based on a retrospective review of program awards and the results from those awards.	2001	Success	Success
	2002	Success	Success
	2003	Success	
	2004	Success	
Annual Measure: Percentage of program announcements available at least three months prior to proposal deadline.	2001	95%	100%
	2002	95%	94%
	2003	95%	
	2004	95%	

Rating: Moderately Effective

Program Type: Research and Development

Program Summary:

Geosciences is a directorate of NSF that funds basic research, equipment, facilities, and education in the atmospheric, earth, and ocean sciences.

The assessment indicates that the overall purpose of the program is very clear, but that NSF's annual goals, applied to Geosciences for this assessment, are too broad to be useful in tracking how the program will improve scientific understanding and its application. Additional findings include:

1. The program is the principal source of Federal funding for university-based basic research in the geosciences, providing over half of the total support in this area.
2. The program conducts independent evaluations on a regular basis to identify needed program improvements and evaluate effectiveness.
3. The program uses a competitive process using peer-review to make awards—an efficient and effective management process.
4. Although annual external reviews indicate that NSF was successful in meeting its goals, there is limited information about the criteria the external panels use to make those determinations.
5. The program's budget is not aligned with goals in a way that allows one to determine the impact of funding on performance.
6. The definition of the Geosciences directorate as a program was not useful in making budget decisions, because such decisions were not made by directorate.

For this year, the PAIT score reflects acceptance of the performance measures and the results they indicate. It is particularly difficult to establish meaningful annual performance measures for basic research. NSF uses a non-quantitative process to measure its progress in achieving its long-term and annual goals. Independent, external committees regularly assess NSF programs and the results of the awards made. In response to these findings:

1. The Administration will develop better annual goals for NSF programs as part of the agency's revision of its strategic plan and the development of the 2005 Budget.
2. The Administration will likely not use the "Geosciences" directorate as a program for future assessments.

[2003 funding includes \$74 million in transferred programs not re-proposed in 2004.]

Program Funding Level (in millions of dollars)

2002 Actual	2003 Estimate	2004 Estimate
608	601	688

OMB Program Assessment Rating Tool (PART) *Research and Development*

Name of Program: **Geosciences Directorate**

Section I: Program Purpose & Design (Yes, No, N/A)

						Weighted
Questions	Ans.	Explanation	Evidence/Data	Weighting	Score	
1	<i>Is the program purpose clear?</i>	Yes	Geosciences (GEO) supports basic research, NSF Budget Submission to Congress; National infrastructure, and education in the atmospheric, Science Foundation Act of 1950 earth, and ocean sciences. These activities are (http://www.nsf.gov/home/about/creation.htm) conducted primarily at U.S. universities and NSF Strategic Plan colleges. (http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf0104)		20.0%	0.200
2	<i>Does the program address a specific interest, problem or need?</i>	Yes	Industry failure to support basic, long-term research in this area. Advancement of the scientific and educational enterprise.	NSF Mission Congressional Budget Request Science Resources Studies reports on research funding	20.0%	0.200
3	<i>Is the program designed to make a unique contribution in addressing the interest, problem or need (i.e., not needlessly redundant of any other Federal, state, local or private efforts)?</i>	Yes	GEO is the principal source of federal funding for university-based basic research in the geosciences, providing over half of the total support in this area. NSF focuses on basic, long-term research funded much less often by other mission-specific agencies and sectors.	NSF Budget Submission to Congress; Science Resources Studies reports on research funding	20.0%	0.200

4	<i>Is the program optimally designed to address the interest, problem or need?</i>	Yes	GEO relies primarily on competitive merit-review, primarily utilizing peer researchers. This proves extremely efficient and effective.	Committee of Visitor (COV) Reports; National Science Board statements;	25.0%	0.250
5 (RD 1)	<i>Does the program effectively articulate potential public benefits?</i>	Yes	While focusing on basic research, GEO targets processes controlling weather, climate, natural hazards and natural resources. GEO also supports education and outreach activities that develop the scientific workforce and enhance public understanding.	NSF Budget Submission to Congress COV reports OLPA Press Releases Custom News Service	15.0%	0.150
6 (RD 2)	<i>If an industry-related problem, can the program explain how the market fails to motivate private investment?</i>	N/A			0.0%	

Total Section Score	100%	100%
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Section II: Strategic Planning (Yes, No, N/A)

