

**INSIGHTSEERS: PEERING INTO INVITED STUDENT PARTICIPATION OF A MISSION SCIENCE TEAM MEETING.** J. R. Morris<sup>1</sup>, L. R. Schurmeier<sup>2</sup>, N. L. Wagner<sup>3</sup>, S. Baker<sup>4</sup>, C. Bill<sup>5</sup>, S. Mohanna<sup>6</sup>, N. Roth<sup>7</sup>, H. Sanderson<sup>5</sup>, S. Sridhar<sup>5</sup>, S. Woodley<sup>8</sup>, I. J. Daubar<sup>9</sup>, B. Fernando<sup>5</sup>, C. Newman<sup>10</sup> and M. Panning<sup>11</sup>. <sup>1</sup>Department of Earth Sciences, Durham University, UK (joanna.r.morris@durham.ac.uk). <sup>2</sup>University of Hawai'i at Mānoa, HI, USA. <sup>3</sup>Baylor University, TX, USA. <sup>4</sup>School of Geosciences, The University of Aberdeen, UK. <sup>5</sup>The University of Oxford, UK. <sup>6</sup>University of California, Los Angeles, CA, USA. <sup>7</sup>Pennsylvania State University, PA, USA. <sup>8</sup>The Open University, UK. <sup>9</sup>Brown University, RI, USA. <sup>10</sup>Aeolis Research, AZ, USA. <sup>11</sup>Jet Propulsion Laboratory, California Institute of Technology, CA, USA.

**Introduction:** NASA's InSight mission has been operating on the surface of Mars for almost four Earth years [1]. Starting in 2021, science team members have run a program designed to invite early career researchers (ECRs) to observe their international science team meetings (STMs). Normally, these meetings are restricted to science team members and official affiliates. However, through an application and selection process, several senior graduate students and postdoctoral researchers have been invited to observe and participate in a program known as InSightSeers, inspired by similar programs originating on the Europa Clipper and Dragonfly missions [2]. The InSightSeers program aims to expose and familiarize these ECRs with the inner workings of science team meetings and provide them with experience that can aid them in deciding whether they want to be involved with scientific missions in the future [3]. In addition to enabling ECRs without access to scientific missions to participate, the InSightSeers program works closely with the InSight Diversity and Inclusion Working Group to support inclusivity and diversity of the InSightSeers participants. The latest selection of InSightSeers attended in STM#25 in person from November 14<sup>th</sup>-18<sup>th</sup> 2022. This was the first time InSightSeers were able to participate in person due to travel restrictions due to Covid-19 and funding limitations.

**Participation:** The InSight team solicited applications from senior graduate students and postdoctoral researchers to observe and participate in the 25<sup>th</sup> STM. Four selections were made from US-based ECRs and six from the UK, with the STM congregating at the Royal Astronomical Society in London, UK. Before the meeting, the InSightSeers were introduced to each other and some of the InSight leadership at a virtual overview meeting. They were brought up to speed on the science objectives, team members, and common acronyms of the InSight team via a "InSightSeers Information Packet" including the mission's "Rules of the Road" document, and slides on the mission's science achievements thus far, including references to publications for background reading.

InSightSeers were asked to agree to keep data and discussions from the meeting confidential.

Each InSightSeer was paired with a mentor from the science team that best matched their research area. This aspect of the program was very important, as the mentor helped to introduce and enable conversations between the InSightSeer and any other researchers.

At the beginning of the meeting, the InSightSeers introduced themselves with a quick introduction slide and then the meeting progressed as usual. Throughout the meeting the InSightSeers contributed to scientific discussion by asking questions after talks and further expanded upon topics being discussed. Questions from InSightSeers and InSight team ECRs were prioritized during discussion.

**Reflection from InSightSeers:** The academic system, as it currently stands, has been recognized to exclude underrepresented groups as they progress through their academic careers [4]. Recognizing the limitations that these groups face should be paramount to everyone working within the academic system so that anyone can develop a STEM career in a supportive and encouraging environment. NASA has committed to adopting equity, diversity, and inclusion (EDI) principles [5] and calls upon all employees to implement policies that facilitate inclusion throughout their agencies and funded programs. The InSightSeer program is one such concept that promotes these principles. Based on feedback from the InSightSeers after the meeting, the strategies implemented by the InSight Diversity and Inclusion Working group were accomplished successfully. Feedback from the InSightSeers regarding this included:

1. The hybrid nature of the meeting allowed for people to choose between attending in-person or online, making it more accessible.
2. Funding was provided to cover travel, accommodation and subsistence making the meeting accessible to all ECRs.
3. Introductions from mentors facilitated conversations between InSightSeers and members of the science team, improving inclusivity.

4. Reminding all participants about the code of conduct and rules of the road at the beginning of the meeting reinforced the team's commitment to EDI principles.
5. Providing information packets and lists of publications before attending the meeting allowed InSightSeers to participate more fully in discussions.
6. Giving ECRs a chance to ask questions before opening the discussion to the science team encouraged participation by attendees of all levels of experience.
7. Including ECRs in group chats and group activities improved inclusivity.
8. Listening to how the team problem-solved and overcame challenges in creative ways throughout the mission was motivating and inspiring.
6. Conduct workshops at scientific conferences to teach ECRs in specific technical skills that will be beneficial when applying to work on space missions.
7. Invite ECRs to give more talks and posters and allow science team members to provide constructive feedback.
8. Invite ECRs to sit in on mission proposal panels to better understand how NASA judges and selects future missions.
9. Science team members could give career talks at universities to allow for ECRs to network.

Whilst the experience was overall extremely positive and many benefits have been identified, the following recommendations have been suggested by the STM25 cohort of InSightSeers to further advance the development of EDI principles in on-going and future NASA missions.

1. Provide a forum for anonymous InSightSeer feedback after the meeting finishes. Some participants may not be comfortable with sharing their thoughts in a public forum during the meeting.
2. Increase lead time after selection and before attending the meeting so that InSightSeers can be better prepared.
3. More dedicated meeting time for discussion with specific science teams.
4. Keep to the schedule without sacrificing break times, or include extra time for unexpected schedule overruns. A survey of 2,379 higher education staff (83% of which were academics) found that they work well beyond their contracted hours, including holidays and weekends. This often leads to serious, negative impacts on work-life balance, relationships, and mental health [6]. Academics who take regular breaks and maintain a healthy work-life balance are more likely to contribute to the team in a creative, positive, and productive way.
5. Include more daytime social networking events in quieter settings to make it more accessible to the neurodivergent members of the group.

Overall, there was unanimous agreement amongst the InSightSeers that this program was a positive experience and has inspired future career goals. Their participation has built confidence in pursuing careers in planetary science and exploration. It has shown that NASA missions lead to thrilling discoveries and important contributions to the field, but also friendships and further collaborations across many sub-disciplines with international scientists. Finally, the InSightSeers felt that it was an unparalleled opportunity to learn about the mission itself. The STM provided a complete overview of the mission science, struggles, and successes! It is therefore our recommendation that the science team meetings for current and future NASA missions should be made accessible to ECRs in similar ways.

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**References:**

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