Updated Response to the UARS Committee of Visitors: October 2013

The review of the Geospace Section held in 2011 was mostly positive. The COV, however, did make some constructive suggestions and recommendations to improve GS programs. Following are responses to each of these, which were provided initially, an update from October 2012, and an update as of October 2013:

MAIN FINDINGS AND RECOMMENDATIONS

a. Elevate GS to Division Level

The 2008 COV argued quite persuasively that with the creation of a new division several problems would be solved… Since the 2008 review, several things have happened that further argue for establishment of a "Geospace Division"… It is ever more fitting that GS be the locus of management and operation of the ATST and its programmatic arms… the COV suggests that Arecibo (like ATST) be moved in an administrative sense into the Geospace arena...With such increased responsibility and associated funding levels, clearly the GS portfolio would warrant "division" status…Yet another recommendation (see below) is that the highly successful CubeSat program presently run by GS should be funded with new NSF division-level resources…This would be a welcome component of the recommended Geospace Division as envisioned by our COV.

Discussion

The 2008 and 2011 Geospace Section COVs made the creation of a new division dedicated to the science of the Earth's space environment their highest priority. As these COVs noted, the 2006 National Space Weather Program Assessment Report also suggested a similar reorganization.

We agree that we need to ensure that the research community is well served administratively and organizationally. We will work within GEO to optimize our response to growth in this area of science.

ACTION

Together with the Division and the Directorate GS will explore the concept of a new Division, including its internal and external ties and the impact on staffing.

October 2012 Update

Nothing further to report at this time, except to note that the recent decision to move the Office of Polar Program into the GEO will undoubtedly result in a review of the overall organizational structure of the Directorate. Any consideration of creating a new division for Geospace will have to be integrated into these discussions.

October 2013 Update

Nothing further to report at this time.

b. Space Weather as a major "natural hazards" component of NSF

The COV believes that space weather falls very much into the domain of CaMRA and should be actively included in NSF's natural hazard considerations.

Discussion

We agree that space weather fits well within CaMRA.

ACTION

No further action required

October 2012 Update

CaMRA is now defunct. It has been subsumed by Hazard SEES — a broad initiative involving many hazards and their impacts. GS will make sure to inform our community of this opportunity.

October 2013 Update

To our knowledge, the first Hazard SEES solicitation did not attract any space weather related proposals.

c. Strategic Planning for GS

The COV notes that especially in recent years, the Geospace Section has developed somewhat organically and has benefitted from opportunistic growth. This is to be applauded. However, in light of the above suggestions and in light of the likelihood of flat resource levels for some time to come, the COV strongly urges that GS engage in a more systematic strategic planning exercise. This planning should involve both "top-down" thinking from the GS staff as well as broad and thoughtful inputs from the community members.

Discussion

We agree that strategic planning is important. The GS section prepared an initial strategic plan in 2009 and we are in the process of updating that plan. Important input to our strategic planning comes from overall NSF guidance on the NSF strategic plan and from the geospace science community as well. The community input comes to the GS section on a regular basis through the CEDAR, GEM and SHINE programs as well as from our participation in the annual Space Weather Week meeting hosted by the Space Weather Prediction Center in Boulder, CO. We will pay careful attention to the guidance provided by the Decadal Survey and have been supporting and contributing to the activities of the current Decadal Survey panel.

ACTION

We expect to complete a revised draft of the GS strategic plan prior to the next meeting of AC-GEO. A final version of the strategic plan will be prepared after we have had time to examine the recommendations from the Decadal Survey.

October 2012 Update
The GS strategic plan has been updated and further developed. However, final completion is awaiting detailed examination and discussions of the Decadal Survey, which was just released in September 2012.

