

## EVALUATION OF THE INSIGHTSEERS MISSION OBSERVERS PROGRAM

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**Introduction:** Mission observer programs are recognized as an effective way to engage early-career researchers (ECRs) who might not otherwise have a chance to experience mission science first-hand<sup>[1,2]</sup>.

Inspired by the initial work of the Europa Clipper team, observer programs have run as grassroots activities on InSight, DART, and Dragonfly leading to the establishment of the NASA HQ managed Here To Observe (H2O) program.

Between 2020 and 2023, approximately 100 ECRs from around the world participated in the six iterations of InSight's mission observer program<sup>[3,4]</sup>. Participants ('InSightSeers') were competitively selected to attend an InSight Science Team Meeting and observe its workings, and to present their own research to the wider team.

The first four iterations of the program were run virtually, whilst the final two were in-person and applicants were fully funded for travel to and from the team meeting, including their expenses. Each participant was paired with a mentor on the InSight team who served as personal point of contact before and during the meeting.

**Aim:** As part of our efforts to evaluate the project and improve future mission observers' programs, we sought to undertake a comprehensive

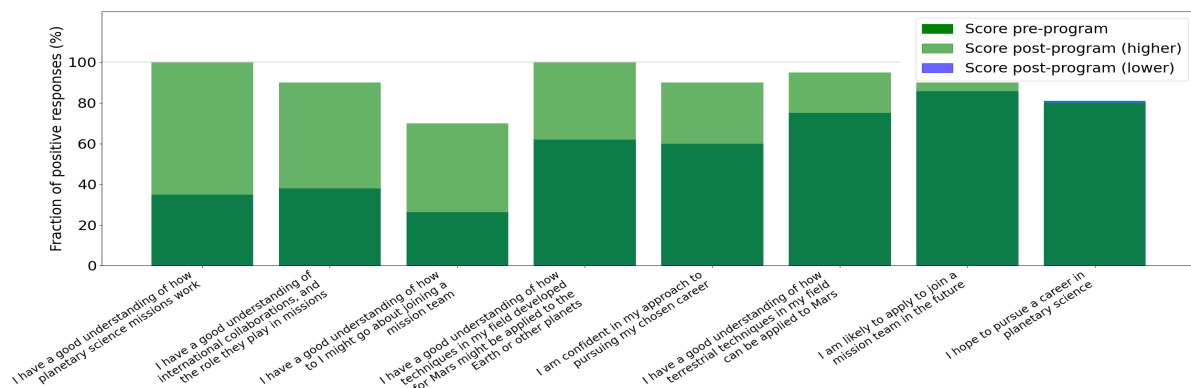
pedagogical evaluation of the program. This effort was designed to be specific and quantitative; and to evaluate the experiences of both participants and their mentors as well.

**Methodology:** Our initial effort focussed on a pre- and post-program evaluation of the final cohort of 21 InSightSeers and their 10 mentors.

A series of anonymized questions were asked of participants before the meeting, assessing their familiarity with various aspects of the InSight mission science operations and the team's research, links between the mission and questions in terrestrial geophysics, and their perception of how they might progress in an academic career.

The same set of questions were asked after the meeting to identify the specific value added by the InSightSeers program. A unique, non-traceable identifier code was also given to each participant such that responses could be traced across pre- and post-meeting surveys without compromising anonymity.

A similar format was used for mentors, though questions instead focused on their knowledge of the challenges facing ECRs, and their confidence in helping ECRs overcome these.



**Figure 1:** Pre- and post-program evaluation scores from the InSightSeers – showing the fraction of positive responses to each question. In all but two categories, enormously positive outcomes were achieved. In the remaining category ('I hope to pursue a career in planetary science'), the modal response was unchanged and a small negative trend was observed.

**Results:** Figure 1 shows initial evaluation results from the InSightSeer participants. The response rate to the pre-program survey was 100% (N=21) and to the post-program survey was 95%. As can be seen, significant added value was identified in six of the eight categories by the program.

