FY 2015 NSF COMMITTEE OF VISITOR (COV) REVIEWS

FY 2015 REPORT TEMPLATE FOR
NSF COMMITTEES OF VISITORS (COVs)

Date of COV: Jun 1-2, 2015
Program/Cluster/Section: NCAR and Facilities Section
Division: Atmospheric and Geospace Sciences
Directorate: Geosciences
Number of actions reviewed: 18 **Awards: 9** **Declinations: 8** **Other: 1 (returned without review)**
Total number of actions within Program/Cluster/Division during period under review: **Awards: 9** **Declinations: 8** **Other: 1 (returned without review)**
Manner in which reviewed actions were selected: All actions were selected.
Date of program portfolio review: The NCAR, facilities and cross-cutting programs portfolio is reviewed in a number of ways. The NCAR science programs and management were reviewed in FY2011 and will be reviewed again in FY2016. The NFS facilities portfolio is also informed by community workshops, decadal surveys and NAS/NRC reports. AGS is currently undergoing a strategic planning exercise that will consider all of the AGS science and facilities programs, of which the programs managed by NFS are a significant part.

COV Membership

	Name	Affiliation
COV Chair	Dr. Daniel Jaffe	Professor and Chair, Physical Sciences Division School of Science and Technology University of Washington-Bothell Bothell, WA and Professor Atmospheric Sciences University of Washington-Seattle Seattle, WA
COV Members:	Dr. Ronald J. Ferek	Program Officer, Marine Meteorology Program Office of Naval Research Arlington, VA
	Dr. Gretchen Mullendore	Associate Professor Department of Atmospheric Sciences University of North Dakota Grand Forks, ND
	Dr. Julienne Stroeve	National Snow and Ice Data Center University of Colorado Boulder, CO
	Dr. Lisa White	Assistant Director (Education and Public Programs) Museum of Paleontology University of California Berkeley, CA

INTEGRITY AND EFFICIENCY OF THE PROGRAM'S PROCESSES
AND MANAGEMENT

Briefly discuss and provide comments for *each* relevant aspect of the program's review process and management. Comments should be based on a review of proposal actions (awards, declinations, and withdrawals) that were *completed within the past three fiscal years*. Provide comments for *each* program being reviewed and for those questions that are relevant to the program(s) under review. Quantitative information may be required for some questions. Constructive comments noting areas in need of improvement are encouraged.

I. Questions about the quality and effectiveness of the program's use of merit review process.
Please answer the following questions about the effectiveness of the merit review process and provide comments or concerns in the space below the question.

QUALITY AND EFFECTIVENESS OF MERIT REVIEW PROCESS	YES, NO, DATA NOT AVAILABLE, or NOT APPLICABLE
1. Are the review methods (for example, panel, ad hoc, site visits) appropriate? Comments: Current review methods are appropriate and sufficient for most programs in NFS. However, there is a need for greater use of peer review of major scientific and educational components of the NFS portfolio. This is especially true given the large level of base funding that supports NCAR. The mid-term site visit team reports provide a good overview of the overall strengths and weaknesses of the activities for each of the NCAR labs. However, these reports also represent the most substantive "review" of individual components and, as such, they do not provide enough detail to evaluate the scientific rigor, accomplishments and future plans. The review information is far less than what one would typically see for an individual peer-reviewed proposal. We recommend NFS consider adopting a more traditional peer review process for evaluating project selection with NSF base funds. This information is important to justify base science and education funding and may help set priorities for funding in a constrained budget climate. **Data Source: EIS/Type of Review Module**	Yes, with caveats.

	Yes

2. Are both merit review criteria addressed
 	
   a) In individual reviews?
 	
   b) In panel summaries?
 	
   c) In Program Officer review analyses?
 	
Comments:
Both merit review criteria are evaluated and discussed by both reviewers and program officers.
 	
Data Source: Jackets	

	Yes, generally, but not always
3. Do the individual reviewers giving written reviews provide substantive comments to explain their assessment of the proposals? Comments: Most reviewers provide important and critical review information, however not all reviewers provide a useful or critical review of the proposals they are evaluating. For example, there was a general lack of critical review of a computational infrastructure proposal by the majority of reviewers. Another instance of an insufficient review was found for a large center award. Inadequate reviews should be returned to the reviewer for modification or additional reviewers should be sought. **Data Source: Jackets**	
4. Do the panel summaries provide the rationale for the panel consensus (or reasons consensus was not reached)? Comments: In general, the panel summaries do a good job of summarizing the findings of the reviewers. The amount of information within panel summaries varies widely among proposals. **Data Source: Jackets.**	Yes

	Yes.
5. Does the documentation in the jacket provide the rationale for the award/decline decision? [Note: Documentation in the jacket usually includes a context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), program officer review analysis, and staff diary notes.] Comments: Yes, individual reviews and panel summaries generally provide the necessary justification for award decisions. **Data Source: Jackets**	