Questions	Ans.	Explanation	Evidence/Data	Weighting	Weighted Score
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1	<p><i>Does the program have a limited number of specific, ambitious long-term performance goals that focus on outcomes and meaningfully reflect the purpose of the program?</i></p>	Yes	<p>GEO completed a major long-range strategic plan, GEO 2000, to develop a vision of cutting-edge issues in the geosciences through 2010. This plan identifies priority areas for scientific investment for the decade. In addition, GEO completed a facilities plan for the period 1999-2003 that is currently being updated.</p>	15.0%	0.150
2	<p><i>Does the program have a limited number of annual performance goals that demonstrate progress toward achieving the long-term goals?</i></p>	No	<p>Each year, performance indicators demonstrate progress toward achieving long-term goals are delineated in the annual GPRAs. Specific programmatic activities are outlined in the budget request. The annual goals need to be modified to be more specific and easier to measure. NSF's GPRAs annual goals read like long-term outcome goals not annual performance goals.</p>	15.0%	0.000

3	<p><i>Do all partners (grantees, sub-grantees, contractors, etc.) support program planning efforts by committing to the annual and/or long-term goals of the program?</i></p>	No	<p>All awardees are required to submit annual Project Reports outlining progress toward achievement of Minutes of AC/GEO meetings objectives. Further, the program regularly Workshop reports engages partners in program planning to ensure that plans are at the forefront scientifically and are feasible, as well as to garner support for program plans as well as facilities, education and outreach. All program announcements are tailored to meet program goals, and proposals for support submitted by partners address these goals. However, the annual grantee reports question do not link well with the agency's goals. This however, is not a strong "no."</p>	7.5%	0.000
4	<p><i>Does the program collaborate and coordinate effectively with related programs that share similar goals and objectives?</i></p>	Yes	<p>GEO worked closely with EPA, NOAA, and USGSNSF 2003 Budget Submission to Congress to coordinate the transfer of three programs. Climate and Human Health Program GEO routinely develops coordinated programs Indian Ocean Experiment (INDOEX) with other agencies, such as operation of the Academic research Fleet.</p>	7.5%	0.075
5	<p><i>Are independent and quality evaluations of sufficient scope conducted on a regular basis or as needed to fill gaps in performance information to</i></p>	Yes	<p>GEO is regularly evaluated through annual Evaluation reports from several external, independent Directorate reports, Advisory Committee Reports, entities; Committee of Visitor evaluations of each area Committee of Visitor Reports, and NRC reports. take place every three years. See FY20001 reports on Lower Atmospheric Research Section and Instrumentation and Facilities Program.</p>	15.0%	0.150

*support program improvements
and evaluate effectiveness?*

6	<i>Is the program budget aligned with the program goals in such a way that the impact of funding, policy, and legislative changes on performance is readily known?</i>	No	Budget and performance integration for GEO, asSpring 2003 Management Scorecard; NSF throughout NSF, continues to be a problem area.congressional budget justification. Difficult to connect performance with funding levels.	NSF	7.5%	0.000
7	<i>Has the program taken meaningful steps to address its strategic planning deficiencies?</i>	Yes	Agency seems generally to be acting in goodNSF response to COV reports; management response faith on this front and is moving forward. to AC reports. New Facilities Plan is being developed. Committee of Visitor and Advisory Committee recommendations/findings are often addressed	NSF	12.5%	0.125
8 (RD 1)	<i>Is evaluation of the program's continuing relevance to mission, fields of science, and other "customer" needs conducted on a regular basis?</i>	Yes	Evaluated through annual Directorate reports,Evaluation reports from several external, independent ofentities; Committee of Visitor evaluations of each area take place every three years. See FY20001 reports on Lower Atmospheric Research Section and Instrumentation and Facilities Program. See also attached list of recent NRC reports.	NSF	10.0%	0.100

9 (RD 2) *Has the program identified clear priorities?* Yes Priorities are reasonably well defined in GEONSF Geosciences Beyond 2000: Understanding and 10.0% 0.100
 2000 report and assessed by National Academy Predicting Earth's Environment and Habitability
 reviews, COV reviews and AC reviews.

