

**NSF/OCE RESPONSE TO THE 2015 COMMITTEE OF VISITORS REPORT ON
RESEARCH AND EDUCATION PROGRAMS IN THE DIVISION OF OCEAN SCIENCES, FY 2012 - 2014**

The NSF Directorate for Geosciences recognizes and sincerely appreciates the time and effort that the members of the 2015 Committee of Visitors put into their review of the research and education programs of the Division of Ocean Sciences for fiscal years 2012 through 2014. In particular we are aware that their work involved a considerable amount of document review and interaction among themselves and with OCE staff prior to their meeting at NSF. The COV commitment to its task was evident, and working with them was a genuine pleasure for NSF staff.

The Committee of Visitors triennial review of OCE programs is an important process by which GEO and OCE learn about our successes in fulfilling NSF's responsibilities to advancing research and education and by which we come to better understand areas for improvement. The COV Report and follow-up documents also serve as important communications to the ocean sciences community. We appreciate the strong support the Committee voiced on OCE program management and the work of program staff, and we welcome its recommendations for improvement. These recommendations and our responses to them are presented below.

COV RECOMMENDATION 1 (p. 6)

Within each of the disciplines (e.g. PO, BO, CO, MGG), panel membership should reflect, to the extent possible, an appropriate balance of sub-disciplines reflecting the types of proposals being considered. In situations where the composition of the panel underrepresents a particular area or topic covered by a proposal, panels should be guided to pay special attention to expert ad-hoc reviews.

NSF/OCE RESPONSE 1: Both of these recommendations are fully consistent with standard practice in all OCE programs, but we welcome the reminder from the COV. The details of implementation may vary slightly from program to program for a variety of reasons, but all strive for the same goal: achieving an optimal match between the collective expertise of the panel and the topical variety in the set of proposals assigned to it.

While this is an issue of first-order importance that we address at the start of every proposal cycle, it is a simple reality that not every proposal can be matched topically with the available panelist expertise. Several avenues of recourse are open to our Program Officers, including making a special effort to obtain top-quality expert ad hoc reviews before the panel convenes and, if necessary after the panel, obtaining additional ad hoc reviews before making the final award/decline recommendation. Experience has shown that with or without explicit Program guidance, panelists are well aware of the special challenges that come with these situations and readily voice any concerns they may have openly during panel discussion.

We want to point out that some experimentation is already underway. Achieving adequate panel expertise has been a longtime challenge for the Marine Geology and Geophysics Program, which for each core panel needs geophysicists, geochemists, geologists, oceanographers, observationalists, and modelers, among others. In the past two years MGG has gone to a split-panel model, where after beginning the panel as a single group to orient all members, discuss proposals that cross multiple MGG sub-disciplines, and to provide some calibration period, the panel is divided in two along disciplinary lines (broadly, "hard rock" and "soft rock"). Both the Program staff and the panelists have found the

change very positive. One of the greatest benefits is the narrower disciplinary focus.

COV RECOMMENDATION 2 (p. 7)

A review panel (in-person or virtual) phase should be the preferred method for REU review whenever practicable, as it is for other programs. A panel provides opportunity for dialogue and comparison among all the proposals. The panel meeting also serves the purpose of identifying "best practices," which also benefits the review process by identifying the elements of a successful proposal/program.

NSF/OCE RESPONSE 2: The REU program has been using a modified ad-hoc mail review process for proposals over the past few years in an effort to involve more of the REU community in the review process and reduce administrative costs for the relatively small number of proposals received (usually 15-20). The modified ad-hoc process included sending multiple (2 - 4) proposals to reviewers so that they could compare a small set of proposals. This allowed for some comparison of proposals, although it could not replace the panel dialog process. We agree that the use of either an in-person or virtual panel for the REU program is preferable and may combine it with ad-hoc reviews to continue the expanded REU community involvement in the review process. The combination of ad-hoc and panel review is the standard review process for OCE.

COV RECOMMENDATION 3 (p. 8)

Broader Impacts: NSF should continue to educate the community about expectations for BI.