October 2013 Update
A final draft GS strategic plan, including responses and cross-referencing to Decadal Survey recommendations was completed and shared with the Geospace community at the CEDAR, GEM, and SHINE summer workshops 2013. Feedback and community comments are being collected and the plan is also currently being integrated into a strategic planning activity for the AGS Division.

d. Fund CubeSats appropriately.
The CubeSat program has brought a new excitement and potential for discovery to the GS program at NSF. There has been tremendous proposal pressure during the first few years of the program, indicating a strong interest in the program on the part of the community… the program needs to be adequately funded to maintain a reasonable acceptance rate (encouraging a high level of creative proposals) and to reduce the pressure on the current GS budget… The program directors are encouraged to clarify the objectives of the program. Is it primarily an educational program? If so, can similar objectives be achieved with other much less expensive options, such as student rocket launch projects, for example. Is the objective primarily to obtain new science results? If so, what niche is the program specifically filling? Is the science yield that can be expected competitive with the science yield from more conventional GS instrumentation with similar costs?

Discussion
We agree that the CubeSat program has been a huge, immediate success and we are strongly committed to its continuation. As a new, and for NSF rather unusual, activity the program has been conducted very much in an ad-hoc fashion for the first 3 years of its existence. We agree, however, that to ensure long term success for the program and to manage it effectively it needs a stable baseline budget and (correspondingly) a core-program home. The need for the development of new and improved observational capabilities for space weather was the main driver behind the creation of the CubeSat program. Even though the program has proven valuable in several other ways, not least of which is its educational impacts, observations to advance space weather and other scientific research remain an important objective for the program. A new space weather research program would provide an appropriate home for the further growth and development of this new activity. A comprehensive external review of the CubeSat program is planned for 2013, after 5 years, to assess the scientific, technological, and educational value and success of this activity and provide guidance for its future execution.

ACTION
GS will establish a dedicated funding line for the CubeSat program. We will ensure that the questions and concerns raised about the scientific value and cost-effectiveness of CubeSat projects are included as part of the external evaluation of the CubeSat program to be conducted in 2013.

October 2012 Update
GS has established a new Space Weather Research and Instrumentation Program that will be responsible for management and oversight of the cubesat awards.

October 2013 Update
A dedicated funding line for the Space Weather program was established for FY13 with an increase for Cubesat funding expected for FY14.

e. FDSS
The COV considers the Faculty Development in Space Sciences program a very important initiative in GS… The COV strongly recommends the continuation of the FDSS program in a staggered manner at the discretion of UARS. The FDSS program is critical for the future health of the space science community.

Discussion
GS is proud of the fact that our previous FDSS investments have already resulted in seven new tenured faculty. We are committed to providing continuing opportunities for the professional development of young space scientists, and this commitment to nurturing the next generation is also supported by our NSF leadership.

ACTION
We recognize that a staggered series of FDSS submission opportunities is a sensible approach and we hope to fund a new FDSS competition sometime in FY2012. However, the next FDSS competition could be postponed if NSF and GEO budgets suffer reductions in the near-term.

October 2012 Update
We are planning for a new release of a FDSS solicitation and for 1-2 new awards to be made in FY2013.

October 2013 Update
A new solicitation for the re-initiation of the FDSS program is in clearance.

f. Interdisciplinary Research
… there remains concern that the traditional discipline-based structure of the section (AER, STR, MAG) may inhibit cross-disciplinary research efforts. The COV encourages

the program directors to continue to work together to identify innovative ways to enable more research into the coupling and system aspects of the solar-terrestrial system.

Discussion

We concur with the COV on the importance of cross-disciplinary research, and as identified by the COV, the Geospace Section has been proactive in transcending the intrinsic program boundaries by continually identifying and co-funding proposals and research initiatives that cross multiple disciplines within and beyond the Sections's purview. In particular, we are committed to maintaining the synergy that exists among AER, MAG, STR, and GF.

In addition to such cross-disciplinary activities within the Geospace Section, we have been actively participating in NSF-wide programs that permeate through disciplines outside the Division and the Directorate, such as FESD, CDI, CMG, CAMRA, and even in cross agency activities such as the NSF/DOE Partnership in Basic Plasma Science and Engineering, and NSF/NASA partnership in strategic capabilities in space weather.