	Generally yes, but a few missing items.
6. Does the documentation to the PI provide the rationale for the award/decline decision? [Note: Documentation to PI usually includes context statement, individual reviews, panel summary (if applicable), site visit reports (if applicable), and, if not otherwise provided in the panel summary, an explanation from the program officer (written in the PO Comments field or emailed with a copy in the jacket, or telephoned with a diary note in the jacket) of the basis for a declination.] Comments: With respect to the merit review of REU proposals, in most cases we found the program officers provided the PI with clear documentation and the rationale guiding an award/decline decision. The decisions explicitly relate to the two NSF review criteria, Intellectual Merit and Broader Impacts, and are made in the context of the REU site program criteria. Although the types of individual documents and correspondence in the Communications section of the jackets varies, all reviewed proposal contain some level of correspondence to the PI, including a context statement, that guided evaluation of the proposals. For some of the declined awards, the documents available in the Communications area of the jacket did not include a copy of a direct e-mail to the PI stating the review decision, however, all the Review sections of the jackets consistently contain the Review Analysis, Reviews, and Panel Summary guiding the final assessment of the proposal. **Data Source: Jackets**	
7. Additional comments on the quality and effectiveness of the program's use of merit review process: No other comments.	

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II. Questions concerning the selection of reviewers. Please answer the following questions about the selection of reviewers and provide comments or concerns in the space below the question.

SELECTION OF REVIEWERS	YES , NO, DATA NOT AVAILABLE, or NOT APPLICABLE
1. Did the program make use of reviewers having appropriate expertise and/or qualifications? Generally, we found reviewers were appropriate subject matter experts for most proposals. Program managers are making a concerted effort to solicit reviews from a diverse population of experts. For the most part reviewers provided substantive reviews. An exception was a computational infrastructure award, where there was a lack of critical review by the majority of reviewers. In addition to a technical review, this program may also need some review of its management structure to justify the costs. See also comments in section I.3 above. **Data Source: Jackets**	Yes, generally.
2. Did the program recognize and resolve conflicts of interest when appropriate? Comments: We did not see any evidence of conflicts of interest. **Data Source: Jackets**	Yes
Additional comments on reviewer selection: No other comments.	

III. Questions concerning the management of the program under review. Please comment on the following:

MANAGEMENT OF THE PROGRAM UNDER REVIEW

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1. Management of the program.

Comments:
The program managers appear to be very conscientious and cognizant of their role in managing the NFS program to serve the broader community. Program managers have excellent sensitivity to the needs and requirements of the larger AS community and vigilance for a level playing field between the large center and the academic community. They seem to be highly committed to supporting the best science and providing critical service to the Atmospheric Sciences community in a time of constrained budgets.

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2. Responsiveness of the program to emerging research and education opportunities.

Comments:
It is important for program managers to balance investment between truly innovative (high risk/high payoff) research efforts and long-term commitment to difficult problems. One metric of this is portfolio "turnover." The Facilities Program described several good efforts in this regard.

The acquisition of a new storm penetration aircraft (A-10) is a good example of a necessary new community resource and we hope NFS overcomes the current challenges of bringing it on line. The process for deciding which facilities should be phased out (e.g. CHILL) is also appropriately driven by community research requirements. This type of periodic review and replacement/elimination should continue regularly. APAR is perhaps another example of an innovative potential new facility instrument, but was described as being unaffordable within current budgets. Concept development can continue, at a low level, but at some point a decision (with community input on the research requirements) will need to be made. If community interest and feasibility are established, then a plan to resource such a facility should be developed and prioritized relative to other items in the facilities portfolio.

We emphasize again the need for more scientifically driven peer-review process for NCAR as the community needs to understand the clear role and justification for a national center that consumes a large share of the community resources.

We notice that instrument development receives a fairly small level of support. We recommend that NFS engage with the SBIR/STTR programs at NSF to compete for the potentially large resources available through those programs to provide more substantial investment in instrument development. Other opportunities for community instrument development and support could be provided through NCAR and/or the academic community. For example, NCAR, academic institutions and/or private business could be contracted to provide high end instrumentation to the atmospheric chemistry community for short term uses. This would alleviate the challenge that individual PIs have for

incorporating expensive instrumentation into field programs.

We appreciate the effort to bring the REUs under a single program to improve incorporation of best practices. This seems to have been highly successful.

3. Program planning and prioritization process (internal and external) that guided the development of the portfolio.

Comments:
Program Management in a resource constrained climate requires appropriate management techniques. Prioritization becomes especially important so that high-risk, high-payoff innovation does not suffer relative to maintaining the status quo. A process may sometimes be required to eliminate lower-priority efforts in the NFS portfolio. Unfortunately such decisions may need to be made quickly in response to unforeseen budget pressures. Prior strategic planning is essential to support decision making either for opportunities or cuts. Of the techniques described to us (community workshops, mid-term reviews by SVT's, NAS panels, etc.), it appears to the COV that NFS has made relatively little use of peer-review in the traditional NSF style to prepare for anticipated or unforeseen budget cuts or opportunities.

