

An Assessment for Geoengineering Efficiency due to Sulphate Emissions in the Stratosphere under the RCP (Representative Concentration Pathways) Anthropogenic Scenarios

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Efficiency of geoengineering climate mitigation due to emissions of sulphates in the stratosphere is assessed by employing the IAP RAS climate model (CM). In particular, geoengineering emission intensity needed for compensation of the 21st century global and/or regional warming is estimated for the anthropogenic forcing corresponding to the RCP (Representative Concentration Pathways) scenarios which are prepared for the simulations to be included in the Intergovernmental Panel on Climate Change Fifth Assessment Report. Ensemble approach for the performed here numerical experiments allows to analyse sensitivity of obtained results to changes in governing parameters of the model and geoengineering mitigation. Since the IAP RAS CM includes an interactive carbon cycle module, the first estimates of geoengineering impact on ecosystem primary production and respective carbon uptakes are made. An analysis is performed to elucidate the role of different mechanisms on carbon fluxes from the atmosphere to the terrestrial ecosystems and to the ocean.