Decarbonising conference travel: testing a multi-hub approach

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Background and Motivation

SPARC community driven idea

- Discussion around the carbon footprint impact of SPARC meetings started at a DynVAR/SNAP meeting in Madrid in 2019.
- Researchers (incl. several ECRs) suggested a multi-hub conference approach to reduce the carbon footprint related to conference travel but at the same time, retaining face to face interaction → a compromise between a traditional single site conference and a fully online meeting.
- Charlton-Perez et al. (2021) proposed a multi-hub approach for SPARC GA, which was implemented in 2022.

Motivation

- For many researchers, the high footprint associated with in-person travel to international scientific conferences presents an urgent ethical dilemma.
- We need to find new ways to reduce the carbon budget of conference travel, work on multi-hub formats suggests substantial reductions (around 80%, Klöwer et al., Nature 2020).
Calculating the carbon footprint (travel only)

Gathering information
• Registration requested every attendee to provide their travel details to attend the conference (departure city, the destination city, and travel mode).

Calculate footprint
• Travel distances and associated GHG emissions were calculated using a mobility-service app (Wegener Center of the University of Graz, Austria) and emission factors provided by mobitool.
• Emissions factors depend on the countries that the traveller crossed.
• The tool distinguishes between short and long-haul flights, and works with real travel distances, using train maps and street maps for trains, cars, and buses.

Results
• Average travel carbon $\rightarrow$ 885 kgCO$_2$eq per attendee
• The multi-hub model reduces the travel carbon footprint by a factor of up to 4.1 (depending on location).

Figure 1: GHG emissions because of travel to the SPARC multi-hub conference, given in [tCO2eq], and the individual contributions for three conference venues and virtual attendance.

Did it work?

- **Yes, it did!** – clearly the conference achieved one of its aims in reducing travel GHG emissions compared to a single site conference.

- To understand if this came at too high a cost to the aims of the conference, we asked participants to complete an online survey at the end of the conference: “Was the reduction in carbon worth the carbon saving?”
  - It was not: 23%
  - The emission saving was worthwhile even though the conference was worse than a single site conference: 34%
  - The multi-hub format was the same or better: 41%

- The judgement was similar across career stages and the majority would attend another multi-hub conference.

What could be improved on?

- Travel emissions estimate: Include questions around travel mode to/from airports/train stations.
- Interaction between poster presenters and participants from different hubs and for online poster presenters was lower than we had hoped.
- The format also necessitated long conference days, but there are ways to work around this.
- Collaborative discussions in the breaks were limited to attendees of an individual hub. – provide [dedicated quiet sessions and online tools to enable collaboration](#) and personal connection with online poster presenters and researchers from different hubs.
Lessons learned

• **Invest in professionals**: high-quality, technical support to setup the technology, solve problems as they occur and keep the conference flowing.

• **Invest in required technology**: The multi camera setup in each hub gave a sense of immediacy and cross-hub conversation.

• **Do not underestimate the work for the local organisers**: Everything needs to happen three times, often in slightly different ways. Finance, visas, travel are all different between the three hubs and there is some additional financial exchange rate risk.

• The **importance of playing the recorded talks** in the main lecture hall was underestimated. A large proportion of attendees were present for all the recordings and even clapped when the recorded talks finished.

• **Closed captions**: we should have invested more time in producing closed captions for the talks which would have been beneficial for both online and in-person participants.
Thank you

If you are considering a similar conference approach the organizers would be happy to share their data and experience. (contact: sparc-office@dlr.de).