In particular, 100% of participants expressed a positive sentiment (‘somewhat agree’ or ‘strongly agree’) post-program when asked about whether they now had a good understanding of how planetary science missions worked, and when considering whether scientific analysis techniques developed for Mars may be re-applied elsewhere.

Two categories (‘likely to apply to a mission team in the future’ and ‘hope to pursue a career in planetary science’) showed no significant change, with a small positive increase in one case and a small negative increase in the other.

Figure 2 shows the corresponding evaluation for mentors. Results here are much more muted, showing no substantial change in any category. The pre-meeting evaluation received a 100% response rate (N=10), the post-meeting evaluation was 80%.

**Discussion:** From Figure 1, it is clear that substantial value was added to the InSightSeers’ academic paths by the program. The greatest benefits were seen on questions related to the practicalities of mission science, whilst limited progression is seen in categories relating to joining mission teams in the future or pursuing a career in planetary science. Whilst not necessarily negative (i.e. someone may have made a positive decision to pursue alternate paths after gaining a better understanding of mission science in practice), this does suggest that further attention is needed in these areas to optimize outcomes if the program seeks to recruit people to planetary science careers.

From Figure 2, it is also clear that neither benefits or drawbacks from taking part in the program as a mentor are observed. These metrics (which are

restricted in scope and not comprehensive) do imply that there is room to make the experience more valuable for mentors – though we note that several signed up to mentor in several program iterations.

**Future work:** It is our intention to extend surveys of this type to the previous five InSightSeers cohorts. Because pre-program evaluations obviously cannot take place after the fact, we seek to identify longer-term value added (e.g. changes in career path as a result of the program).

We also intend to continue working with those running similar programs on other missions to identify best practice for recruitment, management, and evaluation. We hope to share findings with those wanting to establish similar programs elsewhere.

**Conclusions:** Our quantitative evaluation demonstrates significant value added for the InSightSeers themselves as a result of participation in the program, particularly as related to knowledge of the practicalities of mission science. Further work is needed to optimize outcomes for mentors. Community feedback is most welcome!

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**References:** [1] Fernando, B. et al (2022) Nature Astronomy, [doi.org/10.1038/s41550-022-01861-2](https://doi.org/10.1038/s41550-022-01861-2) [2] Rivkin, A.S. & Chabot, N.L (2022), Advancing IDEA in Planetary Science #2019 [3] Daubar, I.J. et al (2022), LPSC #2146 [4] Morris, J.R et al (2023), LPSC #1966

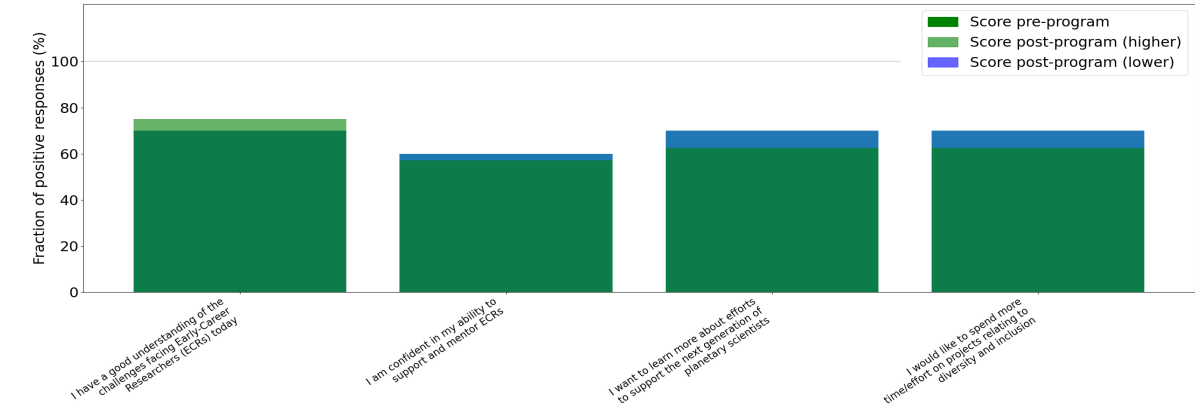


Figure 2: Evaluation for the mentors. Results are more muted, showing no substantial changes in any of the categories.