

Division of Polar Programs Arctic Sciences Section (ARC)

Response to the Committee of Visitors (COV) Report May 17 – 19, 2016

The Arctic Sciences Section (ARC) extends its sincere thanks to the members of the Committee of Visitors (COV) for their comprehensive evaluation of the ARC merit review process and program portfolio management. The COV included scholars with strong ties to the Arctic research community, and the quality of their work reflects a vested commitment to the continuation of a highly productive and influential science program. We acknowledge the significance of such a large investment of time and effort by high-caliber researchers and value the thoughtful observations and recommendations outlined in the report.

We are gratified by the committee's recognition of our very high standard of peer review and efforts to ensure the integrity of the decision-making process. We appreciate the recognition of our efforts to fund potentially transformative proposals, to engage with the scientific community, and our documentation and justification process for award decisions and declines. Arctic Natural Sciences (ANS) program is particularly gratified by the COV's commendation of the recently instituted disciplinary panels. We will strive to maintain these good practices as the Section continues to evolve.

What follows is the ARC response to specific recommendations made by the COV in its report.

COV Recommendations with ARC Responses

Extensive Dwell Time, Section III.1 page 4: The COV was advised by AON, ASSP, ANS, and ARCSS that the objective for proposal response ("dwell times") was to have 75% of the decisions returned to the proposers within six months of submission. Of the ~160 jackets assigned to the COV, dwell times for ~80% (including those in the EAGER and RAPID categories) did not achieve this objective. Consideration should be given to holding panel meetings within three months of proposal submission deadlines and to increasing the number of proposal submission opportunities within a calendar year to distribute the programmatic workload associated with evaluating proposals for funding.

ARC Response: We agree with the Committee that ARC dwell times have not met NSF institutional standards. The Section has made a concerted effort to recommend actions on all proposals received over 5 months ago by the end of the fiscal year (September 30, 2016), bringing us back within NSF guidelines. We would like to note that during the period under review two programs (AON in 2014 and ASSP in 2016) did not hold annual competitions, which was unusual for the history of our section. This was done in part to manage a backlog of well-reviewed proposals, but this action consequently increased dwell times.

The Section is also experimenting with not using a deadline in 2017. Other programs at NSF have instituted a similar change, resulting in a lower number of annual proposal submissions. The removal of the deadline encourages researchers to submit a proposal when it is polished and ready, rather than rush a submission to meet a deadline. We hope for similar results for the Arctic Section's 2017 proposal cycle, culminating in the more distributed programmatic workload recommended by the COV. The caveat is that the no-deadline approach might increase the dwell time with respect to institutional standards. Programs still plan to utilize *ad-hoc* and panel review, as recommended elsewhere by the COV, as a result programs will wait until they have a critical mass of proposals before investing the time and finances necessary to obtain panel input. However, as a Section we will ensure that program officers factor in dwell time when considering panel timing.

ASSP and AON Program Mortgages, Section III.1 page 4: Over the three-year time frame covered by this COV, two programs developed extensive out-year commitments that greatly hindered their ability to commit substantial funds to the annual grant competition. It is the opinion of the COV that the Section should adopt a more conservative approach that limits out-year commitments, which safeguards resources to support new research proposals and provides a buffer against unanticipated programmatic cuts.

ARC Response: We feel that the issue of out-year commitments for both AON and ASSP was not clearly communicated to the COV. The discussion was triggered in part by a figure showing AON funding levels over the last decade, and the figure was not well suited to accurately inform a discussion of out-year commitments. We have prepared two new figures to succinctly depict the proportion of the total programmatic budget dedicated to out-year commitments for AON (Figure 1) and ASSP (Figure 2). At NSF, it is generally advised that Program Officers manage their portfolios so that commitments encumbering future years do not exceed two thirds of the anticipated annual budget. For the period under review, 2013-2015, both programs were within the suggested guidelines, with AON out-year commitments ranging between 38%-51% and ASSP ranging between 17%-54%. The unencumbered funds can be used for new awards, supplements, or other actions as the program officer sees fit.

The ASSP competition hiatus in October 2015, and in effect during fiscal year 2016, was driven both by a desire to assess research priorities through a series of workshops with the community, to make use of 2016 uncommitted funds to support meritorious proposals from 2015, and to further reduce the out-year commitments in 2017 and beyond. We also note that while there was no competition for full research proposals in 2016, ASSP accepted proposals for Doctoral Dissertation Improvement Grants, conferences, and EAGER, RAPID, and INSPIRE grants. This was done to ensure that funding opportunities were available for meritorious work that was time sensitive, particularly for early career PIs.