Total Section Score 100% 70%

Section III: Program Management (Yes, No, N/A)

					Weighted
Questions	Ans.	Explanation	Evidence/Data	Weighting	Score
1 <i>Does the agency regularly collect timely and credible performance information, including information from key program partners, and use it to manage the program and improve performance?</i>	Yes	The program regularly collects management/process goals as well as on grantee achievement on grant-specific activities. This information is used to manage the program and to guide future directions.	Management/processes data Annual project reports Annual program plans for major activities	10.0%	0.100
2 <i>Are Federal managers and program partners (grantees, subgrantees, contractors, etc.) held accountable for cost, schedule and performance results?</i>	Yes	The program is results-oriented and managers and grantees are held accountable for performance and results. Grantee accounting of costs is regularly audited, and funds can be withheld pending satisfactory project progress.	Management/processes data Annual awardee project reports Annual program plans for major activities	5.0%	0.050

3	<p><i>Are all funds (Federal and partners') obligated in a timely manner and spent for the intended purpose?</i></p>	<p>Yes NSF, already strong in this regard, has been improving steadily. GEO is among Foundation annually with limited or no carryover leaders in this area.</p>	10.0%	0.100
4	<p><i>Does the program have incentives and procedures (e.g., competitive sourcing/cost comparisons, IT improvements) to measure and achieve efficiencies and cost effectiveness in program execution?</i></p>	N/A	0.0%	
5	<p><i>Does the agency estimate and budget for the full annual costs of operating the program (including all administrative costs and allocated overhead) so that program performance changes are identified with changes in funding levels?</i></p>	<p>No Program does not include all direct and indirect costs borne by the program; there is a central salaries and expenses account.</p>	7.5%	0.000
6	<p><i>Does the program use strong financial management practices?</i></p>	<p>Yes The agency has an excellent financial management system under which GEO finances are managed. No material weaknesses</p>	10.0%	0.100

identified in agency-wide audit.

7 <i>Has the program taken meaningful steps to address its management deficiencies?</i>	Yes GEO is included in reviews by NSF's Office of Inspector General reports and Management Controls Committee which, chaired by the NSF CFO, provides continuing long-term senior executive attention to NSF's management challenges and reforms. In addition, challenges are identified by the NSF IG and through NSF's annual review of financial and administrative systems as required by the FMFIA. In addition, GEO regularly convenes Committees of Visitors (COVs) -- groups of outside experts -- to review grant-making activities.	15.0%	0.150
8 (RD 1) <i>Does the program allocate (Co 1) funds through a competitive, merit-based process, or, if not, does it justify funding methods and document how quality is maintained?</i>	Yes NSF is a leader in this regard among all federal agencies.	NSF budget system; for FY 2001, 88% of NSF's basic and applied research funds were allocated to projects that underwent merit-review. See the NSF FY 2001 Performance Report (http://www.nsf.gov/pubsys/ods/getpub.cfm?nsf02105) for additional details.	15.0% 0.150

<p>9 (RD) <i>Does competition encourage the participation of new/first-time performers through a fair and open application process?</i></p>	<p>Yes GEO's application process is open to all, and strives to make program announcements available at least three months prior to proposal being due. In addition, GEO participates in special outreach efforts to make potential investigators aware of GEO programs.</p>	<p>Outreach meetings (e.g. EPSCoR) NSF Enterprise Information System; In FY 2001, 18% of awards were made to new investigators.</p>	<p>12.5%</p>	<p>0.125</p>
<p>10 (RD) <i>Does the program adequately 3) define appropriate termination points and other decision points?</i></p>	<p>Yes GEO, like other NSF directorates, establishes termination points in its grant making process with decision dates along the way.</p>	<p>Annual project reports. Periodic site visits. Program announcements.</p>	<p>5.0%</p>	<p>0.050</p>
<p>11 (RD) <i>If the program includes 4) technology development or construction or operation of a facility, does the program clearly define deliverables and required capability/performance characteristics and appropriate, credible cost and schedule goals?</i></p>	<p>Yes All significant facilities operated by the program are required to set numerical targets for their provision of service to the community, and to report on actual results. Construction projects are closely monitored for compliance with both cost and time. In FY 2001, GEO oversaw two construction projects, both of which complied with NSF's goal of not exceeding budget or schedule by more than 10%. One aspect of one project did take two days longer than planned, but this had no impact on the broader project.</p>	<p>Facilities reporting system</p>	<p>5.0%</p>	<p>0.050</p>

10 (Co Does the program have No	Grantee progress is monitored by program staff	Annual awardee project reports	5.0%	0.000
3.) oversight practices that provide sufficient knowledge of grantee activities?	to ensure that proposed activities are, in fact,	Site visits conducted by managers carried out. IG has questions whether NSFCOV Reports staff follow-up on project reports and conduct enough site visits for oversight purposes.		

11 (Co Does the program collect N/A			0.0%	
4.) performance data on an annual see #1 basis and make it available to the public in a transparent and meaningful manner?				

