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Increasing recognition of historically marginalized scientists: Lessons learned from the Nomination Task Force

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The Space Physics and Aeronomy (SPA) Section of the American Geophysical Union (AGU) created a Nomination Task Force (NTF) in 2017 upon concerns that the numbers of women nominated for AGU Fellow were significantly lower than would be expected based on SPA membership representation, including as low as zero in two of the four preceding years. Now that the NTF has been in existence through four cycles of AGU Honors and Awards, the outcomes indicate the success of the NTF in increasing the number of nominations for scientists from historically marginalized groups. These data indicate that the work of the NTF has enhanced the nomination pool rather than occurring at the expense of other nominees. Until recently, the ability to collect and distribute demographic information has been limited, and cisgender binary identities are often inferred. Moving forward it is a goal of AGU to be more inclusive and intentional with respect to gender, racial, and ethnic identities. We share our best practices and success stories with a broad audience to help others build upon the work of the NTF within their own institutions and professional groups. We also discuss challenges that we are still facing and provide suggestions for continuing to improve the process.

KEYWORDS

diversity and inclusion, awards and prizes, professional societies and associations, recognition and appreciation, best practices

1 Introduction

The STEM (science, technology, engineering, and mathematics) fields have been making strides to become more diverse and inclusive. Yet, a National Science Foundation report indicated that the Geosciences have one of the least diverse demographics

(National Science Foundation and National Center for Education Statistics, 2017). The Space Physics and Aeronomy (SPA) section of the American Geophysical Union (AGU) is approximately 20% women. Space Physics falls in the Division of Plasma Physics within the American Physical Society (APS), which is one of the least diverse divisions within APS. Members of the Space Physics Research Community have been working towards improving diversity and inclusion. Liemohn et al. (2021) described “Increased Workforce Diversity” as one of the four topics that are emerging as “Instigators of Future Change in Magnetospheric Research.”

Despite efforts to increase diversity and improve the climate, there have been many challenges. A news feature in *Physics* describes the pros and cons of scientific prizes, including the lack of diversity among prize winners not reflecting the diversity of the field. They also note the likelihood that multiple prizes are given to a few people instead of spreading the recognition (Popkin, 2022). Unfortunately, there are many barriers that prevent scientists in historically marginalized groups from being considered for awards and honors at an equitable level across STEM fields (e.g., Symonds et al., 2006). Within AGU, between 2014 and 2018, women were not being nominated for AGU awards and honors at a rate proportional to their membership numbers at the related career stage (McFadden, 2018). In the 2021 Fellows nomination cycle, one AGU section chose not to select any nomination packages to forward to the Union Fellows committee due to the lack of diversity in their nomination submissions (Harvey, 2022). There have been numerous ensuing calls for action to improve this situation within AGU and other scientific professional societies. One barrier to improving the situation, particularly for the most eminent prizes such as the Nobel prize, is the lack of transparency and data on nominations (Blunier, 2022). While the AGU nomination process has more transparency, the data collection is limited to identity categories that are inferred, such as binary cisgender identity. In 2017, a grass-roots group within SPA noticed a lack of diversity in its Fellow nomination pool and created a Nomination Task Force (NTF) to support nomination packages for scientists that identify in historically marginalized groups. An initial report on the NTF was published in AGU’s science news magazine, *EoS* (Jaynes et al., 2020). Now that the NTF has participated in five nomination cycles (with data available for four), we present results and lessons learned to share our best practices and success stories with a broad audience to help others build upon the work of the NTF and to adapt these practices to their own institutions and professional organizations. We emphasize that the goal of the NTF is not to change the criteria for selection of AGU Fellows and other honors and awards; it is to increase the nomination rate of scientists from historically marginalized groups to a level that is more representative of the overall community membership.

2 American Geophysical Union Space Physics and Aeronomy section member demographics

We first present data on the demographics of the AGU SPA Section. One argument why the representation in awards and honors is low is that the overall representation is low, but that is often not the case. The gender distributions for AGU SPA section in 2021 as a function of career level (Figure 1) are shown. One example demonstrating that low representation in awards and honors is not due to overall representation: from 2014 to 2017, 6% of nominations (3 of 50) for AGU Fellow in the SPA section were women (see next section), far lower than their 14%–25% representation in the mid-career/experienced category (Figure 1) from which Fellows are usually nominated.