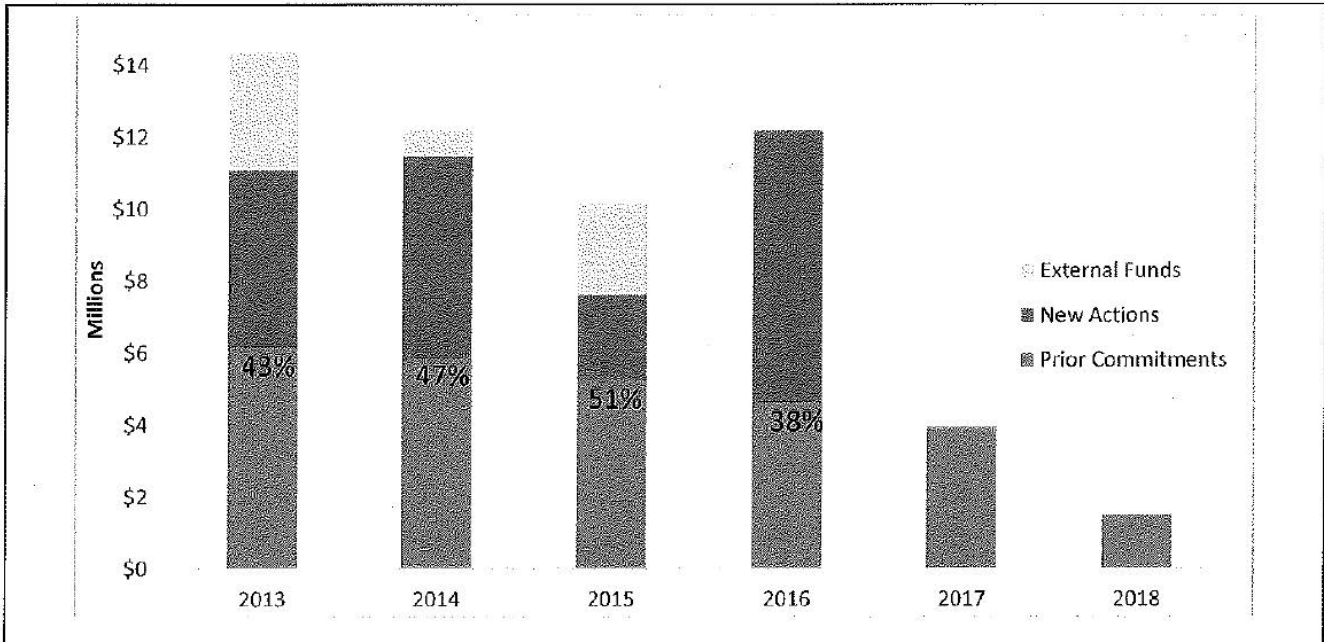


Figure 1. AON Program budget separated by funding actions for the years 2013-2018. Percentages represent the amount of the total programmatic budget that is dedicated to funding prior commitments for that fiscal year.