NSF/OCE RESPONSE 3: NSF expectations for Broader Impacts are regularly broadcast to the community in a variety of ways. These include the NSF website and *Grant Proposal Guide*, review request letters, instructions to panelists prior to the discussion of proposals, and Program Officer Comments to the PI following an award/decline decision. Nevertheless, we in OCE realize that much misunderstanding and misinformation remains and will take steps to remediate the situation. During the next year, we will critically examine the effectiveness of our current communications on Broader Impacts to mail reviewers, panelists, and PIs with the intent of clarifying and simplifying wherever possible. We will also make a standing practice of periodically including articles providing guidance on issues related to proposal preparation and review – including Broader Impacts -- in the OCE Newsletter.

COV RECOMMENDATION 4 (p. 8)

Intellectual Merit: The Program Officers should provide clear guidance to the PI when assessments made by reviewers (or panel) are inappropriate (whether biased, incorrect, or excessively harsh) and that such assessments have not been taken into account in the final award decision.

NSF/OCE RESPONSE 4: We agree that this is an important responsibility of every Program Officer, but it is a responsibility that must be exercised with appropriate care. For this reason, panelists are instructed to assist by pointing out during the panel discussion any ad hoc reviewer comments that appear to be inaccurate, unsubstantiated, excessively harsh, or otherwise inappropriate – and to comment on them in the Panel Summary. Even if such guidance is inadvertently left out of the Panel Summary, Program Officers routinely provide it to the PI via FastLane as part of the Program Officer Comments. We are

aware that occasionally we may miss a few of these and will try harder to minimize these oversights.

COV RECOMMENDATION 5 (p. 8)

OCE should continue to recruit and attract short term Program Officers (often referred to colloquially as rotators) who come into NSF and then return to academic or other federal agency or private organization employment via the Intergovernmental Personnel Act (IPA) or other appointment mechanisms such that there is a continual influx of scientists with recent experience at the cutting edge of ocean sciences research and innovative ocean science education activities.

NSF/OCE RESPONSE 5: We heartily agree with the Committee's recommendation as well as their rationale for it. In addition to enriching and informing the peer review process at NSF, rotators acquire practical knowledge about NSF and federal sponsorship of research that may prove beneficial to their home institutions. However, the collective benefits and vitality of the IPA and other mechanisms for employing rotators is heavily dependent upon the willingness of members of the research and education community to step forward and offer their services as rotators.

COV RECOMMENDATION 6 (p. 9)

Given the importance of IPA and other short-term personnel and the importance of the proposal review process, OCE should review periodically its processes and implement improvements where warranted for training and mentoring non-career Program Officers (and new Program Officers who are on an NSF career track) such that those incoming Program Officers have appropriate training and guidance by experienced Program Officers with respect to all aspects of the review process, especially (1) assessments of ad hoc reviews and panel reviews, (2) how to document the reviews in the proposal jacket portfolio, (3) factors to take into account in final decisions, and (4) various means of formally communicating final decisions about a proposal to PIs.

NSF/OCE RESPONSE 6: The training of new Program Officers, both rotators and permanent staff, is an ongoing process at the NSF- and GEO-wide levels and within each OCE program. It is something that we do now and a responsibility that we take very seriously. NSF provides a series of intensive courses on the elements of policy and process of Merit Review; new Program Officers are required to take the first two courses in this series within 90 days of their arrival. Those two courses cover the four issues raised above. In OCE we have a good record of compliance, but on occasion the timing of the course offerings does not align well with the arrival of the new Program Officer, so there may be a delay in taking them.

At the program level, the onboarding of new OCE Program Officers involves staged mentoring to bring them up to speed through on-the-job training – typically beginning with reviewer selection and then proceeding to other program management skills such as running panels. Each program in OCE also has an established internal protocol for checking and editing Review Analyses before they are sent up the clearance chain for approval by the OCE Division leadership. Normally, an experienced Program Officer is tasked with checking the Review Analysis write-ups of a novice and providing feedback. Over the next year, we will review our current onboarding procedures with an eye toward identifying and correcting deficiencies and developing a set of best practices.

COV RECOMMENDATION 7 (p. 10)

If allowed by overall NSF Policy, OCE should post on their website examples of hypothetical good reviews and reviews which do not meet the desired level of substantive comments in support of ratings. Such examples would be helpful in graduate education/training programs. At the very least, a listing of the elements of a good review and those of a bad review should be posted on the website. If such actions are not allowed currently, the Geosciences Advisory Committee should evaluate this COV recommendation and, if in agreement, proceed to forward it to appropriate leadership levels of NSF for consideration.

