

IACS action plan to implement IUGG Resolution 1: Reducing the Carbon Footprint by the Research Community

Adopted at the IACS Annual Business Meeting (held online) on 6 September 2021

1. History

IUGG adopted '**Resolution 1: Reducing the Carbon Footprint by the Research Community**' at the General Assembly in Montreal in July 2019 (see Appendix 1), resolving that the research community should "exhibit an exemplary attitude by modifying its professional practices in order to rapidly reduce its carbon footprint".

In response, the IACS Bureau adopted the following resolution on March 27, 2020 by e-voting: "*IACS is committed to supporting IUGG "Resolution 1: Reducing the Carbon Footprint by the Research Community" adopted at the 2019 General Assembly in Montreal, by reducing travel (particularly by air), related to symposia organization and other IACS business.*

IACS acknowledges the importance of close ties and communication with the local organizers of IUGG and IACS Assemblies, and will strive to provide input via video-, tele-conferencing or other suitable means, rather than participating in site visits that require carbon-intensive travel. Video-conferencing will also be used to conduct annual bureau meetings between IACS Assemblies and to allow remote participation in bureau meetings at the Assemblies"

At IACS Bureau Meeting 18 in November 2020, the IACS Bureau agreed that an *ad hoc* committee (Andrew Mackintosh, Charles Fierz, Liss Andreassen, Regine Hock, Richard Essery) would further develop, clarify and strengthen this implementation through an action plan that includes concrete steps to reduce the IACS carbon footprint with a focus on reducing air travel.

2. Background

The climate impacts of conference travel have received increased attention in recent years (Jäckle, 2019; Klöwer et al. 2020). Long-haul flights are the main source of carbon emissions for international scientific organisations and associated conferences. For example, one return flight between Hong Kong and San Francisco releases more CO₂ than does the average British person's activities over an entire year (Klöwer et al. 2020). IACS as an Association, and through its relationship with IUGG, is associated with a relatively large amount of international travel. This is partly because of the international nature of IACS (with representation from many different countries and continents), and the practice of conducting some IACS business and hosting scientific meetings in person.

During the COVID-19 pandemic in 2020/2021, the use of video conferencing platforms such as Zoom and Teams has become normalised. These platforms provide a stable, high-quality video environment for delivering and sharing presentations and facilitating discussion. In light of the IUGG resolution and the successful widespread uptake of video conferencing, we have reassessed what constitutes *necessary* travel and will modify our practices accordingly.

Running meetings in an online-only or hybrid (mix of in-person and online) format has several co-benefits beyond reducing the carbon footprint. It has the potential to introduce and engage a larger number of scientists than a traditional in-person meeting, including a greater number of scientists who are unable to travel. Impediments to travel disproportionately affect particular groups of people and vary with stage/type of career; in-person-only meetings therefore systematically minimize the participation of these groups. The 2020 (with no registration fee) as well as the 2021 EGU General Assembly (with a registration fee) attracted >50% more participants than usual because it engaged a wider community than the traditional in-person-only format.

Evidence also suggests that a greater number of people engage in text/chat-based discussions at online meetings. This engagement is an additional benefit alongside reducing the carbon footprint and increasing the diversity of the conference attendees.

The main disadvantage of online meetings is the reduced ability to socialise and build collegial relationships with peers (Raby and Madden, 2021). Our overall strategy needs to balance reducing our carbon footprint, while continuing to provide meaningful opportunities to cultivate professional relationships. The latter necessitates some in-person meetings.

Klöwer et al. (2020) make the following useful suggestions for academic associations and professional bodies such as IACS and IUGG:

“Such groups should support the reorganization of conferences around emissions, virtual participation and inclusivity. They should set criteria for funding conferences – those that ignore emission targets should not be supported. As a first step, there should be an immediate move to biennial conferences, with fully virtual meetings in alternate years.”

3. Action plan on reducing carbon footprint

Based on the considerations above IACS adopted the following **action plan** to implement **IUGG’s Resolution 1: Reducing the Carbon Footprint by the Research Community’** at the IACS Bureau meeting held virtually on 6 and 13 September 2021.

a. IACS Assemblies (other than IUGG General Assemblies)

As a constituent organisation of IUGG, IACS hosts a major in-person scientific meeting every two years, one of which is in conjunction with the General Assembly of IUGG held every 4 years. In-person meetings bring many benefits, including networking opportunities and time for in-depth discussion of scientific and administrative issues. IACS supports the continuation of air travel to these bi-annual meetings, although IACS will work to reduce the overall carbon footprint of these meetings with the following actions:

