

Directorate for Geosciences (GEO)
Division of Atmospheric and Geospace Sciences (AGS)

Response to the 2014 Committee of Visitors Report:
Geospace Section (GS)

Date of the COV: June 10-11, 2014

The Geospace Section (GS) of the Atmospheric and Geospace Sciences Division (AGS) appreciates the 2014 Committee of Visitors (COV) for their time and efforts to review the Fiscal Year 2011 to 2013 activities of the following programs in the Geospace Section portfolio: Aeronomy (including CEDAR, Coupling, Energetics and Dynamics of Atmospheric Regions), Geospace Facilities, Magnetospheric Physics (including GEM, Geospace Environment Modeling), Solar-Terrestrial Research (including SHINE, Solar Heliospheric and Interplanetary Environment) and Space Weather.

We commend and thank the COV for the excellent guidance provided in the report resulting from the June 10-11, 2014 meeting, and acknowledge the substantial amount of work the committee undertook while evaluating the complex portfolio of programs. We appreciate the very positive feedback that the COV provided about the integrity of the merit review process and the management of the GS programs.

The following are the Geospace Section response to the 2014 COV Summary of Findings and Recommendation. The numbering and headings mirror those of the report. In those areas where no issues were raised, no response is given.

A.5. Does the documentation in the jacket provide the rationale for the award/decline decision?

The one issue the COV had was “It was occasionally and infrequently necessary to hunt around in the Jacket to infer justifications for decisions; this was readily attributable to imperfections in the electronic interface. If questions remained, the Program Directors and staff were willing and able to answer the COV.”

We believe it would be useful and will implement in future COV ‘s additional telecons and maybe a webEX to explicitly go over maneuvering in the E-Jacket system to find needed documentation.

A.6. Does the documentation to the PI provide the rationale for the award/decline decision?

The COV commented: “To varying degrees, documentation ranged from extremely good/impressive to hopes for more documentation, particularly in capturing verbatim e-mail record [N.B., and records of phone conversations], which the reviewers understood was not always captured”. But noted, however: “based on the ones that we were able to see, the Program Director did an excellent job of reflecting the reviewers' assessments while providing rationale for the overall decision.”

We appreciate the acknowledgment by the COV committee that GS program officers use a variety of methods to provide feedback on proposals to the PIs, including phone calls, e-mails and face-to-face meetings, some of which may not have been fully documented in the electronic jacket. It should be noted that this direct feedback from the program director to the PI is a complement to the standard feedback, which is always provided, comprising anonymous copies of the reviews, the panel summary if applicable, and a context statement detailing the review and decision process that was adopted. We strongly believe that tailoring the means of communicating with PIs on the outcome of their proposals to the individual case and situation is highly effective and the most efficient approach. We agree that documentation would be improved if all relevant correspondence dealing with the award/decline decision was uploaded and available in the jacket. We will make sure to do that in the future.

B. 2. Did the program recognize and resolve conflicts of interest when appropriate?

We agree that the computer software is not perfect and also we agree with the notion that *“all involved must take responsibility for COI management, including a combination of the computer algorithm (which might be improved), the Program Directors (who add clear value to the assessment beyond the algorithm), and to the reviewers.”* We note and particularly appreciate the finding that *“Despite the discussion of these issues, an important conclusion that was universal remains, as stated succinctly by the Aeronomy panel: ‘We found no instance where either the integrity of a proposal review or the ensuing decision was impacted by COI.’”*

One issue brought up by several of the subgroups dealt with COI rules on multiple authorship papers. The COV felt these rules were too strict and prevented some very qualified people from reviewing the proposals. However, co-authorship, on a project, book, article, report or paper within the previous 4 years is a covered relationship that is typically disqualifying from participating in a review according to the NSF Standards of Ethical Conduct. The disqualification can be waived by the NSF ethics counselor in the Office of the General Counsel if the integrity of the reviewer’s services can be shown to be unaffected by doing so. These COI rules are designed to assure impartiality in the review process. Thus, although we appreciate the limitations strict interpretation may cause, we will continue to follow the accepted COI rules.

D. Other comments

The STR subgroup noted that in the STR program: “An analysis of the approval rate of women and minority PIs indicated a large fluctuation from year to year. However, the success rate of female PIs from 2011-2013 appeared to be anomalously low”.

