

**EQUITY AND INCLUSION IN PLANETARY SCIENCE: NEXT STEPS FOR IMPROVEMENT.** J. A. Rathbun<sup>1</sup>, E. G. Rivera-Valentín<sup>2</sup>, <sup>3</sup>L. C. Quick, <sup>3</sup>O. J. Tucker, <sup>4</sup>F. Rivera-Hernández, <sup>5</sup>K. E. Mandt, <sup>6</sup>A. J. Evans, <sup>1</sup>Planetary Science Institute ([Rathbun@psi.edu](mailto:Rathbun@psi.edu)), <sup>2</sup>Lunar and Planetary Science Institute (USRA), <sup>3</sup>NASA Goddard Space Flight Center, Greenbelt, MD, 20771, <sup>4</sup>Georgia Tech, School of Earth & Atmospheric Sciences, Atlanta, GA 30332, <sup>5</sup>John Hopkins University Applied Physics Lab, <sup>6</sup>Brown University.

**Introduction:** In April 2020, the Statistical Research Center of the American Institute of Physics funded by the American Astronomical Society’s Division of Planetary Science conducted a survey of planetary scientists [1]. Survey results showed that the planetary science community lacks diversity along several axes [1-3] and that members of racial and ethnic minority (URM) groups, particularly Black and Latinx groups, are severely underrepresented in planetary science [2]. Results also highlighted the lack of improvement in representation for these groups in at least the past decade [3]. In contrast, representation of white cis-women and LGBTQ+ scientists, while low, has improved substantially over the last decade [1].

While many efforts to increase diversity within other STEM fields have concentrated on recruitment [4-5], that is just the first step. To increase diversity of historically underrepresented groups within the planetary science culture and community, the focus should be on retention, inclusion, and equity.

The presented work is intended for members of historically included groups in planetary science, such as those that are white, cis-gender, male, and heterosexual, that continue to make up the majority of the community. Members of historically excluded groups are well aware of the existing barriers and the actions necessary to address them.

Several studies have demonstrated the barriers faced by members of historically excluded groups [6-10]. **The next step should be to implement changes, not further understanding of the “problem”. In other words, stop asking us to analyze demographic data to “prove” that there is a diversity problem.**

**Recommendations:** Recommendations for improving inclusivity and equity in STEM and academia can be found in many documents [2-5, 7, 10-13].

For individual planetary scientists, particularly members of historically included groups, we recommend to: (1) realize that gender- and color-blind approaches to diversity and inclusion do not work [7]; (2) actively pay attention to the demographics of people you work with, make an effort to include, hear from, and value the perspectives of, members of historically excluded groups; (3) learn how to intervene to help others in the obstacle course (for example, bystander intervention).

For NASA and other groups, we recommend:

1. Make DEIA a valued part of how mission science team members are selected and grants are awarded, such as making racial diversity as important a priority as institutional or discipline diversity when selecting teams.
2. Ensure that reporting, such as proposal briefings, are inclusive when it comes to reporting PI demographics. Briefings that present only PI demographics as they relate to binary gender are exclusionary and can unintentionally relay the message the other axes of severe underrepresentation (e.g., race, LGBTQ+ status, ethnicity, etc.) in our community do not exist and/or are not important.
3. Continue to implement policies, such as Dual Anonymous Peer Review (DAPR) to mitigate biases within standard community processes, such as proposal and paper review
4. Punish harassers and bullies in the field.
5. Enact DEIA rules and policies for ad-hoc advisory committees and assessment groups to ensure that these groups, and their members, actively embrace DEIA and NASA’s new core value of Inclusion.
6. Involve and fund social scientists in creating policy.

**References:** [1] Porter, A. et al. (2020) AIP report [https://dps.aas.org/sites/dps.aas.org/files/reports/2020/Results\\_from\\_the\\_2020\\_Survey\\_of\\_the\\_Planetary\\_Science\\_Workforce.pdf](https://dps.aas.org/sites/dps.aas.org/files/reports/2020/Results_from_the_2020_Survey_of_the_Planetary_Science_Workforce.pdf) [2] Rathbun J. A. et al. (2021) *LPS LII*, #2094. [3] Rivera-Valentín E. G., et al. (2021) *LPS LII*, #2163. [4] Hill C., et al. (2010) *AAUW report*. <https://eric.ed.gov/?id=ED509653> [5] NASEM (2020) *Astronomy Survey* <https://doi.org/10.17226/26141> [6] Berhe, A. A. et al. (2021) *Nat. Geosci.* <https://doi.org/10.1038/s41561-021-00868-0> [7] NASEM (2021) Anti-Racism in STEMM doi: 10.17226/26294 [8] Hofstra, B. et al. (2020). *Proceedings of the National Academy of Sciences*, 117 (17), 9284–9291 [9] Rathbun, J.A., 2017, *Nat. Ast.*, **1**, id 0148 [10] Marín-Spiotta, E. et al. (2020) *Adv. Geosci.* **53**, 117-127. [11] Diniega, S. et al. (2020) *DPS* #52, id 502.06 [12] Berhe, A. A. and Ghezzehei, T. A. (2020) *Eur J Soil Sci*, DOI: 10.1111/ejss.13078 [13] Nashville recommendations for Inclusive Astronomy (2015) [https://tiki.aas.org/tiki-index.php?page=Inclusive\\_Astronomy\\_The\\_Nashville\\_Recommendations](https://tiki.aas.org/tiki-index.php?page=Inclusive_Astronomy_The_Nashville_Recommendations)