ACTION

GS will continue to create and pursue opportunities to strengthen research into the coupling and system aspects of the solar-terrestrial system GS will pursue a reorganization of our existing programs and activities to establish a new program area dedicated to Space Weather research and instrumentation, which will constitute a natural focal point for the participation in both internal and external space weather relevant activities.

October 2012 Update

A solicitation for Space Weather Modeling Collaborations was issued jointly with NASA. Awards from this competition will be made in FY13 and GS is planning to contribute $1.5M/ year to this for the next 5 years.

October 2013 Update

A total of 51 proposals were received and evaluated in a panel review held September 24-28, 2012. Based on the panel evaluations and recommendation, NASA and NSF program officers jointly put together a final selection and funding recommendation. The deliberations included not only the proposals intellectual merits and broader impacts but also strategic and programmatic considerations to ensure a well-balanced outcome with respect to research areas, methodologies, institutions, and community sustainability.

The final selection of 8 projects that were fully or partially funded constitutes an investment of $4.3M per year for the next 5 years ($1.5M/ year from NSF and the rest from NASA). The combined set of projects covers the entire Sun-Earth system and targets key grand challenges in space weather modeling. Together, the projects will significantly enhance our capabilities in the modeling and prediction of: 1) solar eruptions; 2) the propagation of these more realistic ejections through interplanetary

space, especially providing more accurate information of the magnetic field in the ejecta that is critical for determining the effects at Earth; 3) particle acceleration in the corona and solar wind; 4) small-scale physics effects in global magnetosphere models, which are crucial to accurately predict magnetospheric dynamics; 5) ionosphere and upper atmosphere dynamics. All projects will result in modeling and/or data analysis products that will be delivered to the CCMC and, thus, be made available for scientific research as well as experimental space weather prediction.

g. Virtual vs. face-to-face panels.

Three recommendations are offered regarding panels. First, a balance of virtual and face-to-face panels should be maintained. Particularly when the level of funding is high and the issues potentially controversial, a face-to-face panel is preferred. For the more routine assessment of standard programs, virtual panels may be adequate. Second, the Program Officer should be aware of the potential difficulties in communication that can occur during virtual panels and strive to ameliorate them. The Program Office will need to be diligent in noting issues that may not be pursued in sufficient detail during the discussion, and either encourage additional discussion during the panel or have follow-up discussions with the panelists offline. And third, when using virtual panels, explore the use of the most up to date video conferencing capabilities rather than relying on audio only, for example.

Discussion

We agree that there are both advantages and disadvantages to using virtual panels to review proposals as opposed to face-to-face meetings held at NSF. It should be noted that NSF is under pressure to reduce travel costs and the use of virtual panels is one way to reduce such costs. We believe that virtual panels are appropriate for the CEDAR, GEM and SHINE panel reviews where all the participants in the panel are familiar with the topics being reviewed and are also familiar with each other. In contrast we feel that the panel review for the proposals submitted to the CubeSat program requires a face-to-face panel.

ACTION

We will investigate the possibility of using video conferencing technologies to enhance virtual panel experience.

October 2012 Update

Recent experience in early October, 2012, with AC/GEO suggests that the technology for videocons is still problematic.

October 2013 Update

In-person panels were convened in July for two panels evaluating core AER and MAG proposals and the latest CEDAR panel in September 2013 was also done as a physical meeting at NSF. The panelists expressed the opinion that face-to-face panels had several serious advantages over virtual panels.

h. College of reviewers

The current COV believes it is clear that this would greatly help NSF, and perhaps also be a model that is (begrudgingly) beneficial to reviewers (e.g., reviewers sign up to do 6 reviews in one year, then get 5 years off). On the other hand, some proposals should be reviewed with an eye toward a particular expertise that may not be captured by the "college", and so exceptions should be allowed.

Discussion

We greatly appreciate the insight from this COV that the college of reviewers is seen mostly as a help to NSF. The idea was discussed also by the preceding COV but mainly as a means of making participation in the NSF review process more attractive for reviewers, by giving them better recognition for their service, and of easing the burden on reviewers, by concentrating their participation and giving them clear expectations of when and how much they would be called upon. We acknowledge the fact that the science community may be split on this issue. The "college of reviewers" would ease the burden on NSF program officers mainly by helping to decrease the number of unanswered review requests that would be made. We agree with the COV that it is unlikely that the group of reviewers in the "college" will include adequate expertise in all areas, so that additional reviewers will be needed.

