Scientific Meetings for All

Two organizations found ways to be more intentional about encouraging participation by a diverse spectrum of attendees at scientific meetings—the scientific community can learn from their experiences.

Scientific meeting organizers can take specific actions to ensure that all scientists have the opportunity to fully contribute and to be heard and valued. Credit: Eliott Foust, National Center for Atmospheric Research

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Meetings and workshops are where scientists exchange ideas, foster collaboration, and reconnect with colleagues. Even as virtual interactions become commonplace, gathering in physical locations is still essential for building relationships and trust, being exposed to new ideas, and bridging perspectives on challenging problems. However, not all scientists have the opportunity to fully contribute at scientific meetings, and their attendance doesn't guarantee that their ideas are heard or valued.

As awareness of inclusiveness issues grows, our community is actively developing and successfully providing resources for inclusive scientific meeting planning.
Some members of our scientific community are left out because of barriers they encounter [*National Science Board* (https://www.nsf.gov/nsb/publications/2015/nsb201510.pdf), 2015]. Attendees with mobility, sight, or hearing limitations may lack accessibility to meeting venues or facilities. Attendees with families may lack childcare (https://eos.org/opinions/caregiver-awards-support-early-career-researchers) or care for other family members who require it. Other attendees may lack safe bathroom spaces where their choice of which bathroom to use is not questioned or challenged and where they can summon help if necessary. Still others are targets of harassment and assault. These issues have led some to avoid networking events at conferences or not to attend conferences altogether, at significant cost to their careers [*National Academies of Sciences, Engineering, and Medicine* (https://doi.org/10.17226/24994), 2018].

The scientific challenges and opportunities facing the scientific community demand novel approaches and ideas that will only come from a diverse, engaged scientific workforce. As awareness of inclusiveness issues grows, our community is actively developing and successfully providing resources (https://sparcopen.github.io/opencon-dei-report/) for inclusive scientific meeting planning (https://opensky.ucar.edu/islandora/object/manuscripts:983). It is time for scientists to commit to implementing these lessons to ensure that scientific understanding advances and continues to be applied for the benefit of all of society.

Developing Guidelines for Inclusive Meetings

Two meetings, including a workshop series and a conference, illustrate some of the ways that conference organizers can intentionally increase access (https://u.osu.edu/composingaccess/) to attendance and participation.

In May 2018, the Aspen Global Change Institute (AGCI) partnered with the Earth Science Women's Network (ESWN) and 500 Women Scientists (500WS) to identify concrete ways to advance diversity, equity, and inclusion (DEI) in science workshops, including the workshop series hosted by AGCI. Four of the authors of this article were part of a group of 22 individuals with expertise in diversity and inclusion in science that met to identify specific actions that could be implemented in workshop planning, execution, and follow-on activities. Recommendations from this meeting were synthesized in "Inclusive

Scientific Meetings: Where to Start (http://dx.doi.org/10.5065/1hjh-yf38)," published on ESWN's and 500WS's websites.

AGCI implemented these guidelines during its 2019 workshop season (May–September). For 30 years, AGCI's interdisciplinary workshop series (https://www.agci.org/sciencesessions) has advanced understanding of global change topics such as food system impacts of climate change, energy decarbonization pathways, climate modeling, and land use impacts on the Earth system. Each weeklong workshop creates opportunities for scientists to learn, ideate, and initiate new approaches to global change challenges. New protocols implemented in many aspects of the AGCI workshops dealt with the selection of topics, leadership, and participants, as well as registration, workshop environment, and program evaluation.

Meanwhile, another committee (which included several of the other authors of this article) was planning the conference (held 2–4 April 2019 in Boulder, Colo.) that initiated the Environmental Data Science Inclusion Network (https://edsin.qubeshub.org/) (EDSIN), supported by the National Science Foundation's program Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science (NSF INCLUDES (https://www.includesnetwork.org/home)). Broadening participation in science, technology, engineering, and mathematics is a core tenet of the NSF INCLUDES program, so hosting an inclusive event was a priority for the committee. Committee members sought suggestions from colleagues and also pulled best practices from online sources. They paid particular attention to ensuring that participants drove the conversation according to their expertise. The resulting conference plan adopted an unconference format (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4310607/) that allowed researchers, practitioners, evaluators, and employers to set an agenda to examine DEI across the environmental and data science fields.

Putting the Plans to Work

Research shows that individuals who are already underrepresented in their fields often also experience underrepresentation in front of the podium at conferences.

The AGCI workshops and EDSIN conference were learning opportunities for implementing inclusive practices (https://www.edcamp.org/) at scientific meetings. Research shows that individuals who are already underrepresented in their fields often also experience underrepresentation (https://www.nature.com/articles/d41586-019-03688-w) in front of the podium at conferences. So a critical first step was the commitment of the organizing committees to ensure diverse representation among both attendees and presenters.

Conveners invited experts who would bring different perspectives, including those who were involved in diversity-focused professional societies or were from minority-serving institutions. AGCI required cochairs to cite how each potential participant's expertise and background met the needs of the workshop

and encouraged organizers to use resources such as 500 Women Scientists' Request a Woman Scientist (https://500womenscientists.org/request-a-scientist) database. The EDSIN organizing committee sent invitations to 113 potential participants. They also tailored messages to different listservs and identified social media handles and hashtags to solicit participants beyond the committee's existing networks. Final selection was based on independent reviews using a rubric aligned with conference goals.

