

ATS/CIRA Colloquium

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Reflecting Sunlight: Solar Geoengineering to Cool a Warming Planet

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via Microsoft Teams

Climate change is occurring and its impacts on ecosystems, humans, and the economy are growing. Yet, global efforts to reduce carbon dioxide emissions into the atmosphere are falling far short of what is necessary to avoid the worst impacts of climate change. It is within this context that the concept of Climate Intervention (CI) is being considered. Attempts to moderate anthropogenic warming by increasing the amount of sunlight that the atmosphere reflects back to space is a specific type of CI, sometimes referred to as Solar Geoengineering (SG). SG strategies are very controversial within and beyond the climate science community, and the limited research on the topic has been scattered and ad hoc. I recently had the honor and pleasure of serving on a National Academies of Science, Engineering and Medicine (NASEM) committee tasked with developing a research agenda to advance the scientific understanding of SG and recommending how SG research should be governed. The committee's report was released just a few weeks ago.

While we strongly emphasize that SG is not a substitute for strong and decisive action to reduce greenhouse gas emissions, we also identify SG as one of the most promising ways to reduce climate warming and, thus, potentially reduce the impacts of climate change over the coming decades. We also recognize, however, that proposed SG strategies involve significant and uncertain risks that need to be understood.

A key recommendation of the NASEM report is that the U.S. should establish a transdisciplinary SG research program as a small, yet important, component of the nation's overall research portfolio related to climate change. A transdisciplinary SG research program is necessary in order to build the foundation of scientific insight and information that will help decision-makers and stakeholders make choices about possible future implementation of SG. While the initial research program might prove that additional investment into SG research is warranted, it is also possible that it could indicate that SG should not be considered further. The salient point is that either outcome will be guided by sound science.

I will present an overview of SG research and the major recommendations of the NASEM report. In so doing, I will also describe how NASEM studies are constructed and share personal reflections on the experience of serving on such committees.