

**SPACE SCIENCE IN CONTEXT: LESSONS LEARNED AND RECOMMENDATIONS FOR IDEA PRACTICE AND BEYOND.** D. M. Persaud<sup>1</sup> and E. S. Armstrong<sup>2</sup>, <sup>1</sup>Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California, USA (divya.m.persaud@jpl.nasa.gov), <sup>2</sup>Dept. of Mathematics and Science Education, Stockholm University, Sweden.

**Introduction:** We present an overview of Space Science in Context (SSiC) 2020 conference, which brought together a community of scholars interested in developing interdisciplinary knowledge and practice around contexts of space science research globally. We then describe two key lessons learned from the event and develop four key recommendations for the community: put aside funding for IDEA (inclusivity, diversity, equity, accessibility) projects; develop events in dialogue with communities; include expertise across fields; and prioritize the needs of those most marginalized in the field.

**Space Science in Context 2020:** SSiC (held on 14<sup>th</sup> May 2020) was a virtual conference engaging planetary scientists with science & technology studies (STS) and other scholars. We reached 450 registrants and, in lieu of a registration fee, raised £1000 for a COVID-19 fund. Our global contributors included 12 main speakers (please see the supplement) and 30+ e-poster presenters from a range of disciplines exploring themes related to space and society. We held three themed panels on Decolonising Space; Computing, Technology, and Space; and Space and Society. The event was held digitally on spacescienceincontext.wordpress.com and live with Microsoft Teams, and remains online for future access.

Many of our participants were based in the UK, across university institutions, independent research bodies, and cultural sector projects. Further, we reached audiences across Europe—including Austria, Belgium, France, Germany, Greece, Luxembourg, Netherlands, Portugal, Spain, Switzerland, Russia, the UK, and Ukraine—and extensively in the Global South. We had contributors from European collaborations in industry (e.g., Ball Aerospace, Eutelsat, Measat Satellite Systems, Vertic); museums; space agencies (ESA, NASA, JAXA); and across academia.

SSiC 2020 centered equality and accessibility [1]. The event employed a flipped-classroom model: pre-recorded talks and e-posters online, question asking in advance, and discussions at the live event and on social media. We delivered full captioning and transcripts of media; a website compliant with WCAG 2.1; and access guidance and policy for media and conduct, adapted to the virtual environment. 18-26% of the UK/EU/US is disabled, compared with ~4% of UK academics; however, 25% of respondents declared that they were disabled and/or neurodivergent, suggesting that the access measures effectively supported disabled attendees. 80% of respondents felt SSiC 2020 supported their needs, including mitigating “sensory overload

experienced at traditional conferences”; allowing “as little speaking and as much typing as [comfortable]”; having a questions format that enabled those “too anxious to ask a question” otherwise; and facilitating attendance “while fasting, which would have been impossible in a regular conference format.” Moreover, 75% of attendees reported that they were more likely to focus on access at events they organized, demonstrating a change in audience perceptions.

SSiC 2020 had a diverse invited speaker roster and subject matter—ranging from LGBTQ+ representation in space science to science education engaging underrepresented groups—both of which stimulated discussion between senior and junior academics. This was remarked upon by attendees, one noting it was “fantastic to see speakers and presenters that represented what the future of space science should look like.” 69% of the respondents felt that it had been useful for networking and community building (in marked contrast with many other digital conferences that have followed in the pandemic), with notable development of opportunities for presenters.

Our conference policy has had significant social impact in its use to change conferences and online meetings globally. Within the planetary science community, the conference policy has been featured in [2], and cited in two white papers submitted to the NASA planetary decadal survey [3, 4]. We have adapted it for other conferences across industry, government, and academia in the US and Europe. We are enthusiastic to support others to use this model and policy to improve their own events. The format has also set an example of equitable virtual meeting for other fields of STEM (e.g. [5, 6]).

**Lessons learned:** We specifically highlight two lessons learned from SSiC that will stimulate the IDEA community.

*Access at the heart of the event.* SSiC was motivated by understanding that academic conferences across fields are inaccessible for a variety of reasons, including costs, other attendees, and lack of provisions and support for individuals to access content [7]. This emphasis meant that the community who attended was more diverse than in other spaces, which many participants reported as being the result of knowing that their needs would be met.

*Interdisciplinarity is fundamental to developing IDEA practice.* SSiC has been built from the ground up as an interdisciplinary collaboration—from the two organizers and their own backgrounds, to the panel selection, the venues of advertising the conference, and,

consequently the audience. Because disciplinary specialization happens early and is deeply ingrained in professional cultures, creating spaces that facilitate sharing information and building new directions is invaluable. This is particularly vital in IDEA practices within STEM which often fall to unpaid labor of invested individuals. Building the event from an interdisciplinary foundation brought in expertise and helped develop a community that was situated in both disciplinary areas and pluralized the connections and experiences that were brought into the event.

**Recommendations from the practice:** We make the following recommendations:

*Money and funding.* Many of these practices require funding and it is vital that this funding is not an after-thought for IDEA-oriented work, but is fundamentally woven into larger structures of work, planning and development, and tenure and promotion practices if it is to be taken seriously and it make change within fields of research. This includes paying speakers and organizers, and meeting access needs for those involved and attending the conference. We recommend that funding is made available throughout organizations to support IDEA practices from the outset.

*Ask the community what access provisions are required, and then implement as many of them as possible.* There are many access-based reasons that people cannot attend events. While the topic of SSiC is about IDEA- and justice-based content, it should not only be IDEA conferences that center access in their development. We recommend that all conferences are developed in conversation with participants in the field, from the outset.

*Include expertise across fields.* There is significant expertise across disciplinary fields (and within them). We recommend building authentic connections across disciplines that bring together different knowledge areas and practices within IDEA spaces and beyond.

*Prioritize those who are most vulnerable within the community.* Throughout SSiC we worked to prioritize those who are often excluded from other spaces in the space science research. We did this through implementing and upholding strong codes of conduct that were zero-tolerance, including of having harassers at event. We recommend that future events within the field take seriously what it means to make these spaces 'inclusive' and to center the needs of those who have experienced harm in the profession.

**Future directions:** Funded by the Royal Astronomical Society's Grant for Meetings, Space Science in Context will be reprised in October 2022. At the time of this conference, pre-registration will be open for any IDEA meeting attendees to express interest and give feedback to shape the format of the event.

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**Additional Information:** Further information on the conference, as well as the SSiC 2020 content, is available at the SSiC website: <https://spacescienceincontext.wordpress.com/>

**References:** [1] Persaud, D. M., Armstrong, E. S., 14<sup>th</sup> Europlanet Science Congress, 2020, ab. 211. [2] Diniega, S., et al., LPSC LI, 2020, ab. 2482. [3] Strauss, B., et al., 2021, *Bulletin of the AAS*, 53(4). [4] Diniega, S., et al., 2021, *Bulletin of the AAS*, 53(4). [5] Pang, H., et al., *Canadian Journal of Physician Leaders*, 7 (1), 51-56, 2020. [6] Stivison, E., "Conferences for All," *ASBMB Today*, 2021. [7] Armstrong, E. S., Persaud, D.M., Jackson, C. A.-L., 2020, *Physics World* 33 (9).