RADMAN

Limitations of Climate Engineering Efficacy by Different Types of RADiation MANagement

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Project Description

CO_2 abatement, adaptation and Climate Engineering (CE) are widely understood to be three independent approaches to addressing harmful climate change. In this project, we challenge this assumption by examining the limitations of solar radiation management (SRM) by means of Sulfate Aerosol Injection (SAI) and Marine Cloud Brightening (MCB) as instruments to lower global/regional temperatures. This is the first comprehensive attempt to quantitatively predict the limitations of these two most frequently discussed SRM schemes. This will include for the first time the quantification of the limitations of SAI and MCB in parallel. We surmise that these limitations are likely to have a profound impact on legal and political effects that link and sequence mitigation, adaptation and Climate Engineering measures including the politics of climate equity. Advanced atmospheric numerical models encompassing detailed aerosol and cloud microphysics are used to ascertain the physical limits of both SRM techniques. These results will then form the foundation within the SPP for an integrated assessment of different legal CE governance regimes and the interactions between CO_2 mitigation, adaptation and Climate Engineering.

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