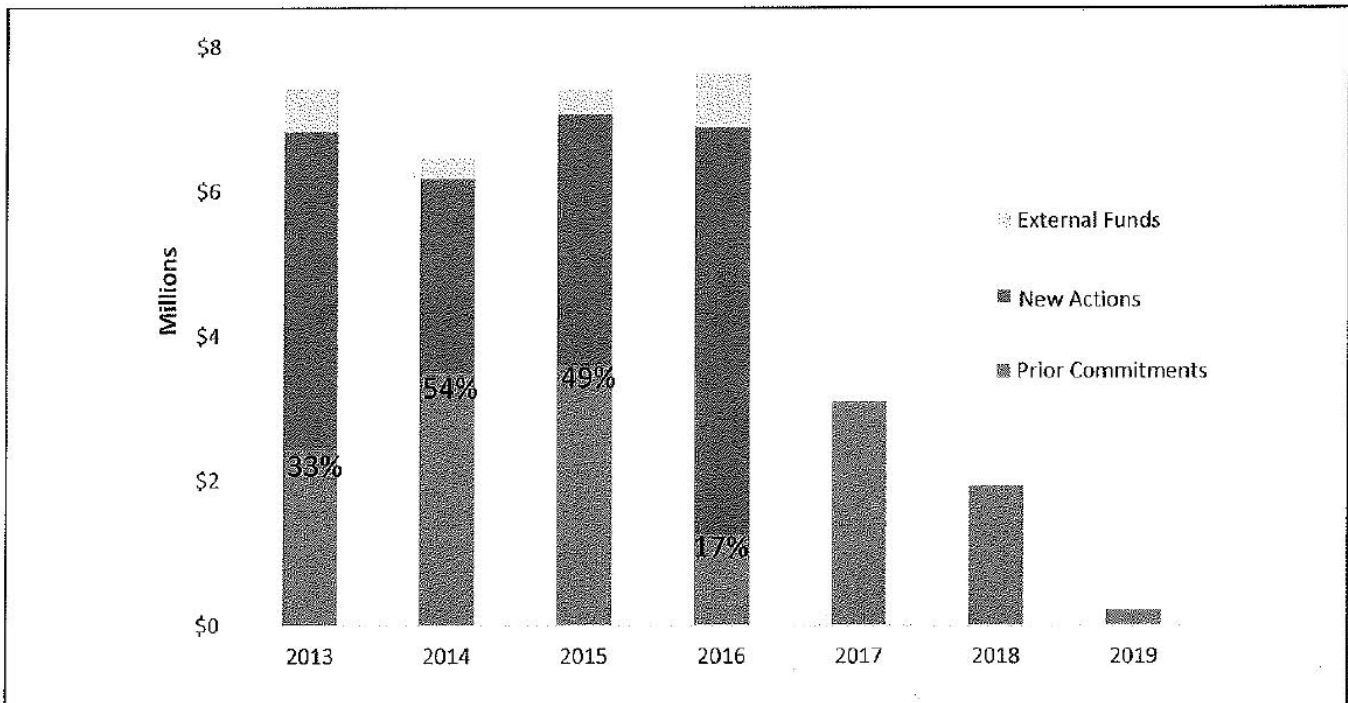


Figure 2. ASSP Program budget separated by funding actions for the years 2013-2019. Percentages represent the amount of the total programmatic budget that is dedicated to funding prior commitments for that fiscal year.

We acknowledge that AON's inability to make new awards in 2015 was mainly the result of a budget reduction. The funds available were used to support supplements and other actions to reduce out-year commitments. Since the period under review by the COV we have made a number of programmatic changes to address the financial sustainability of the program.

AON Program Management, Section III.4 page 10; Section IV.2 page 12: Some form of a high-level, external, strategic planning initiative needs to be mounted to assist the AON PO to identify the rationale and the structure of a functional AON network. This planning needs to include strategies to "hand off" mature data streams to willing partners and to introduce new and better technologies into the observing network in such a way that the value of existing data is not compromised and new data can be collected more efficiently and at lesser cost.... The COV has the following overarching recommendations for strengthening AON and providing a smoother evolution to a fully functioning network. These include an increase in funding for AON and development of a strategy for targeting the type of datasets collected, including a mechanism for long term funding, where LTER, CZO, and LTREB are reasonable models.

ARC Response: We acknowledge and agree with the observations made by the COV that renewed engagement with the research community would be helpful to provide "high-level, external, strategic planning". We believe that a portfolio review, similar to the one recently undergone in GEO/AGS may be a helpful approach, and are considering conducting one in conjunction with the ARCSS and ANS programs. Efforts have already been made to increase interagency and international cooperation in maintaining long-term observing systems and to lower the current out-year commitments for the program. Future synergies of AON with other NSF Directorates and/or additional government agencies can also be reconsidered as part of further development of the "Navigating the New Arctic" that recently emerged as one of the 10 Big Ideas for Future NSF Investments (https://www.nsf.gov/about/congress/reports/nsf_big_ideas.pdf) put forth by NSF Director France Córdova.

ARC Staffing and Workforce Development, Section III.1 page 5: To guard against unexpected staff shortages, and to develop the workforce of program officers for NSF's future, the COV suggests that the section consider adding more visiting program staff (IPAs or Temporary Feds), to (a) keep perspectives fresh, (b) assist with workload and unanticipated staff changes (and reduce dwell times), and (c) contribute to the pool of academic scientists with sufficient administrative experience and acculturation to replace NSF staff that are likely to retire over the next 5-10 years.

ARC Response: We agree that additional staff are required, and are finalizing the hire of 4 new Program Officers to the ARC Section, two to support the ANS program and two to support the RSL. However, the strongest candidates were all eligible for permanent positions, and that is the direction we have gone.

Panel Summary Improvement, Section I.4 page 2: The COV encourages the program managers to be sure that the panel summary is a summary of the deliberations of the panel, rather than a summary of the *ad hoc* reviews.

ARC Response: We agree with the committee's view and will ensure this distinction is highlighted in our upcoming panel orientations.

Panel Member Justification Documentation, Section II.1 page 3: It was more difficult in general to assess the qualifications of the panelists, and more specifically, the qualifications of the panelists who contributed to the panel summary. The COV suggests that the Program include a similar description for the primary panelist assigned to a proposal, along with the *ad hoc* reviewers in the Review Analysis documentation.

ARC Response: We recognize that inclusion of assigned panel members' expertise into Review Analyses would ease the burden of assessment for the COV and have recently begun to implement this recommendation. However, we also note that Panel Summary captures the full panel discussion of each proposal and therefore does not exclusively document the commentary of the assigned readers. We will ensure that future COVs understand that the listed expertise in the Review Analysis may not reflect the full Panel discussion.