How merit review is carried out and implemented across the many programs, divisions, and directorates at NSF is currently being reviewed and revised at a Foundation-wide level. Creative and innovative ways are being sought for how to improve the merit review process and make it more efficient. Ideas that are being looked at include enlarging the group of proposals that do not require external review, simplifying some handling and documentation requirements, and strengthening the requirements for resubmissions.

ACTION

GS will participate actively in NSF's efforts to review and revise the merit review process and will seek to participate in pilot studies.

October 2012 Update

Nothing further to report at this time.

October 2013 Update

Nothing further to report at this time.

i. Additional Program Directors/Support staff.

… additional staff assistance is needed, which could be provided by additional rotator positions. However, the COV notes that successful scientists will likely not wish to put their entire research program on hold to come to NSF temporarily, so rotators should be granted a sufficient percentage of their time to continue research programs. This could be accomplished by dividing rotator position into two, 20-hours each, and allowing them

to continue receiving funding (even if from NSF). Other possible staff augmentation solutions include hiring more contractors and, perhaps, lower-level administrators.

Discussion
We appreciate the concerns expressed by the COV for workloads of section staff as well as the ideas put forward to help alleviate these.

ACTION
GS will continue to work with the community to ensure that Program Director rotator positions in the sections are filled by high quality scientists and community leaders. An additional PD for the Aeronomy program has high priority in the current AGS hiring plans. GS will also continue to evaluate the work-flow for proposals and redistribute tasks to administrative personnel as appropriate. Further, we will look into options for hiring summer interns and other short-term staff who can provide additional relief on specific tasks.

October 2012 Update
An extensive search was conducted for new Program Directors for AER and MAG with excellent community response, resulting in a very strong candidate field and highly successful selection of new Program Director rotators for these positions in 2012. Similar efforts are currently underway for the STR program.

October 2013 Update
The STR selection was completed successfully with a new permanent Program Director now in place for that program.

j. Education programs/summer schools
Over the past 10 years, there have been a number of education-oriented specialized workshops, including the Center for Integrated Space Modeling (CISM) school, the Polar Aeronomy and Radio Science (PARS) school, and the Advanced Modular Incoherent Scatter Radar (AMISR) student workshop. In general, these specialized schools have been highly successful and appear to be meeting a need within the community not being met elsewhere… It is recommended that these schools be maintained and operated in the future. Perhaps some opportunity for running these (or different) schools should be competed, in order to allow for their proper evaluation and continued growth. This is a special concern for the CISM program, which is about to end.

Discussion
GS recognizes that targeted workshops and summer schools provide education in specialized areas not offered in most academic institutions and we will continue to encourage and support these activities. The AMISR Summer School has been extremely successful and the most recent school was held jointly with EISCAT in Kangerlussuaq, Greenland. This will continue on an annual basis for as long as the demand remains high. The highly praised CISM Summer School should be continued after the termination of

the CISM award in August of 2012. No definite plans have been made for the continuation of this activity in 2013, but there has been interest expressed by several groups. The suggestion that this and other schools be competed is a good one, and GS is currently discussing the most expeditious way to conduct the competition. The PARS Summer School is no longer being held, but much of the material presented there is currently included in the AMISR Summer School curriculum.

It should be noted that the need for specialized schools is perhaps unique to the space physics community. As there are few space physics departments in universities, the opportunities for graduate students to learn about specialized fields such as space weather or incoherent scatter are limited.

ACTION
GS will continue to address this shortfall in space physics education for as long as it exists. We hope that members of the community will work aggressively within their institutions to identify and address gaps in space physics education.

October 2012 Update
A proposal for the continuation of the CISM Summer School was funded in 2012. The school will be organized by and held at NCAR. A proposal for the continuation of the AMISR summer school is currently in preparation.