3 Nomination task force outcomes

Since its inception, the NTF has been involved in 24 Fellow nominations, 29 nominations for other AGU awards, and 5 nominations for a non-AGU award (see Table 1). Several of these nominations resulted in awards. Since the NTF was created based on data on nominations for AGU Fellow, such nominations have been a primary focus. Results from the last eight nomination cycles are shown in Table 2. While detailed demographic data is collected from the AGU membership, such data are not collected from nominees and are inferred based on name and institution. This limits the ability to demonstrate impact on other demographics, but the NTF certainly considers nominees from other marginalized groups. We note that the work of the NTF has increased the overall number of nominations submitted, demonstrating that this work is not reducing the potential recognition of any demographic, while also increasing the number of women that have been awarded fellowship.

While Fellow nomination packages are an important part of the NTF effort, we also work on other awards and honors (e.g., Joanne Simpson Medal, Macelwane Medal, SPA Scarf Award), and even some non-AGU awards to a lesser extent. The NTF created a tool to help find appropriate AGU awards and is publicly available at <https://connect.agu.org/spa/committees/ntf/award-finder>. Our work has also influenced the mindset of other decision processes, such as the selection of named lecturers at the AGU Fall Meeting. All of these results enhance and promote the equity, diversity, and inclusion within the field. AGU has recently implemented the need for nomination canvassing committees similar to the NTF for each of its sections, and the NTF provides continuous feedback to AGU on this process. The American Astronomical Society Solar Physics Division also has initiated an NTF as an official ad hoc committee with the help of SPA NTF members.

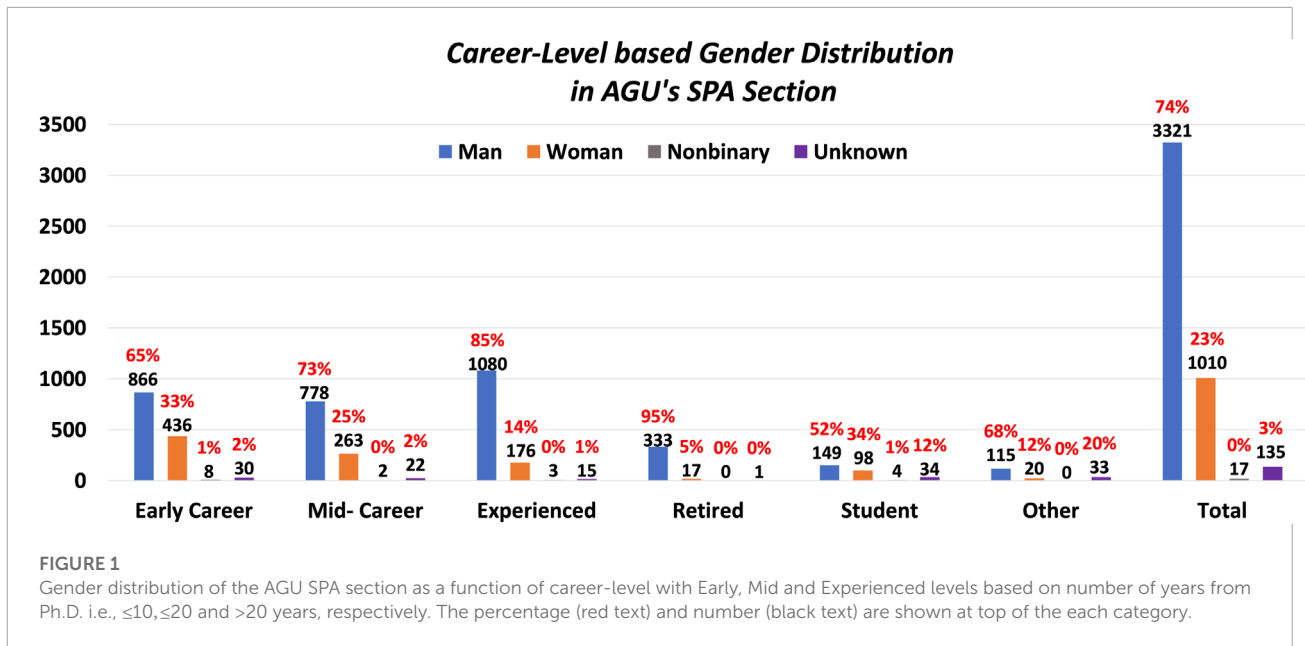


TABLE 1 Number of nomination packages submitted by the NTF.

