

The consequences of conferencing

With the easing of the global COVID-19 pandemic, conference organizers now have the option to return to in-person conferencing once again. Early indications show that they are keen to do so, largely without any online-access possibility, despite the manifold benefits of virtual attendance.

The relaxation of COVID-19 regulations and the relative mildness of the omicron variant have made it possible once again to hold in-person conferences with a reasonable degree of safety. As the astronomical and planetary science communities filter back into the routine of meeting face-to-face, we are at a watershed moment: will we return to the conferences of old, with solely an in-person component, will we stick with the virtual model we have adopted in the last couple of years, or will we prefer a hybrid model, taking advantage of this change in mode to reinvent conferencing?

This choice is complex and multi-faceted and there are pros and cons of each option. Last year we published an [in-depth discussion on this topic](#), but briefly: in-person conferences offer more natural social interactions and networking that can be important for early-career researchers, but they often come with a hefty carbon footprint in a time of climate crisis, and they can provide barriers to accessibility for those with constraints of a financial, physical, mental, geographical, political, familial or caring nature. Virtual conferences often struggle to offer effective networking opportunities, and can lack the engagement of an in-person conference and therefore affect scientific communication; however, they greatly reduce access barriers and, as we have shown, shrink carbon footprints by orders of magnitude. Hybrid conferences try to offer the best of both worlds, but can involve inflated costs, and usually require more staffing and organization.

We have several data points already. The calendar year opened with the cancellation of the 239th American Astronomical Society (AAS) meeting due to COVID-19. This meeting is usually the largest astronomy meeting of the year in the Americas. Taking the list of conferences provided by the Canadian Astronomy Data Centre (CADC), the first three months of 2022 were dominated (~70%) by virtual meetings. However, in April, the mode flipped: ~85% of conferences were entirely in-person, with only one offering a virtual option.

The first large meeting of Northern spring was the Exoplanets 4 conference in Las Vegas, USA, in May and was

predominantly in-person. It was an international conference, attracting roughly 500 attendees. The meeting drew some criticism for its lack of a virtual attendance, especially since the organizers, the AAS, had successfully held several large-scale virtual conferences during the pandemic period. Also criticized were the high costs associated with registration and accommodation, and the lack of public transport options for reaching the location. At least 20 attendees also reported themselves COVID-positive during or shortly after the meeting, despite a strong COVID-19 policy (vaccination requirement and masking). Soon afterwards, roughly 600 attendees travelled to Atlanta, USA, for the Astrobiology Science Conference (AbSciCon), with some sessions also available to online audiences. There were six reported COVID-19 cases, with a strong COVID-19 policy in place. In contrast, another spring meeting incurred a high number of COVID-19 cases: IAU Symposium 361 on massive stars, held entirely in-person in Ireland, was responsible for ~50 cases (out of an attendance of ~200). This outbreak caused some international attendees to extend their stay in Ireland. There were no requirements for vaccinations or masking.

Nearly half of conferences were strictly in-person during May and June, with another third offering some form of hybrid attendance (usually livestreaming of selected talks or sessions). In keeping with this, at the end of June, the European Astronomical Society (EAS) held their annual meeting in Valencia, Spain, drawing more than 1,700 attendees. Remote attendance was not allowed (even for speakers), although plenary sessions were streamed and the members' business meeting included an interactive online component via Zoom. This meeting too has drawn criticism for the lack of a global virtual option, following two very well-attended online annual meetings, and the quantitative assessment of the conferences' carbon footprint in both modes of attendance. In this issue of *Nature Astronomy*, we publish an open letter from most of the EAS Advisory Committee on Sustainability, who castigate the meeting organizers for going against their advice in this respect. The meeting

organizers had been guarded about the reasoning for not offering a virtual mode in addition to physical; an e-mail from the chair of the meeting organizing committee that was shared with *Nature Astronomy* acknowledges that 'ethical' considerations (meaning accessibility and carbon footprint) had been downplayed this year and that the organizing committee wanted to gather people together after a two-year break. The formal response from the EAS Council, also published in this issue, reiterates the desire to bring people together again in order to network — beneficial for early-career scientists in particular — and discloses the prohibitive cost for adding an interactive online component to the meeting.

Ethically it is clear that the way we organize conferences needs to change: equity, accessibility and environmental responsibilities should not be relegated to the 'nice to have' options for conference organization. However, it is also clear from the rush back to exclusively in-person meetings that progress will be slow. These different attitudes can be exemplified by the contrasting comments from one spring conference organizing committee: "The [Scientific Organizing Committee] believes that physical presence at the workshop is a very important ingredient for its success" and another: "online meetings have a significantly wider reach within the community, due to factors such as reduced pressure on funds [...], care and local responsibilities, and difficulties with travel. This, combined with the significant contributions to greenhouse gas emission resulting from travel to in-person conferences, and the ongoing threat of infection and regulations related to the coronavirus pandemic, the choice was made to hold IR 2022 virtually" (a quote from the [IR 2022 Meeting Report](#) featured in this issue). This is not to say that all conferences should be fully virtual — because that is clearly not ideal either — but that an inclusive and interactive online option should be generally factored into conference organization as part of standard (and ethical) best practice. □

Published online: 18 July 2022
<https://doi.org/10.1038/s41550-022-01749-1>