October 2013 Update
The AMISR summer school award has been made.

k. International aspects of programs
… activities occurring around the globe present valuable opportunities for NSF to leverage the investments and accomplishments of our foreign partners. GS should actively establish partnerships and support complementary research and infrastructure development that will serve to integrate research, education, and infrastructure programs in other countries with those supported by NSF to the benefit of U.S. scientific development and improved international relations.

Discussion
GS agrees that the importance of international collaborations is increasing and we are committed to being proactive both within NSF and externally. Within NSF, we have established excellent working relationships with program officers in the Office of International Science and Engineering, who are helping in our efforts to establish partnerships with several countries, including Argentina, Norway, Denmark, and Portugal. We are also working closely with GEO staff in establishing joint programs with the European Union. Externally, GS staff regularly travel to foreign countries as organizers or participants in international workshops. Both the CEDAR and GEM Steering Committees have permanent international members to ensure good communication and collaboration. Ultimately, the extent to which GS takes advantage of

opportunities for international partnering is dependent on how proactive scientists in the community are in responding to those opportunities.

ACTION
We will make every effort to notify the community when new programs with foreign partners emerge, but success in these activities will depend on the quality of the proposals submitted in response.

October 2012 Update
GS is working closely with the GEO front office in preparing for a multi-disciplinary initiative as a candidate for funding under the SAVI program. The effort will parallel proposals already funded by the EC. GS is also working with OISE in finalizing an MOU with Argentina in which Argentina is making a significant investment in establishing and operating the AMISR unit to be relocated to La Plata, Argentina.

October 2013 Update
No results have yet emerged from the SAVI collaboration.
The move to Argentina has moved forward slowly with GS agreeing on a ten year plan for the deployment of the new AMISR units. The intention to begin moving the RISR system to Argentina is still on track to begin in August of 2014.
Over the last year, GS has been engaged in extensive discussions with the UK on joint activities in space weather. Budget pressures and uncertainties for FY14 currently prevent us from following through on these plans, but the initiative seems to be going ahead on the UK side regardless.

l. Standing science advisory groups/Visitor program
An appropriately constituted committee can be a valuable resource to the program directors as they assess and guide future developments in the various research areas that they manage. A related suggestion is to develop a visitor program in which individuals or small groups can be invited to visit NSF and provide more extensive briefings to the staff on critical science topics.

Discussion
We acknowledge the importance of utilizing the intellectual resources within the research community in guiding the continual identification and refinement of critical research areas within the programs. However, in proceeding to benefit from such valuable resources, we must also be cognizant of policy issues for standing committees and of the role of existing advisory bodies. The only standing advisory group in the Geosciences Directorate is the GEO Advisory Committee, and we strive to ensure that some members on that committee are connected to the geospace community..

ACTION
We will continue to explore strategies for ensuring community input to GS decision making both formally and informally.

October 2012 Update
Nothing further to report at this time.

October 2013 Update
Nothing further to report at this time.

m. ARRA funds/usage
The COV notes that the ARRA funds were used to support excellent scientific efforts and allowed the GS to expand their funding of more new PI-led and CAREER proposals. However, even with the additional ARRA funds, there were many high quality proposals that were not funded. This underscores the fact that the GS budget is insufficient to support all the submitted proposals deserving of funding.

Discussion
We agree with the COV that the ARRA funding presented us with a unique opportunity to rescue a number of excellent projects that we would not have been able to undertake otherwise.

ACTION
GS will continue to work diligently with the community to ensure that the very best projects get funded and that success rates are maintained to the extent possible with available funds.

October 2012 Update
Nothing further to report at this time.

October 2013 Update
Nothing further to report at this time.

ADDITIONAL FINDINGS AND RECOMMENDATIONS

aa. Satellite data
Investigations involving coordinated measurements from ground and from space have been conducted in an opportunistic fashion in years past. This potential should be further exploited through increased NASA-NSF-DoD collaboration.