Total Section Score	100%	88%
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Section IV: Program Results (Yes, Large Extent, Small Extent, No)

	Questions	Ans.	Explanation	Evidence/Data	Weighting	Weighted Score
1	<i>Has the program demonstrated adequate progress in achieving its long-term outcome goal(s)?</i>	Yes	Achievement of goals was reviewed by the Advisory Committee for Geosciences in FY 2001 and found to be satisfactory.	Advisory Committee for Geosciences report on Directorate performance	25.0%	0.250

Long-Term Goal I: Developing "a diverse, internationally competitive and globally-engaged workforce of scientists, engineers, and well-prepared citizens" (PEOPLE)

Target: Demonstrate Significant Achievement

Actual Progress achieved toward Successful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area

goal:
Long-Term Goal II:Enabling "discovery across the frontier of science and engineering, connected to learning, innovation and service to society" (IDEAS) Target:Demonstrate Significant Achievement Actual Progress achieved towardSuccessful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area goal:
Long-Term Goal III:Providing "broadly accessible, state-of-the-art and shared research and education tools." (TOOLS) Target:Demonstrate Significant Achievement Actual Progress achieved towardSuccessful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area goal:

2 *Does the program (including No Achievement of goals was reviewed by theAdvisory Committee for Geosciences report on 27.5% 0.000 program partners) achieve its Advisory Committee for Geosciences in FY 2001Directorate performance annual performance goals? and found to be satisfactory; however, see Q2 in Section II on concern with annual goals; No in Q2, Section II requires No answer here.*

Key Goal I:Globally engaged science and engineering professionals who are among the best in the world. Performance Target:Demonstrate Significant Achievement Actual Performance:Successful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area
Key Goal II:A science and technology and instructional workforce that reflects America's diversity. Performance Target:Demonstrate Significant Achievement Actual Performance:Successful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area
Key Goal III:Discoveries that advance the frontiers of science, engineering and technology. Performance Target:Demonstrate Significant Achievement Actual Performance:Successful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area

<p>Key Goal IV: Partnerships connecting discovery to innovation, learning, and societal advancement.</p> <p>Performance Target: Demonstrate Significant Achievement</p> <p>Actual Performance: Successful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area</p>
<p>Key Goal V: Shared use platforms, facilities, instruments, and databases that enable discovery and enhance the productivity and effectiveness of the science and engineering workforce.</p> <p>Performance Target: Demonstrate Significant Achievement</p> <p>Actual Performance: Successful -- the Advisory Committee for Geosciences determined that GEO had demonstrated significant achievement in this area</p>
<p>Key Goal VI: Have 95 percent of program announcements available at least three months prior to proposal deadline.</p> <p>Performance Target: Greater than or equal to 95%</p> <p>Actual Performance: FY01: 100%; FY02: 94%</p>

Footnote: Performance targets should reference the performance baseline and years, e.g. achieve a 5% increase over base of X in 2000.

3 *Does the program demonstrate NA improved efficiencies and cost effectiveness in achieving program goals each year?*

<p>4 <i>Does the performance of this program compare favorably to other programs with similar purpose and goals?</i></p>	<p>Yes A review of FFRDCs found that NSF's (including FY 2003 Budget Request NCAR operated by GEO) were among the best Review of FFRDCs managed in government. In the FY 2003 Budget NSF Enterprise Information System Request, it was proposed that three programs be transferred to GEO from other agencies to improve their management. Recognized as a "best practice", nearly all of GEO's program funds are allocated utilizing a merit review</p>	<p>10.0%</p>	<p>0.100</p>
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process.

5	<p><i>Do independent and quality evaluations of this program indicate that the program is effective and achieving results?</i></p>	Yes	<p>The program is regularly reviewed by external experts, who have unanimously determined GEO activities are effective and achieve results.</p>	27.5%	0.275
6 (RD 1)	<p><i>If the program includes construction of a facility, were program goals achieved within budgeted costs and established schedules?</i></p>	Yes	<p>Annual facility construction and operation goals are established, and all program goals were met.</p>	10.0%	0.100
Total Section Score				100%	73%

Recent NRC Reports

Year Title

- Addressing the Geosciences 1999 Our Common Journey: A Transition Toward Sustainability
- 1999 Global Environmental Change: Research Pathways for the Next Decade
- 1999 Global Ocean Science: Toward an Integrated Approach
- 2000 Illuminating the Hidden Planet: The Future of Seafloor Observatory Science
- 2001 Basic Research opportunities in Earth Science

2001 Review of EarthScope Integrated Science

2002 Abrupt Climate Change: Inevitable Surprises

2002 The Sun to the Earth - and Beyond: A Decadal Research Strategy