	2018	2019	2020	2021	2022
AGU fellow	4	6	4	7	3
Other AGU awards	1	3	7	9	9
Non-AGU awards	1	1	1	0	2

4 Nomination Task Force lessons learned

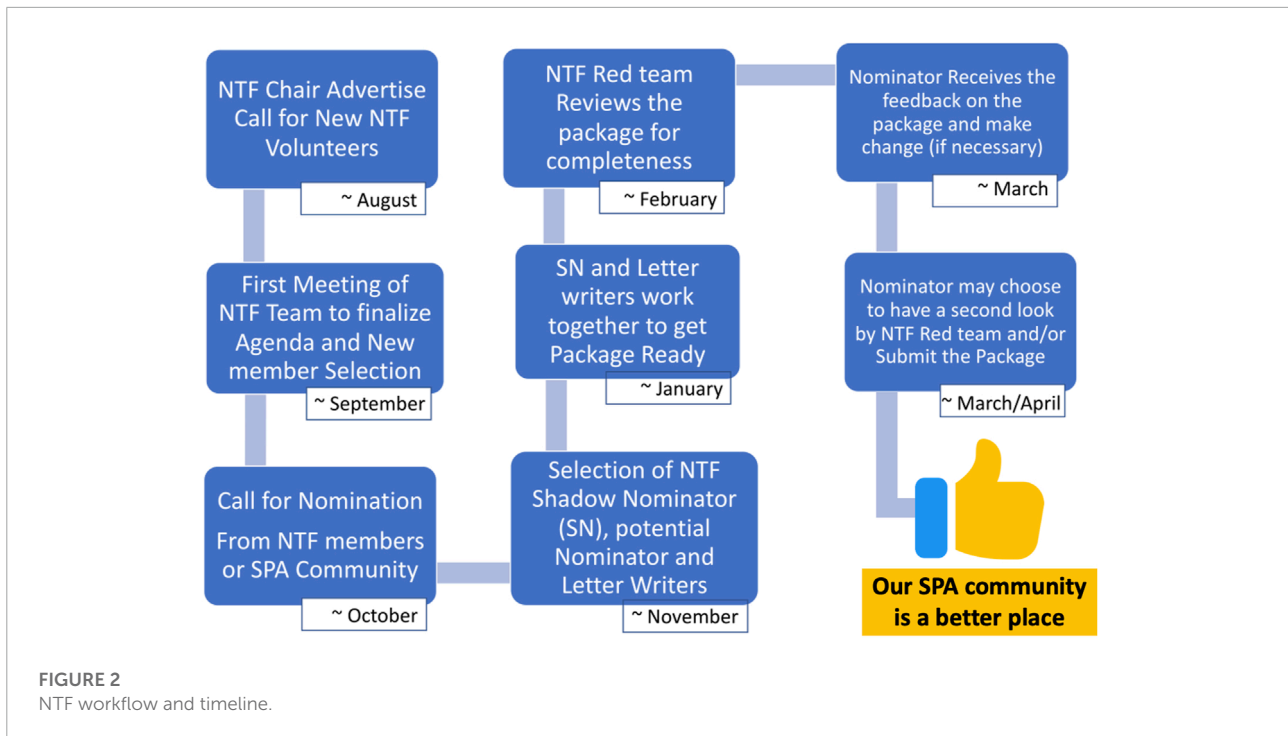
Nomination packages typically require in-depth volunteer work from a number of individuals close to the nominee

but benefit from a coordinated team approach. This grass-roots, distributed approach divides the work of creating robust, winning nomination packages while considering privacy and a number of other sensitivities. Quality is increased with informal peer-to-peer review and crowd-sourcing at each step of the way. The group culture values transparency and teaches others how to do what was once privileged knowledge passed primarily among select senior members. This distributed approach scales and is transferable to other societies. Participating in the NTF is a valuable and unique opportunity to learn more about the AGU awards process and to help ensure that award nominations come from a wider and more representative fraction of SPA. Early-career scientists benefit

TABLE 2 Fellow nomination packages received and awarded from the AGU Space Physics and Aeronomy Section.