Discussion
We concur with the COV that further exploitation of coordinated ground and space measurements toward addressing scientific research topics in GS is beneficial and deserving of continual proactive attention. Examples that point to our recognition of this importance and our commitment to such activities are the joint NSF/NASA sponsorship of TIMED observations in support of GS science topics, and AFRL/NSF sponsorship of C/NOFS measurements for investigating science topics in equatorial aeronomy.

ACTION
We anticipate to continue to explore future collaborations as motivated by pertinent science topics.

October 2012 Update
A recent NSF-funded cubesat launch is successfully making observations in coordination with NASA's RBSP mission.

October 2013 Update
Nothing further to report at this time.

bb. Student pipeline
Overall, the Committee strongly endorses NSF's efforts to bring in and nurture promising young new talent in the space sciences community. However, with today's flat budgets, NSF should be mindful of the delicate balance required to maintain stability in the system. Too much bias in the funding of young new scientists over that of more experienced and seasoned researchers can have its own negative impact by producing more scientists (even those exceptionally talented) than the system can reasonably support.

Discussion
As the COV identifies, we recognize that a broad experience balance in our funding portfolio is essential for the health and longevity of the disciplines we serve. Maintaing stability in the system, however, requires access to reliable and quantitative diagnostic data that would provide insight in guiding such considerations for informed investments toward a balanced portfolio.

ACTION
While thus far only anecdotal data have been available, efforts are underway to obtain more systematic diagnostics for such assessments. In particular, as part of the ongoing NRC decadal survey for space science, we are sponsoring a demographic study of a variety of factors, including experience level, that should provide valuable insight into the "stability of the system"

October 2012 Update
Nothing further to report at this time.

October 2013 Update
Nothing further to report at this time.

cc. Facilities lifecycle
We encourage the program directors to develop criteria and a strategic plan for the short-term and longer-term future of the various facilities and their role in the achieving the overarching goals of the program.

Discussion
Facility lifecycle planning has been a high priority for GS since the outcome of the panel review of the facilities led by Susan Avery in 2003. As a result of that, the facilities jointly produced a strategy document that detailed the guidelines for implementing an integrated plan for science and technology development in the years ahead. This activity has been combined with several all-facility meetings where issues related to lifecycle planning are discussed in detail. Facility staff were also actively involved in the development of the newest CEDAR strategic plan, which also contains important findings related to the important role facilities play in geospace research. In spite of these efforts, GS does not yet have a long-term plan for the facilities. The GS strategic plan is a start, and it sets out priorities to be used in making facility-related decisions. Any plan for the future of the facilities would have to outline several possible scenarios that could be implemented under various budgetary scenarios. Strong community involvement, both from within and outside of the facility user community, would be critical in developing such a plan.

The Integrated Plan for the NSF's Upper Atmospheric Facilities listed the criteria used to evaluate facility performance, and these are used regularly when facility proposals are reviewed. Although mostly qualitative in nature, the criteria are linked to quantitative metrics such as number of publications, number of users, number of graduate student theses supported, etc. It is important to define these metrics carefully and to use them in a constructive manner. Each of the facilities has different strengths and a useful scheme for assessing success must take into account the difficulty in comparing one facility with another based on simple quantitative measures.

The COV's endorsement of recompetition is well founded. A primary benefit of recompetition is the potential to bring new management to a facility with fresh ideas and innovative approaches that will build upon and extend the successes of the previous managing institution.

ACTION
GS will proceed with lifecycle planning for its facilities objectively and comprehensively to ensure the results are constructive and beneficial.

October 2012 Update
The facilities will hold a meeting in November 2012 to begin the discussion of life cycle planning. A comprehensive external review of the facilities is being planned for 2013..

October 2013 Update
Nothing further to report at this time.

dd. Data access/data advisory panel
The 2008 COV raised issues about data access and data policies. While the present Committee shares these concerns, we learned that these issues are being dealt with at

higher levels in NSF. We look forward to seeing great progress on these issues in the next several years.

Discussion
We thank the COV panel for their interest and suggestions. Actions taken since the last COV on this subject have included discussions with NOAA and with NASA on how and where NSF projects can potentially archive data.