As noted by the COV, this phenomenon was not true for all of GS, but only for the SHINE part of the STR program during the reporting period. In FY 2014 (after the period of consideration by this COV), the SHINE program again had a similar success rate for male and female PIs. We acknowledge that this situation did arise, and are committed to striving to avoid this issue in the future. NSF, and GS, emphasizes the value of diversity

among grantees, and this is one possible broader impact of a proposal. In order to ensure that panels are better aware of this, GS proposes to instruct panelists explicitly about the value NSF places on diversity and to note the possible role of implicit bias in the process of peer review.

E. 2014 Overarching Findings and Recommendations

Responses to the 2011 COV

CubeSats -- The COV strongly endorsed this program. The 2011 COV report suggested that the GS CubeSats be elevated to an NSF-wide program, requiring a significantly expanded budget. The 2014 COV stated “In the absence of any evidence of an expanded or new funding horizon, the consensus (not unanimous) 2014 COV recommendation is that CubeSats remain a GS-centric program...”

The continued strong endorsement of this special new program in GS is gratefully acknowledged. We agree that the incredible growth both in the demand for cubesat projects within the GS science community and in the important science results that they deliver constitutes a strong justification to continue and grow the program in its current form, irrespective of any possible future opportunities to expand the program into a GEO or NSF-wide program. We fully intend to follow this recommendation.

Faculty Development in Space Sciences (FDSS) -- The COV applauded the re-initiation of this program.

We greatly appreciate this acknowledgment of our re-launch of the FDSS program in FY14. Two proposals have been selected for awards from the first round of proposals and are pending implementation in FY15. The next solicitation deadline is in August 2015 for selection and award in FY16 or FY17.

Interdisciplinary Research -- “The COV found that that GS is responding to the 2011 COV recommendation (for interdisciplinary research). The 2014 COV encourages an expansion of these efforts with particular attention to further partnerships with the middle and lower atmosphere climate, chemistry, and dynamics programs within AGS.”

GS shares the COV’s interest in interdisciplinary research. We are pleased to note that the geospace community is actively engaged in such research, as evidenced by the large, and growing, number of expressions of interest in the INSPIRE program. Several INSPIRE awards were made in FY 14, and at least a similar number is anticipated in FY 15. The FESD competition has been terminated, but it is anticipated that a GEO-wide activity focused on hazards will be launched in the near future. GS actively encourages the community to participate in these programs.

GS, in particular the Aeronomy Program, has encouraged collaborations with programs in the Atmosphere Section. During FY 2014, a large airborne field project was carried out in New Zealand with the goal of studying the generation, propagation, and breakdown of

gravity waves. The project was supported jointly by the NSF Aeronomy, Climate and Large-Scale Dynamics, and Physical and Dynamic Meteorology Programs.

Virtual Panels -- The COV finds “a balance between virtual and in-person panels is best, with the possible addition of mixed virtual/in-person panels. We recommend that future virtual panels invoke improved video technology.”

We agree with the COV that both virtual panels and panels at NSF have advantages. Virtual panels are less expensive, easier to organize and involve less travel. We find that senior scientists who would be too busy (especially faculty members who teach) to attend a face to face panel can find the hours necessary for a virtual panel. On the other hand at face to face panel meetings it is easier to get thorough debate and young scientists get the opportunity to interact more directly with senior scientists. We agree that a mix of panels is desirable. We further agree that NSF should investigate improved video technology that will make it easier to stimulate interactions between the panel members during virtual panels.

Facilities Lifecycle We agree with the 2011 and 2014 COV recommendation regarding the need to develop a strategic plan for Geospace Facilities. However, because support for Geospace observing facilities is distributed among all the Programs, planning requires a fully integrated approach that examines the benefits and impacts of the overall GS investment. Thus, we see a comprehensive strategic plan for facilities as a natural follow-on to the GS portfolio review. GS is committed to developing a comprehensive life-cycle plan for the incoherent scatter radars and other large facilities (lidars, HF radars, AMPERE) as soon as we have the guidance on strategic priorities from the GS portfolio review and the AGS Goals and Objectives document. We also expect guidance at the NSF level on this subject in the future

2014 COV Process and Resources – *The COV “found the electronic Jacket (hereafter eJacket) tool to be quite useful. However, we identified a number of issues that should be addressed to improve its usability.”*

We will pass on these suggestions to NSF IT support. In addition, as noted earlier, we believe an interactive WebEx demonstration (or something similar) would help COV members find needed information much more rapidly and with less frustration.