	2014	2015	2016	2017	2018 ^a	2019	2020	2021
Nominations								
Male	11	9	13	14	19	15	17	18
Female	2	0	1	0	6	9	4	5
Total	13	9	14	14	25	24	21	23
International	N/A	3	3	4	5	3	3	6
US	N/A	6	11	10	20	21	18	17
Total	13	9	14	14	25	24	21	23
Awards								
Male	4	5	4	4	5	3	2	4
Female	1	0	1	1	1	3	1	2
Total	5	5	5	5	6	6	3	6
International	1	0	1	0	2	0	0	1
US	4	5	4	5	4	6	3	5
Total	5	5	5	5	6	6	3	6

^aIndicates the first nomination cycle that the NTF was in effect.



from the opportunity to network with more senior colleagues on a regular basis. The NTF meets regularly throughout several months of the year on video teleconferences and in person at the AGU Fall Meeting, usually for a social meal. Additional communication happens among the team for each nomination package.

The NTF has had a number of discussions of best practices in general nomination writing as well as specific practices to improve AGU nominations, and have compiled many of these resources into one location at <https://connect.agu.org/spa/committees/ntf/ntf-reading>. A common debate is whether to inform the nominee of the nomination. While some people prefer to conduct the nomination in secret, the nominee can help with getting suggestions for nominators and providing updated bibliographies and curriculum vitae. Another debate is whether to include the h-index, which has been shown to be biased (Chapman et al., 2019). The NTF often suggests including the h-index if it is high, and the source of the index, as well as citation counts, should always be included. When working with the letter writers, it is helpful to ensure that they will use the full length allowed, that the secondary writers will each focus on the details of a specific topic to avoid duplicating each other with a summary provided by the lead nominator, and that they will use a common referencing to the bibliography. It is also helpful to ensure they're using appropriate language in their letters, such as using non-gendered descriptive words, avoid using first name, and using strong language (scientists are reluctant to use subjective qualifiers like groundbreaking, pioneering, paradigm shift). Many of these recommendations are

described and implemented by the “Equitable Letters for Space Physics” resource (Burrell et al., 2021).

The timeline for the NTF work each year is based on the AGU awards cycle, but could be adjusted to match other award cycles. The deadline for AGU honors and awards nominations is typically in March/April. Thus, NTF telecons begin in the Fall of the prior year and continue until the award deadline date (see Figure 2). Telecons are typically held once every 2 weeks and last 1 h each. The NTF work begins on our telecons where a list of names of potential award nominees is discussed. The list of names is maintained from year to year, with new names added all the time. Additions come from NTF members, or from non-members *via* requests for suggestions during presentations at workshops and conferences and advertisement in newsletters and social media. Nominee suggestions can be made by communication to any NTF member or through our online “nominee suggestion” Google form. We then brainstorm to identify potential nominators and letter writers for each nominee. Once these individuals have been identified and confirmed, the assembling of the nomination package begins. Much of the work on the package creation is done offline, interacting *via* email. This entire process is iterated on in the time leading up to the awards deadline, ultimately resulting in a set (typically 5–10) of nomination packages that are submitted to AGU for award consideration.

NTF members have a variety of levels of experience with the nomination process, and the work is distributed so that people can participate as their experience and availability

allow. An email list of members is maintained for basic communication, including meeting scheduling and reminders as well as solicitation of potential nominees. Once a list of potential nominees has been created, NTF members volunteer to champion the nomination package as “Shadow Nominator,” a role that we have found to be very important. This person is a regular NTF participant who coordinates the creation of a nomination package for a specific nominee, working closely with the “lead nominator.” This includes contacting senior/highly-accomplished members of the community for nomination and supporting letters, ensuring that the various package components are being produced in a timely manner, reviewing the package materials for typos/inconsistencies, and acting as an interface/liason between the lead nominator and the NTF. And most importantly of all, the Shadow Nominator ensures that the nomination package is submitted before the deadline!

The NTF works as a group to identify potential lead nominators for an individual’s package, who are then contacted by the Shadow Nominator to gauge their interest. Some lead nominators prefer to arrange and contact supporting nominators, while others enlist the help of the Shadow Nominator. The lead nominator is usually a senior/highly-accomplished member of our community who writes the overarching nomination letter and works with the Shadow Nominator to assemble the package. The lead nominator can be an NTF member, but very often they are not, in which case the Shadow Nominator serves as the interface/liason between the lead nominator and the NTF.