NSF/OCE RESPONSE 7: This is an interesting idea that we will pass along to the Geosciences Advisory Committee for further evaluation and possible referral to NSF leadership. In the meantime, whether or not the posting of hypothetical good and bad reviews on the NSF website is approved by our policy office, OCE will investigate the possibility of providing guidance perhaps as an occasional "Frequently Asked Questions" article in the OCE Newsletter.

COV RECOMMENDATION 8 (p. 13)

OCE should consider including in the decision communication to PIs a specific link to the NSF Review Process which is described on the NSF website at

http://www.nsf.gov/bfa/dias/policy/merit_review/facts.jsp#3

When possible and appropriate, OCE should consider providing information regarding portfolio balance and priorities.

NSF/OCE RESPONSE 8: At the time when PIs receive official word of an OCE award/decline recommendation, a "Context Statement" describing the general circumstances surrounding the review of the proposal is included in the set of review documents. We will consider including the above URL for the NSF Review Process as part of the Context Statement to provide a more comprehensive picture of the peer review process.

Portfolio balance is generally regarded as a dynamic concept that is driven by a variety of influences. We agree, when possible and appropriate, to provide information regarding portfolio balance and priorities, perhaps at community town hall meetings or in the OCE Newsletter.

COV RECOMMENDATION 9 (p. 16)

OCE should inform GEO and NSF leadership of the need for a simple, easy to use, online system for proposing PIs and reviewers to note potential conflicts of interests as defined by NSF policy. The system should be configured to inform the Program Officers expeditiously of potential reviewer conflicts.

NSF/OCE RESPONSE 9: We are pleased to report that efforts are already underway at NSF to develop an intuitive, full-featured on-line application to allow principal investigators and reviewers to register and update potential conflicts-of-interest. Shortly after the institution of FastLane, program staff from OCE and across the Foundation recognized both the need for and feasibility of such a capability and forwarded recommendations to upper management that it be developed as soon as possible. Within

the past month we have received confirmation that development is underway, but as of this writing, an expected release date for the application has not been announced. We will continue to monitor any new developments.

COV RECOMMENDATION 10 (p. 22)

There should be continued inter-program discussion on consistent approaches for identifying HR-HR proposals and their funding rates with concerted and continued action on this topic across OCE.

NSF/OCE RESPONSE 10: We agree that we need to make good on our commitment to the 2012 COV with regard to “identifying and evaluating transformative and high risk proposals at the onset of the panel process” and to ensuring that “all OCE panelists are given consistent instructions on how to identify and evaluate potentially transformative and high risk – high reward proposals”. We recognize that opinion on transformational potential and HR-HR may vary widely between individual mail reviewers, panelists, and even among NSF staff; we also believe that it would be counterproductive to narrowly define “transformative” and “high-risk/high-reward” in an effort to make one size fit all. Nevertheless, we agree that inter-program dialog on this issue would be beneficial and resolve to take steps accordingly before the end of CY 2015.

COV RECOMMENDATION 11 (p. 22)

OCE should review present mechanisms designed to facilitate multidisciplinary projects across the various units within OCE and undertake appropriate actions to further facilitate interdisciplinary and multidisciplinary proposals.

NSF/OCE RESPONSE 11: The equitable treatment of multidisciplinary and interdisciplinary projects is a longstanding concern in OCE. We believe that this is such an important consideration that we should always be alert for opportunities to further improve our standard operating procedure, and we welcome this encouragement from the COV. Over the next three years we will endeavor to track the success of these proposals relative to disciplinary proposals submitted to the regular biannual core OCE competitions.

COV RECOMMENDATION 12 (p. 23)

We recommend continued efforts to attain geographic distribution balance in REU proposals and grants, consistent with REU Program goals and objectives.

NSF/OCE RESPONSE 12: OCE will increase outreach efforts to encourage submission of more proposals from West Coast institutions. We also will attempt to co-fund more awards with the BIO directorate with the goal of improving geographic distribution of the program awards portfolio.

