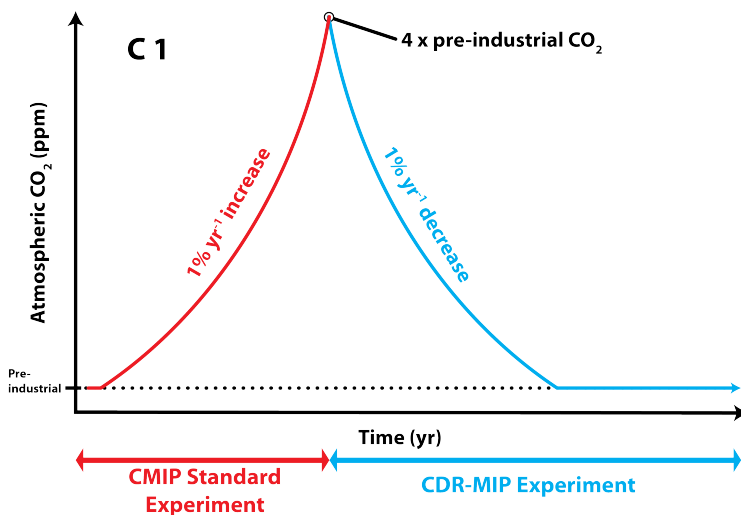


Motivation

Continued anthropogenic greenhouse gas emissions are changing the climate threatening “severe, pervasive and irreversible” impacts. Inadequate emissions reduction had lead to increased attention on Climate Intervention (CI) – deliberate interventions to counter or reduce the impact of climate change by either modifying the Earth’s radiation budget (Solar Radiation Management; SRM), or removing the primary greenhouse gas (CO₂) from the atmosphere – Carbon Dioxide Removal (CDR). The majority of future scenarios that do not exceed 2°C warming by 2100 include CDR methods. At present, there is little consensus on the impacts and efficacy of the different types of proposed CDR. In response to this need, the Carbon Dioxide Removal Model Intercomparison Project (or CDRMIP) was initiated. This project brings together a suite of Earth System Models (ESMs) and Earth System Models of Intermediate Complexity (EMICs) in a common framework to explore the potential, risks, and challenges of different types of proposed CDR. The key questions that are addressed by CDRMIP include:

1) Climate “reversibility”, in the context of using CDR to return high future atmospheric CO₂ concentrations to a lower (e.g. present day or pre-industrial) level.



2) Potential efficacy, feedbacks, time scales, and side effects of different CDR methods.

It is anticipated that this be the first stage of a continuing project exploring CDR. CDRMIP will allow and encourages development of other (future) experiments and scenarios. Potential future experiments could include Bioenergy with Carbon Capture and Storage (BECCS) or ocean fertilization. It is anticipated that future collaborations could include GeoMIP (a Geoengineering Model Intercomparison Project focusing on SRM) for experiments combining SRM and CDR approaches.