



Impact of global solar dimming on atmospheric dynamics and precipitation

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The Geoengineering Model Intercomparison Project (GeoMIP) has proposed to evaluate the efficacy and risks of stratospheric geoengineering with sulfate aerosols and other solar-radiation management techniques engaging various climate models. GeoMIP recommends three primary experiments using the same standard forcing scenarios for all the models. The results will be compared using various diagnostics with a focus on changes in precipitation patterns.

Here, we use the NCAR Community Earth System Model (CESM). For the simulations the Community Atmospheric Model (CAM 4.0) is fully coupled to the land, ice and ocean model. We will test the impact of global solar dimming on the atmospheric dynamics and precipitation for various scenarios, following the first two GeoMIP experiments, solar dimming to counteract 4xCO₂ with regard to 1850 conditions, and, solar dimming to counteract 1% CO₂ increase. In addition, we will discuss model setup and primary results of a model run including atmospheric chemistry (including an aerosol bulk model) in troposphere and stratosphere to simulate a SO₂ injection scenario.