COV RECOMMENDATION 13 (p. 24)

OCE should explore and test proactive efforts to educate and promote opportunities for

collaborations and for individual proposals to the faculty at Minority Serving Institutions (MSIs), four-year, and two-year institutions. This could be effective in increasing the proportion of proposals from non-RI institutions. These partnerships could also help improve OCE's efforts to improve representation of proposals that impact underrepresented students as well as by enhancing the IM and BI by employing a diversity of scholarly thought.

NSF/OCE RESPONSE 13: We strongly agree that OCE should continue to look for opportunities to promote the inclusion of minority-serving, four-year, and two-year institutions in scientific research. Traditionally, our Program Officers have done so primarily through two avenues: (1) by drawing the attention of panelists to proposals involving such institutions, and (2) by providing strong positive feedback on the Broader Impacts to PIs when their proposals involve these institutions. The OCE Newsletter is an excellent forum for bringing community attention to recent awards that involve MSI and primarily undergraduate institutional participation. We also note that this is a concern across GEO and the Foundation and that the AC GEO has been discussing this topic.

COV RECOMMENDATION 14 (p. 26)

We recommend that OCE continue their support of mentoring programs and other novel strategies aimed at reaching gender parity in academia and other positions of responsibility, proposal review processes, and other professional activities. We also recommend continued vigilance in terms of parity of proposal success rates

NSF/OCE RESPONSE 14: We strongly agree with this recommendation and will continue our efforts in this area, but it should be understood that NSF has limited ability to influence some issues in retention and gender parity. It is an NSF-wide concern that the Foundation is trying to address on the longer term through dedicated programs such as ADVANCE.

COV RECOMMENDATION 15 (p. 28)

OCE and NSF in general, should continue to plan, execute and evaluate programs whose goal is to increase recruitment and retention of minorities in ocean sciences with a focus on continuity and complementarity of programs from K-12 grades and the general public education/outreach through graduate education, postdoctoral programs, faculty recruitment and retention, grants submission to NSF and success with grant awards. Such efforts are not the purview and responsibility of only a few in OCE. They should be embraced proactively by all at OCE with the recognition that such efforts will need to be sustained for years to have the desired and much needed outcome.

NSF/OCE RESPONSE 15: We strongly agree with this recommendation, are making steady progress, and will continue our efforts in this area, within the overall NSF program focus and guidance. The goal of obtaining broader participation is challenging, even compared to other STEM fields.

COV RECOMMENDATION 16 (p. 28)

We recommend that OCE make available to future COVs, and that the COV consider early in its deliberations, data and information appropriate to assess the programs and progress that pertain to

inclusion of persons with disabilities and veterans in ocean sciences research and education funded by NSF.

NSF/OCE RESPONSE 16: We will redouble our efforts to provide this data, but providing some of this data is voluntary on the part of the individual.

OTHER TOPICS NOT ADDRESSED ABOVE

COV RECOMMENDATION 17 (p. 30)

OCE should make available to the COV program specific goals and objectives in writing. Relying on communication by discussion during teleconferences or during the COV site visit is inefficient and may result in such information not being effectively communicated and understood.

NSF/OCE RESPONSE 17: We believe that this is a good suggestion, with the understanding that these goals will be broad. For future COVs, we will work to improve along these lines.

TOPIC 3. (p. 30) Issues that should be addressed by NSF to help improve the program's performance.

f) There was a general sense among the 2015 COV that the NSF website is excellent for outreach and highlighting important findings, but sometimes difficult to navigate when trying to find information relevant to aspects of programs and information for existing and prospective PIs. Some of our members found that using Google as a start for their search was more effective than going to the NSF website and searching. We are aware that constructing and maintaining a website to satisfy internal and external constituencies the sizes of those of NSF is a herculean task and offer our comment in the spirit of trying to be helpful.

NSF/OCE RESPONSE:

We completely agree with the COV's view on navigating and finding documents on the NSF web site and will pass this information to the proper officials.

TOPIC 5. (p. 31) Comments on how to improve the COV review process, format and report template.

a) Reduction in confusion as to the Charge to COV in the letter from the Associate Director and in discussions with the liaison person with the unit being reviewed. Harmonizing the template to the data actually being provided or provide the data and write up from the Programs(s) to fit the Template being used. Verbal Instructions to "ignore" certain things seemed odd to us.