Both organizations explicitly offered additional support to increase the accessibility of their events. Attendee registration forms requested information on access requests, dietary needs, and other accommodations. AGCI covered travel, hotel, and registration costs for all participants, and they offered stipends to those for whom caretaking responsibilities might have been a barrier to participation. EDSIN covered costs of travel, hotel, and registration for all attendees requesting support. They also prioritized identifying an accessible venue with inclusive amenities such as gender-neutral restrooms, and they reserved a quiet reflection space for anyone needing a break during the event. EDSIN also offered closed-captioned livestreaming and a Twitter backchannel (https://twitter.com/hashtag/EDSIN) so interested individuals who could not attend in person were still able to participate.

Starting meetings with calls to inclusivity underscores that every individual in the room comes with unique and valuable experience and expertise that are key in advancing solutions to the topic at hand. Credit: Eliott Foust, National Center for Atmospheric Research

AGCI and EDSIN both started their gatherings with calls to inclusivity. At the outset of each workshop, AGCI staff underscored that every individual in the room came with unique and valuable experience and expertise that were key in advancing solutions to the topic at hand. AGCI introduced workshop-specific methods—participants raising their name tents and waiting to be called upon by session moderators, for example—for engaging in discussion to ensure that everyone had an opportunity to be heard. Further, AGCI's code of conduct was printed on cards that were inserted into each participant's name tag sleeve for easy access. The card included instructions for how to report violations to the designated staff person.

At the EDSIN conference, a code of conduct was made available online and at the event, and it was verbally presented at the beginning of the conference. Participants were encouraged to follow the guidelines and to report any inappropriate behavior.

Progress and Challenges

The journey toward inclusion is iterative, and each meeting presents the potential for new challenges and lessons learned.
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During postconference reviews, it became apparent that budgeting remains a challenge for both organizations. AGCI encountered obstacles securing funding to support workshops proposed and led by early-career scientists, whereas more established and senior scientists were typically better connected and more able to communicate workshop ideas with the program managers who allocate funding. However, early-career participants are also more likely to be from underrepresented groups, which provides additional motivation for the extra effort to promote these scientists' ideas in the workshop discourse.

During a postconference committee meeting, EDSIN conference planners noted that budgeting for resources to improve accessibility and inclusion is critical. Organizers need to account for access requests so they can provide accommodations such as sign language interpreters, Braille translation, and speaker fees. Hiring professional facilitators can be expensive, but they can help maximize progress during challenging discussions. Facilitators can also help avoid the pitfalls of poorly led discussions (https://www.theguardian.com/commentisfree/2019/mar/28/confronting-racism-is-not-about-the-needs-and-feelings-of-white-

people), which can potentially cause more harm than good in building support for broader participation and inclusivity in workshops.

Not all challenges relate to money, however. For example, a land acknowledgment (https://americanindiansinchildrensliterature.blogspot.com/2019/03/are-you-planning-to-do-land.html) is considered an inclusive practice for acknowledging the history of Indigenous peoples and the impact of colonization. However, there are many differing opinions on the practice, including when it is appropriate and who should be engaged in developing and giving the acknowledgement. At EDSIN, these challenges were brought to light when the conference chair (a white woman) delivered a land acknowledgement that was received in different ways by attendees, including members of the Indigenous community. Every event will have to work with local Indigenous populations to determine the best approach for their venue and to ensure the acknowledgement achieves its intended purpose.

Other challenges included the additional time needed to search for diverse attendees outside the organizers' personal networks, mitigating power dynamics between early-career and more senior participants, and the unwillingness of presenters to make their materials available to workshop organizers in advance so that these materials could be adjusted for accessibility.

Despite these challenges, both AGCI and EDSIN had positive outcomes in their meetings. AGCI averaged 36% female participants in their 2019 series of workshops, up from 30% in 2018 and 12% at the series outset in 1990. One of their four 2019 workshops achieved a 50:50 balance between attendees who identified as male and those who identified as female—only the second time this has occurred in AGCI workshop history. An average of 34% of participants were early career in the 2019 series, rising from 22% in 2016–2017 and 27% in 2018. Numerous participants gave informal verbal and formal written feedback, commenting that the workshops they attended were the most inclusive they had experienced. Many also mentioned feeling more comfortable and included as a result of the opening inclusivity presentation made by AGCI leadership.

EDSIN received 260 total applications to attend its conference, which resulted in an at-capacity event with 104 in-person attendees and 68 unique livestream viewers. EDSIN attendees represented 15 minority-serving institutions (https://www.doi.gov/pmb/eeo/doi-minority-serving-institutions-program) and included 21 people who self-identified as a person of color and 7 people who self-identified as having a disability. Of 82 respondents to a postconference evaluation, 93% indicated that participation was worth their time, and 85% indicated that their contributions to discussions were heard and valued.

What Scientists Can Do

Scientists must actively commit to holding ourselves, one another, and our organizations accountable.

Scientists have an opportunity and an obligation to be change agents in their communities, but we must actively commit to holding ourselves, one another, and our organizations accountable. At an individual level, this commitment can mean advocating for inclusive practices in lab group meetings, department retreats, field team meetings, and other scientific endeavors. Panelists invited to speak at conferences can ask who else was invited and request a more diverse group if needed. Meeting organizers and session chairs can adopt inclusive practices (https://discover-cookbook.numfocus.org/) and document methods and outcomes with conference proceedings and workshop reports.

At an institutional level, we as a community can demand higher standards regarding inclusive practices at our research institutions, companies, colleges and universities, and professional societies. In many organizations, such standards have already been codified, as in the case of AGU's Diversity and Inclusion Strategic Plan (https://ethics.agu.org/agu-diversity-and-inclusion/), although it is incumbent on individuals to help hold these organizations accountable to their own stated goals. By sharing this guidance, specific how-to suggestions, and experiences implementing recommendations during recent meetings, we hope to empower scientists to make significant progress toward more inclusive meetings and to broaden participation in the scientific community.

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