1. Meeting locations should be optimised to reduce travel (for example by holding meetings at or near transport hubs or global population centres). This suggestion needs to include equity and diversity considerations. IACS has a unique international character, and meetings should not repeatedly be held in the same parts of the world but at least periodically be distributed between continents and hemispheres.
2. IACS Assemblies should encourage and facilitate more online engagement to complement the in-person programme.
3. IACS encourages the use of ground transportation instead of air travel, in particular if the meeting site can be reached in under eight hours by ground transportation.
4. If air travel cannot be avoided, IACS officers should consider carbon offsets for their flights.
5. IACS will carry out scientific program planning meetings for IACS Assemblies, but from 1 January 2022, IACS participation will be via video-conference for any stand-alone business meetings not held during an IUGG General Assembly. In-person participation may only be supported if the program planning meeting site can be reached by train or other ground transportation.

b. IACS Bureau Meetings

IACS is required by its statutes to hold a formal Bureau Meeting every 12 months. Based on our previous success with telecon meetings, we stipulate the following requirements for IACS Bureau Meetings:

1. Bureau Meetings will be held either entirely via teleconferencing or as hybrid meetings¹. In the latter case the location of IACS Bureau Meetings should be optimised to coincide with other scientific meetings that Bureau members, in particular the Executive committee (President, Immediate Past President or President-Elect, Secretary General), already plan to attend.
2. In-person IACS Bureau Meetings must be hosted at institutions that provide high-quality video conferencing facilities such as scanning or wide-angle cameras and multiple microphones, to ensure good integration between in-person attendees and those dialling in.

c. IACS Meetings (ad hoc)

Other ad hoc meetings (not connected to an IACS Scientific Assembly) involving IACS officers should primarily be held via teleconferencing. In-person meetings that involve air travel must be approved by the Bureau and will only be approved in situations where an in-person meeting is deemed essential, or considerably more effective than a videoconference, and the meeting site cannot be reached in under approximately eight hours by train or other ground transportation. IACS should consider sending IACS representatives who are located close to the meeting site when possible and suitable. An example of such an ad hoc meeting might be a review of an IACS service or the evaluation of materials that are not available digitally.

d. IUGG Business Meetings

IUGG holds a number of business meetings where attendance of the IACS President and Secretary General is expected. This includes IUGG Executive Committee (EC) and Scientific Programme Committee (SPC) meetings, the latter of which has typically been associated with a site visit to a future IUGG General Assembly venue.

IACS will continue to participate actively in IUGG business meetings, but from 1st of January 2022, IACS representatives will participate via video-conferencing for any stand-alone business meetings not held during an IUGG General Assembly. In-person participation is only supported if the IACS officers travel to the meeting site by ground transportation (preferably by train or similar). Air travel may only be approved in exceptional cases where an in-person participation is deemed essential, and the meeting site cannot be reached in under approximately eight hours by train or other ground transportation. If suitable, another Bureau Member located closer to the meeting site may be appointed to represent IACS as a substitute for the designated officer.

e. Travel grants

IACS travel grant recipients must use train or other ground transportation to attend an IACS / IUGG Assembly if the meeting site can be reached in under approximately eight hours using available modes of ground transportation.

References

Jäckle, S. WE have to change! The carbon footprint of ECPR general conferences and ways to reduce it. *Eur. Polit. Sci.* **18**, 630–650 (2019). <https://doi.org/10.1057/s41304-019-00220-6>

¹ Defined as a meeting where two or more Bureau Members are at the same physical location while all other members are at different locations joining via teleconferencing.

Klöwer, Milan, Debbie Hopkins, Myles Allen, and James Higham. An analysis of ways to decarbonize conference travel after COVID-19. *Nature* 356-359 (2020).
<https://doi.org/10.5281/zenodo.3553784>

Raby, C.L. and Madden, J.R. Moving academic conferences online: Aids and barriers to delegate participation. *Ecology and Evolution*, 11(8), 3646-3655 (2021).
<https://doi.org/10.1002/ece3.7376>

Appendix 1

Resolution 1: Reducing the Carbon Footprint by the Research Community *The International Union of Geodesy and Geophysics*

Considering

The clearly established impact of human activity on climate change and biosphere degradation,

Acknowledging

The irreversible consequences of continuing the current trajectory of greenhouse gas emission for the ecosystems of the planet and human societies,

Noting

That the Intergovernmental Panel on Climate Change (IPCC), in its recent special report on the impact of global warming of 1.5° C (IPCC, 2018; <https://www.ipcc.ch/sr15/>),

- Demonstrated the dramatic differences between the consequences of warming of 1.5°C and 2.0°C above pre-industrial levels, and
- Showed that limiting the warming to 1.5°C could be obtained only by strongly reducing carbon dioxide emissions before 2030,

Urges

- IUGG and affiliated Scientific Associations to take carbon footprint criteria into account when choosing the venue of future meetings, and
- The participants of the 27th IUGG General Assembly, research institutions and individual researchers to contribute to an unprecedented effort to evaluate and reduce greenhouse gas emission impact on the environment.

Resolves

The research community, which is well aware of the origins and impact of climate change, should exhibit an exemplary attitude by modifying its professional practices in order to rapidly reduce its carbon footprint.