Another important element that we have found for successful nomination packages is to have a red-team review. This is conducted by a group of NTF members (ideally 2–3) who look over the nomination letters, CV, and bibliography as they are being created and again before submission. The red team looks for, for example, redundancy between nomination letters and, if found, suggests ways in which the letter writers can refine their letters to instead focus on different achievements. A nomination package is only sent out for a red-team review if the lead nominator and all supporting letter writers agree that it can be shared with the red team and that the letter writers will be open to making suggested changes.

In order to reduce the burden on a few individuals, often from historically marginalized groups themselves, it is important to continue recruiting new NTF members and turn over the leadership each year. This also helps to spread the recognition to more subfields as volunteers will recommend nominees whose work they are familiar with. Within SPA, there are three subsections (SH, SM, SA). Since the NTF was initiated with SM leadership, the majority of volunteers, nominees, and subsequent

chairs have been within SM. We have worked to recruit more members from SA and SH to ensure we are recognizing deserving scientists from those subsections. This would be similar in any field where volunteers are needed from multiple subfields. One challenge we found in a particular subfield is that it has been hard to recruit lead nominators because many senior scientists themselves have not been recognized with fellowship.

Details about the NTF are maintained at <https://connect.agu.org/spa/committees/ntf>. The website includes a Code of Conduct, FAQ, and extra resources; many of these are general enough for other groups to utilize.

5 Summary

The AGU SPA Nomination Task Force has made a demonstrable impact on the diversity of awards and honors for the SPA membership by developing robust and sustainable approaches to share and manage the workload of nomination packages. The group has developed best practices for preparing strong nomination packages and continues to work on them to incorporate lessons learned. A critical next step is to improve the data gathered about nominees’ demographics and identities.

Data availability statement

The datasets presented in this article were requested from the American Geophysical Union. Some data are available at <https://www.agu.org/Learn-About-AGU/About-AGU/Diversity-and-Inclusion>. Some of the above web-links may change in future, in that case please visit NTF website <https://connect.agu.org/spa/committees/ntf>.

Author contributions

AK was the primary writer with significant contributions from MFB and SC. MH, EM, and AJ provided input and reviewed the text.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships

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References

- Blunier, T. (2022). Diversity in science prizes: Why is progress so slow? *Nature* 606, 433–434. doi:10.1038/d41586-022-01608-z
- Burrell, A. G., Jones, M., Halford, A., Zawdie, K., and Coxon, J. (2021). Bypassing the bias. *Astron. Geophys.* 62, 5.28–5.29. doi:10.1093/astrogeo/atab090
- Chapman, C. A., Bicca-Marques, J. C., Calvignac-Spencer, S., Fan, P., Fashing, P. J., Gogarten, J., et al. (2019). Games academics play and their consequences: How authorship, h-index and journal impact factors are shaping the future of academia. *Proc. R. Soc. B* 286, 20192047. doi:10.1098/rspb.2019.2047
- Harvey, C. (2022). *Nominees for a science award were all white men—nobody won*. Scientific American.
- Jaynes, A. N., Macdonald, E. A., and Keesee, A. M. (2020). Equal representation in scientific honors starts with nominations. *Eos (United States)* 101, 16–17. doi:10.1029/2019eo117855
- Liemohn, M. W., Keesee, A. M., Kepko, L., and Moldwin, M. B. (2021). *Instigators of future change in magnetospheric research*. American Geophysical Union, 753–763. chap. 47. doi:10.1002/9781119815624.ch47
- McFadden, M. (2018). *How will we address the lack of gender diversity in AGU medals, awards and prizes?*
- National Science Foundation and National Center for Education Statistics, (2017). Women, minorities, and persons with disabilities in science and engineering. *Spec. Rep. NSF* 17, 1–21.
- Popkin, G. (2022). *Prizes are not always a win for science*. doi:10.1103/Physics.15.86
- Symonds, M. R., Gemmill, N. J., Braisher, T. L., Gorringer, K. L., and Elgar, M. A. (2006). Gender differences in publication output: Towards an unbiased metric of research performance. *PLoS ONE* 1, 127–e135. doi:10.1371/journal.pone.0000127