



S11: Evaluating the climate impacts of solar geoengineering

Host: **Peter Irvine** (*Harvard University, USA*)

Co-hosts: Helene Muri (*University of Oslo, Norway*), Ben Kravitz (*Pacific Northwest National Laboratory, USA*)

Rapporteur: Jonathan Donges (*PIK, Germany*)

Summary of themes covered in workshop

The workshop discussed different forms of geoengineering with a focus on solar geoengineering or solar radiation management (SRM). The four presentations and following discussion focussed on diverse climate impacts of geoengineering onset and termination, of different mixes of emission mitigation, SRM and carbon dioxide removal and geoengineering as a design problem.

Most controversial question that came up in this workshop?

What is the risk of collateral triggering of climate tipping element by (even limited) solar geoengineering?

What are the ethical and political tensions that could be induced by (even limited) solar geoengineering, particularly with respect to expected changes in the hydrological cycle, shifts in precipitation patterns and possible damage to the stratospheric ozone layer by sulfur particle emissions?

Results of the discussion

Assessment of solar geoengineering should enter IPCC processes and CMIP6 more prominently. More detailed studies of impacts of solar geoengineering needed, e.g. in an ISI-MIP mode. More active collaboration between GeoMIP and ISI-MIP and AgMIP was promoted.

Research gaps identified

Combined studies of mitigation, CDR and SRM are needed, based on multi-model intercomparison. Future research needs to focus on robust impacts assessment, find out which impacts are unavoidable and what are inherent trade-offs and limitations.

Next steps

ISI-MIP and AgMIP participants are encouraged to get in touch with GeoMIP to access ESM data.

Other

NA

3-5 keywords that characterize the session

Solar geoengineering, solar radiation management, climate impacts, model intercomparison, design problem