Conflicts of Interest – *The COV had some suggestions, noting “Specifically, the current computer algorithm scans the text of proposals and CVs and declarations of conflicts by PIs. However, it is not a “database” and has many shortcomings. For example, 1) it doesn’t search for Program Director COIs; 2) it doesn’t distinguish between COI letters of support that say words to the effect that “I think this is a great proposal and should be funded” from statements of fact that are not COIs, such as “These instruments will produce the kind of data needed for this work”.*

We strongly agree with the COV, as noted in their comments on question B.2 above, that successful COI management is only possible if all involved take responsibility, including PIs, reviewers, and NSF staff and that the reliance on technical solutions alone, such as the automatic conflict checker or a COI database, will not be sufficient. We also

appreciate that distinguishing between advocacy and expression of intent of involvement in support letters for proposals on the one hand, and a simple statement to confirm data availability on the other would be helpful in handling potential COIs for many proposals.

Diversity -- The COV suggested “that any anomalies in relative female/minority versus overall funding rates and/or amounts be vigorously pursued. “

We sincerely appreciate the COV bringing this issue to our attention. We do note that this is an anomaly, not a trend – it had not happened in the past and did not happen in 2014. This is not to excuse it. GS highly values diversity and recognizes that this is an important finding that requires constant vigilance. One positive step in this direction that we will implement is to instruct panelists explicitly about the value NSF places on diversity and to note the possible role of implicit bias in the process of peer review.

Balance between Intellectual Merit (IM) and Broader Impact criteria in Reviews

The COV had numerous suggestions and comments in this area.

We are fully committed to supporting the NSF requirement that both Intellectual Merit (IM) and Broader Impact (BI) be given consideration during the review process. We strive to award only scientifically meritorious proposals but are committed to making sure that BI issues are thoroughly considered among the meritorious proposals. We have and will continue to move toward dealing with BI explicitly. For instance we will make sure that the panel instructions stress the importance of BI in making a recommendation. The Program Officers (POs) will continue to make sure that BI is thoroughly discussed in the panel summaries. GS program officers and the Section Head will also be proactive in presentations to the community about the importance of broader impacts. In addition we would note that the three focused research areas (GEM, CEDAR and SHINE) have strong educational elements that are supported by the program. For instance we have day long meetings at the annual workshops dedicated to education of graduate students. These will be continued.

The COV report calls for maintaining a statistical record of BI accomplishments. The COV would have found this useful and it would be useful for internal program management. Program Officers regularly evaluate the BI noted in annual and final reports but do not keep statistics. This requires a tool to extract the BI information and help the POs synthesize it. We will urge NSF to develop such a tool. Meanwhile we will plan on collecting and documenting particularly strong examples of broader impact accomplishments.

GS Portfolio Management

“The 2014 COV strongly encourages GS to promptly undertake a vigorous, comprehensive portfolio review in order to prioritize various elements of the GS program”

We appreciate the COV's encouragement to conduct a comprehensive portfolio review. We are indeed in the process of organizing such a review and intend to brief future AC/GEO meetings about this undertaking.

Interactions Across GS Programs

The COV encouraged “the GS team to work together to develop new and innovative ways to make the connections across GS programs stronger.”

We continue to work to foster cooperation between the CEDAR, GEM and SHINE communities. The focused research efforts have members of their respective steering committees who serve in liaison roles with the other two steering committees. GEM and CEDAR have a joint summer workshop every three years. In August members of the GEM, CEDAR and SHINE communities assembled at the New Jersey Institute of Technology to participate in the first Geospace Earth Cube workshop that is looking for ways for the three communities to share data. Space Weather provides a vehicle for common research. Space Weather science requires that all three communities work together. Therefore we envision a focused Space Weather effort organized like SHINE, CEDAR and GEM that will involve researchers from all three.