

CONNECTING PLANETARY SCIENTISTS WITH THE PUBLIC. C. Shupla¹, E. Klein², M.A. Matiella Novak³, E. G. Rivera-Valentín¹, A. Shaner¹, S. Webb¹, ¹Lunar and Planetary Institute (3600 Bay Area Blvd., Houston, TX 77058, shupla@lpi.usra.edu), ²Institute for Learning Innovation, ³Johns Hopkins University Applied Physics Laboratory.

Introduction: Scientists face challenges in effectively interacting with the public, including the need for preparation and tools to engage diverse audiences.^{1,2,3} The Lunar and Planetary Institute (LPI)'s education and public engagement team has been conducting professional development for planetary scientists^{4,5}, and is exploring the types of tools that will be useful for scientists in engaging the public. In 2020 we will provide new resources and opportunities to connect with audiences, both in-person and virtually.

Planetary Scientist Engagement Institute: In March 2019, working with the Volatiles, Regolith and Thermal Investigations Consortium for Exploration and Science (VORTICES) program, we conducted the first *Planetary Scientist Engagement Institute*. The program covered a variety of education topics, such as common solar system misconceptions, techniques for addressing controversial topics, activities and demonstrations for engaging audiences, and partnering with educational institutions. The program included activities and discussion time to allow participants to share their experiences and insights.

Twenty-three participants attended. Most were graduate students and early-career scientists. Five were experienced/ senior scientists, and one was a planetary science education specialist.

A final evaluation was conducted after the event through an online survey. Participants rated how well the overall institute met their goals on a 4 point scale: "Extremely well," "Fairly well," "Somewhat," and "Not at all." (Participants' stated goals in conducting public engagement included sharing their science/research, inspiring STEM careers, educating and informing audiences, and reaching diverse audiences.) All (100%) of responses were positive: 72% responded "extremely well," 22% responded "fairly well," and one selected Other, indicating "I was excited to know more, by the methods you use to share planetary sciences."

Participants were also invited to rank how useful the overall institute was for their future public engagement efforts on a 4 point scale that ranged from "Extremely useful" to "Not at all". Again, 100% of responses were positive, with 72% responding "extremely useful" and 28% responding "fairly useful."

Sharing Planetary Science Seminars: LPI's education and public engagement team (with input from its science staff) conducts hour-long seminars, which began in February 2018. Seminars include current education research, and incorporate the scientists' experiences

through guided activities and facilitated discussions (Figure 1). Participants attend in-person or online. In evaluation surveys, all responses (100%) have indicated that at least one aspect of the seminars was valuable.

Each session focused on a particular topic, such as addressing controversial topics, working with the news media, understanding audience goals and misconceptions, and measuring your impact. Seminars for spring 2020 will include additional topics, such as presenting to culturally diverse audiences.

We welcome input from the planetary science community on new topics to include in future seminars, and invite all to participate and review the online resources.



Figure 1. Scientists discussing how they engage audiences.

Webinars for Libraries: We are working with NASA @ My Library to assist scientists in delivering virtual programs to libraries, using a promising model developed by Portal to the Public. Scientists will connect with the public at libraries, giving presentations and guiding activities that the librarians will help facilitate for audiences (Figure 2). NASA scientists and engineers are invited to participate; they will receive preparation, and the webinars will be arranged and facilitated by LPI and NASA @ My Library staff.



Figure 2. In a 2019 library webinar, teens explored cratering.

Resources for Public Engagement: Scientists need tools to engage diverse audiences in planetary exploration. We work with scientists using a digital planetarium to give audiences live tours of the solar system and beyond, highlighting select planetary features (Figure 3). We have also created and revised a number of activities that our scientists have used with public audiences, available through LPI's Explore website.

In 2020, we plan to determine the need / demand for kits of activities that planetary scientists can “check out” for use with different audiences. These would include materials for simple hands-on activities appropriate for a broad range of ages, that demonstrate particular aspects of planetary science. We are also planning to create a variety of powerpoints on assorted planetary topics, for planetary scientists to revise for use with different audiences.

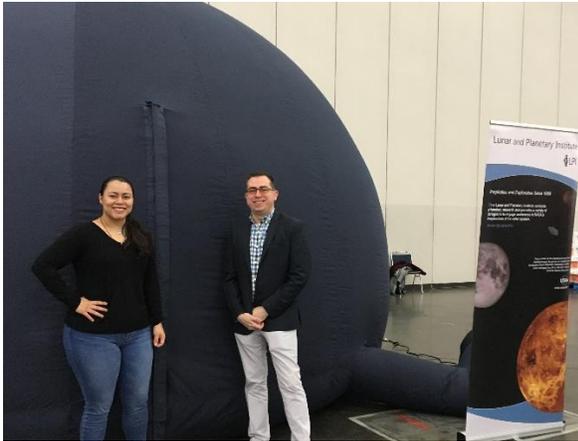


Figure 3. Scientists presented planetarium shows at the Toys for Kids event in downtown Houston, for underprivileged families.

Connections with Audiences: We host a variety of public events and invite planetary scientists to participate as speakers and as activity facilitators. Our team connects scientists with requests for presentations, both locally and virtually, and provides opportunities for scientists to conduct activities during public events.

We are exploring ways to help scientists connect with different audiences, and to partner with organizations, particularly those serving audiences under-represented in STEM. We are happy to help scientists connect with different organizations in their area, to participate in events at museums, planetariums, libraries, and more. There is a large demand for exciting speakers and for scientists interested in sharing their science with the public.

Conclusion: We plan to continue efforts in 2020, exploring new topics in professional development for planetary scientists, with input from the community. Online participation in the online seminars increased in

2019 and is expected to continue increasing. We anticipate repeating *Planetary Scientist Engagement Institutes* in future years. We intend to collect data on the impact that participating in public events has on scientists themselves.

References: [1] Thiry H., Laursen S.L., and Hunter A.B. (2008) Professional Development Needs and Outcomes for Education-Engaged Scientists: A Research-Based Framework. *Journal of Geoscience Education* 56.3 (2008): 235-246. [2] Grier J. A. et al (2002) Defining Long Term Goals and Setting Priorities for Education and Public Outreach. The Future of Solar System Exploration (2003-2013) - Community Contributions to the National Research Council Solar System Exploration Decadal Survey, *Astronomical Society of the Pacific Conference Proceedings* 272, 393-412. [3] Grier J. A., Buxner S., Schneider N. (2014) Preliminary Results from a Survey of DPS Scientist's Attitudes, Activities and Needs in Education and Public Outreach. *DPS*, Abstract #202.02. [4] Shupla S. et al (2018) Preparing Planetary Scientists to Engage Audiences, LPSC 49, Abstract #2168. [5] Shupla S. et al (2019) Professional Development for Planetary Scientists, LPSC 50, Abstract #1847.

Additional Information: For more information on LPI's professional development for scientists or to provide suggestions, please contact Christine Shupla (shupla@lpi.usra.edu).