NSF/OCE RESPONSE: We will work with GEO/OAD and OIA to make sure that the charge of the future COV is consistent between the letter they received and the questions asked in the COV report template.

b) Data Base concerns. We were very appreciative of having proposal jackets available to us for

review over a two month period and also having various plots of data relevant to our charge. We recommend that NSF review across all the Directorates and Divisions types of data collected, how collected (entered) and the various ways data could be exported to support the needs of COVs. We realize that designing, populating and maintaining such a large data base with a plethora of potential uses and users is an arduous task. An example of ease and appropriate use is the capability in a user friendly manner to plot data with "n" as a mean and appropriate confidence intervals.

NSF/OCE RESPONSE: We agree with this suggestion and will forward it to OIA for consideration.

c) Self-study approach to a COV. We recommend that NSF consider having a Self-Study Process prior to actual COV activities and visits. Perhaps OCE could undertake this as a trial process prior to the next COV in 2018 and use the template and data to be made available for the COV to assess for themselves where they are. For those familiar with academic reviews, this would be similar to self-studies being prepared for Re-accreditation Committee visits or Departmental or College Visiting or ad hoc External Committees. It would not eliminate the COV accessing data and discussing issues with OCE Leadership and Program Officers, but it would provide written and more detailed insight about how folks in OCE believe they are doing. We believe that it would be advantageous to OCE. Those of us who have participated in such processes have found them to be helpful in general despite an initial reaction of "not yet another thing to do!" At the very least it would result in gathering information relevant to several questions for which we had minimal information.

NSF/OCE RESPONSE: This is an interesting suggestion, and we appreciate the COV's calling out the benefits as well as the one major constraint of the necessary time investment. As with other broader suggestions, this needs to be considered across the Foundation, so OCE will discuss with the NSF Office of Integrative Activities (OIA) about initiating a pilot study.

d) Portfolio and Priority. If c) above is not undertaken, or within the Self Study, each program should highlight their portfolio and priorities for the period in question for the review and provide this to the COV

NSF/OCE RESPONSE: We endeavored to do that in the one-on-one sessions at the June meeting but time was running short. In the future, OCE can prepare some written background material on portfolio and priorities, to assist the COV as they start their work early to be able to digest and reflect on the large amount of material they are already provided by NSF.

e) Provide more jackets of proposals where the ratings and award/decline decision were more straightforward.

NSF/OCE RESPONSE: We will provide the next COV a more representative sample and add additional outliers as requested.

f) Provide clear indications and descriptions of when and how major research initiatives or budgetary events occurred in the designated review period. For example, for the next 2018 COV any adjustments in response to the "Sea Change" report (National Academies Press, 2015) will have an

impact, as will access to 001 sites and data streams.

NSF/OCE RESPONSE: The Sea Change report and how NSF addressed its recommendations will be an important piece of information for the future COV (e.g., as was the ARRA funding and large RAPID responses for the 2012 COV).

COV CONCERN 4.1 (p. 18)

SUMMARY: The COV noted that an issue raised by the previous (2012) recurred this year, despite assurances that preventative steps would be taken. The 2012 COV Report states: "The COV recommends that the Program check through documentation provided to ensure: (a) The charge to the COV is consistent, (b) The questions in the template are consistent with the charge, (c) Sufficient data are provided to address the charge, and (d) All graphs and tables provided to the COV include detailed descriptive captions or footnotes." Despite good intentions at NSF, the letter providing the charge to the 2015 COV caused the same or similar confusion as for the 2012 COV.

NSF/OCE RESPONSE 4.1: We understand the frustration of the COV with regard to the charge given to them in the letter. To avoid such instances in the future, GEO and OCE will work with OIA, the organization tasked with overseeing the COV process for NSF, to provide on the internal web site both up-to-date and consistent invitation letters and report templates. We will work with OIA to identify questions in the COV report templates for which no reliable quantitative data exist and either drop them from the template or reword them to be more qualitative.

COV CONCERN 4.2 (p. 19)

In several instances in the NSF/OCE RESPONSE to the 2012 COV, the 2013 or 2014 update states "Done" without any explanation of what actually was done. This brief response was not helpful in our efforts to evaluate the results of that action or the anticipated results.

NSF/OCE RESPONSE 4.2: We will make sure that in the future more detailed responses are provided on the yearly updates.