Staying Abreast of Emerging Research, Section III.2 page 6: The COV also noted that Arctic Sciences should take steps to "keep up" with rapid technological changes, to ensure that programs have the opportunity to use cutting edge technology to support the best science possible... To address the challenges introduced by the current rapid expansion of technological innovation, the COV again recommends that NSF ARC recruit young scientists into rotator positions.

ARC Response: The situation with travel funds at NSF has recently improved and the ARC Section and Program Officers have been utilizing this resource as time and workloads allow. We feel that increased NSF presence at relevant science meetings is a step in the right direction and has increased our exposure to the latest advances in the field. We will continue to make meeting attendance a priority for the Section.

ARC always welcomes applications from junior or mid-career researchers into rotator positions, but acknowledge that the two-year time commitment of an IPA may not be appealing to younger scientists working towards tenure.

The recent addition of rotating Science Assistants to Polar Programs has brought a younger, more technologically advanced demographic and fresh perspectives to our programmatic discussions. Funding has been committed to these positions for the foreseeable future.

In defense of top-down input/cultivation of a program, Section III.3 page 7: Given the decision to operate the section in response to distribution of projects submitted (*i.e.*, from the ground up), the COV presumes that the distribution of funded projects differs among disciplines but reflects the distribution of submitted projects by discipline. We suggest that the ANS Section should also include a proactive approach, engaging in dialog with the research community to identify compelling research directions.

ARC Response: In the recently revised solicitation, we have increased attention to proposals that support synthesis and planning, and that through this mechanism we will be able to support the research community in both large integrated projects as well as smaller curiosity-driven projects.

Connecting Funding Decisions to the Larger, National Initiatives, Section IV.10 page 15: However, as noted earlier in this report, the COV encourages the Programs to advocate for input from the research community that then informs strategies like the IARPC 5-year plan, which then guides future research. In reviewing the program solicitations, some Programs could be more proactive in making these connections explicit and are encouraged to do so. POs did not generally comment on these connections or the role of other reports such as the National

Academy of Sciences *Arctic in the Anthropocene* report and the SEARCH research priorities. The COV suggests such connections be described in PO reports to future COVs.

ARC Response: We appreciate this guidance from the COV, and in future presentations to the COV and others, we will demonstrate how program portfolios contribute to national efforts like the IARPC 5-year plan. Our sense is that the contributions are significant.

Additional Comments

ANS/ARCSS Program Identities, Section III.4 page 9: It remains difficult to articulate to the research community the nuanced differences between the ANS and ARCSS programs. Although clear in the minds of the ARC Staff, confusion remains in the research community.

ARC Response: We agree that confusion between ANS and ARCSS persists in the Arctic research community. This is a long-running problem that we have attempted to address in a number of ways in past years, including a short-lived trial of combining the program competitions and writing an article published in the ARCUS newsletter (<https://www.arcus.org/witness-the-arctic/2013/3/article/20194>). This year, we updated both program descriptions in latest solicitation in hopes of clarifying the distinction.

We would like to take this opportunity to acknowledge that since both programs cover a continuum of Earth systems science (from the fine to the broad scale), there will always be some amount of subjectivity in the boundary between ARCSS and ANS. Program officers from both sections have made a concerted effort to be available for discussions with PIs that are unsure which program may be the best fit for their proposal. We will also transition proposals from one program to the other if the respective POs feel it would be a better fit, so that projects are not penalized for how well they match a program's intellectual boundary.

Broader Impacts, Section I.2 page 1: The variability and ambiguity are an intrinsic part of the NSF's review process and the COV only wishes to make an observation. There is no judgment or criticism implied. That said, if there is concern about the role that broader impacts play in the award process, it might be worth tracking the number of requests that include dedicated funds for broader impacts. This information could be included in the review analyses and would highlight the reality that broadening impact always takes time, and usually takes money.

ARC Response: We will explore the feasibility of tracking funds dedicated for broader impacts.

Early career reviewers/Panelists, Section II.3 page 3: The COV encourages the Program to continue to include early-career investigators and underrepresented groups as part of the review process. The COV appreciates that it is difficult to quantitatively assess the participation of these groups, owing to the self-reported nature of the data, and the COV did not identify an obvious way to do this.

ARC Response: We recognize the value of including early-career investigators and underrepresented groups as part of the review process and intend to continue supporting their inclusion through invitations to participate in panels and write ad hoc reviews. To highlight the need and importance of related demographic data, in the future we will provide specific instructions to reviewers on how to update their personal information in Fastlane, while still stressing that participation remains voluntary.

