

ATS/CIRA Colloquium

Simone Tilmes

from NCAR

Hosted by Pat Keys

3 p.m. Thursday, Oct. 19

ATS 101 and Zoom

Research Criteria to Assess Potential SAI Scenarios and Strategies

With global and regional surface temperatures already reaching unprecedented highs, stratospheric aerosol intervention (SAI) is often described as the only method that could be introduced quickly as a form of a stop-gap measure to slow or reverse the projected rise in global surface temperatures until atmospheric greenhouse gas concentrations are stabilized. However, limited and often fragmented SAI research is insufficient to quantify the benefits vs. risks of potential applications. The current knowledge base does not provide enough information for informed decisions on the feasibility of applying SAI. In addition to technical and economic issues that show limitations in how fast SAI may be phased in and maintained, many open research questions need to be addressed to decide whether the benefits of SAI applications outweigh the risks. While existing research shows that SAI would result in global surface cooling and benefits related to cooling, there may be various undesired outcomes. Currently, significant uncertainties exist in cooling efficiency, large-scale surface climate controllability, climatic impacts, resulting impacts on societies and ecosystems, the interactions of unpredictable events (e.g., volcanic eruptions or methane explosions), and other unknown risks. The current lack of governance structure (national or international) leaves the questions open of how and by whom SAI might be deployed, for what objectives, and how deployment decisions could be made inclusive. This presentation outlines research criteria that may serve as a basis for comprehensively assessing potential SAI strategies and scenarios and supporting a governance structure of SAI. The criteria, as well as a simple rating structure, can help to identify SAI scenarios and strategies that may be feasible options in the near future that reduce the impacts and risks of climate change and those that may not be considered. This work, therefore, can serve as a roadmap for future SAI assessments to inform decision-makers and the public.

Colloquia page: atmos.colostate.edu/colloquia