4. Responsiveness of program to previous COV comments and recommendations.

Comments:
NFS clearly took the comments from the previous COV seriously and, in general, the comments and recommendations were thoughtfully addressed. The inclusion of emerging requirements in the newly negotiated cooperative agreement, and in particular the requirement for a comprehensive strategic educational plan, including the hiring of a Director of Education and Outreach, is to be commended.

One of the recommendations from the previous committee was to increase the input from the user community. This broad comment could include input from the facility user community, input from academic partners and/or the education community. This recommendation was interpreted narrowly by NFS staff and they might reconsider their response in the broader context given above.
The COV would like further clarification on:
1. Whether debriefings and surveys provide sufficient means to get full community feedback;
2. The extent of engagement by the academic community in NCAR programs;
3. How and whether feedback from debriefings and user facility surveys is incorporated into improvement of services.

Another observation from the previous COV is that there is tension at NCAR between the roles of 1) excellent scientific research and 2) service to the community (primarily provision for, and maintenance of, observing facilities and community models). It was recommended that this balance should be explicitly addressed in the review process. The program acknowledges that this tension persists and is "one of the many factors considered during the annual budget discussions between NSF/AGS and NCAR management." We recommend that this be more explicitly addressed in the budgeting process.

Finally, the previous COV noted that the NFS management of NCAR and LAOF is "greatly enhanced by the effective engagement of science discipline program officers" and recommended that

UNIDATA and SOARS would benefit from similar involvement. The NFS responded that because the funding model for UNIDATA and SOARS is different (grants instead of cooperative agreements), this type of oversight is not done. The current COV is not clear on why this can not be implemented. Nonetheless, these programs would benefit from such oversight.

IV OTHER TOPICS

1. Please comment on any program areas in need of improvement or gaps (if any) within program areas.

The COV recognizes that Unidata provides an important service to the atmospheric science community by making near-real-time weather data available to universities. However the program appears duplicative of other activities and is relatively expensive. While it is clear that Unidata has evolved to use a wide-range of cyber infrastructure technologies to make atmospheric data easier to access and useful for scientists and educators, it is important that the data is accessible to a broader user base. A step forward would be to make data analysis and visualization available online, similar to NOAA/ESRL websites. We recommend that future reviews of programs of this cost undergo a more rigorous review, to include overall value to the community, reduction of duplication of services and cost effectiveness.

2. Please provide comments as appropriate on the program's performance in meeting program-specific goals and objectives that are not covered by the above questions.

The COV had some concerns about degree of IAAs within the NCAR portfolio. As the NCAR budget becomes more challenging, PI's will be under increasing pressure to increase external funding. IAAs that involve significant university involvement are certainly welcome, while those involving limited university involvement, or those that compete directly with universities, should be approved only with careful considerations as to the advantages for the entire community.

Given the level of resources the NFS manages and the oversight requirements of the CA, the NFS appears to be substantially understaffed. This problem will only get worse if external peer review or other activities add to the workload. We are encouraged that NFS is recruiting a deputy program director for this Section.

3. Please identify agency-wide issues that should be addressed by NSF to help improve the program's performance.

There is an apparent relative shift of resources in the AGS budget over the past decade from the grants programs to NFS. There is a need for a clear statement and transparency on the overall AGS budgeting priorities so that community has confidence in AGS directions going forward.

We also note that the AGS deployment pool resources are far too limited to support the observational studies required by the AS community. For example those resources pale in comparison to the Ocean Sciences community. NFS should explore ways to increase the deployment pool to a level more appropriate for the modern observing challenges facing the atmospheric sciences.

4. Please provide comments on any other issues the COV feels are relevant.

Overall, the COV is impressed with the facilities that are available to the user community on a relatively limited budget.

5. NSF would appreciate your comments on how to improve the COV review process, format and report template.

NFS has asked the COV to consider a broad range of complex issues for an important part of the AGS portfolio. While we appreciate the fact that the review is limited in time and relatively little is asked of the panel before the meeting, more clarity on the questions being asked and a short list of tasks prior to the meeting would probably increase the insight of the COV review. At minimum, earlier access to the proposal jackets would allow for more thorough review of the record and thoughtful consideration of the issues we are asked to address. The NFS should consider asking at least one member from each previous COV panel to serve on the subsequent panel. This would provide some institutional memory on the process.

Finally, the COV learned a great deal during the review, particularly about the challenges and workload involved in managing a cooperative agreement compared to the more familiar grants and contracts. We want to express our appreciation for the NFS staff including Sarah Ruth, Linnea Avallone, Bernard Grant and Amanda Adams. These staff members are conscientious stewards of community resources, do a great job of managing the section and were very open and forthcoming in discussing the challenges the section faces.

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SIGNATURE BLOCK:

Daniel A. Jaffe

For the NCAR and Facilities Section
Professor Dan Jaffe
Chair