ACTION
New proposals are required to provide a Data Management Plan and reviewers are asked to comment on the appropriateness of the DMP when they review a proposal. We are in the process of revising our letters requesting reviews to reflect the new NSF requirements, including the questions concerning the DMP.

October 2012 Update
Nothing further to report at this time.

October 2013 Update
Nothing further to report at this time.

ee. More emphasis on "prior performance"
Results from prior work should be a baseline criterion for proposal selection. There appears to be some leniency on award selection for investigators who have been funded continuously for many years on a particular topic or facility.

Discussion
We agree that the results from prior NSF support should play an important role in determining the overall quality of a new proposal. The NSF Director has put together an internal NSF group to investigate possible changes to the proposal review process and whatever actions the GS section takes will be consistent with NSF guidelines.

ACTION
The GS section is in the process of revising our review request letter to reflect the changes in NSF policy. We will also try to put some additional emphasis on the importance of commenting on the results from prior NSF support, but this must be done in a way that does not prejudice the reviewers against new PIs who have had no prior support.

October 2012 Update
NSF is in the process of revising all of its standard templates for review requests.

October 2013 Update
Nothing further to report at this time.

ff. Postdoc U.S. only: Good or bad?

We urge the community and the NSF staff to keep a close eye on any deleterious effects of this change.

Discussion

The requirement for a "US only" postdoctoral research fellowship program is NSF policy. We recognize that the effects of the NSF's postdoc policy are an issue for the entire community.

ACTION

GS will continue to advise postdocs who are not US citizens that they are still free to submit proposals from their eligible US institutions, either by themselves or by collaborating with a senior tenured researcher, as their institutional policies may require.

October 2012 Update

Nothing further to report at this time.

gg. Rising facility costs/Flat funding

With fixed resources the growth of facility [operational costs] implies a decrease in resources applied to science. This pressure on the science budget may lead to the need to balance science achieved with total cost and to assess whether or when a facility should be upgraded… the decision to upgrade or maintain needs to be weighed against the discipline's strategic science plan. It may well be that a facility that was originally associated with a particular piece of equipment undergoes a transformation with time as the need for that particular piece of equipment decreases. This transformation process needs to be managed against a strategic plan… The COV suggests that efforts be made to assure that the staff at the incoherent scatter radar (ISR) facilities maintains expertise in plasma physics, ionospheric physics, and the processes associated with ISR facilities. The shift in research focus within this research area toward less traditional ionospheric physics, such as neutral atmosphere dynamics and large-scale modeling, raises concerns about the future.

Discussion

The balance between facility funding and individual investigator grants is continuously assessed by GS. In the past several years, most of the facilities have been flat-funded to give the GF program and the Section more flexibility in accommodating new activities, such as cubesats, lidars, and AMPERE. Unfortunately, the stress on facility budgets often reduces the internal scientific efforts of facility staff members. We are aware that this will eventually weaken the knowledge base at the facilities and compromise future decision making. For that reason, we are implementing programs to distribute facility experts among many institutions. The AMISR graduate student program and AMISR Summer School are examples. We will continue these efforts to ensure that the community as a whole maintains expertise in the areas of space science, radio science, engineering, and plasma physics necessary to support the facilities and make sound decisions.

It is interesting that the COV noted the importance of maintaining scientific excellence among the facility staff while also emphasizing that their roles needed to be better defined. Through the facilities reviews that have been conducted and the all-facility workshops, facility scientists are fully aware of their dual roles of supporting external users of the facility while at the same time conducting personal research on the forefront of science. The proportion of time spent by each staff member on each of these activities varies enormously. Young scientists are allowed more time for their research because it is critical they establish firm scientific reputations at this time in their career. This policy also serves to attract the best talent to the facilities; this concept has been demonstrated over and over again. In contrast, other facility staff members devote an enormous amount of time helping external users, developing facility software, and maintaining the quality of facility data.

ACTION
No action required

October 2012 Update
Nothing further to report at this time.

October 2013 Update
Planning for a portfolio review for GS in FY14 is under way.