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Geoscientific Model Development Discussions

Interactive comment on "The Model Intercomparison Project on the climatic response to Volcanic forcing (VolMIP): Experimental design and forcing input data" *by* Davide Zanchettin et al.

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As highlighted in the IPCC AR5 report in chapter 11, future climate projections do not account for uncertainty originating from future (unknown) volcanic forcing.

A precise quantification of this "volcanic uncertainty" would require vast sampling of all possible future volcanic forcing trajectories, something that is not feasible in an intermodel comparison excercise. The next best would be to pick a single forcing trajectory that is on the high side. This would allow to estimate an upper bound for volcanic uncertainty in future climate projections.

In line with what is stated above, I and my collegues would like to propose an additional

non-mandatory experiment that addresses the potential impact of volcanism on future climate projections. This experiment would require a minimal effort to set up, as it would recycle elements from other VolMIP experiments. Moreover, it would constitute a nice link between VolMIP and ScenarioMIP.

Draft of the experiment description:

VolcLong-Cluster-21C: A 21st century scenario experiment that uses the 19th century volcanic forcing prepared for VolcLong-Cluster-Ctrl but otherwise follows the SSP2-4.5* ScenarioMIP protocol. The volcanic forcing start year (1 January 1809) must be aligned with the experiment start year (1 January 2015). The initial conditions should be taken from the end of the CMIP6 historical simulation. This non-mandatory experiment is designed to assess high-end impacts of volcanic activity in the context of future global warming.

*considering recent developments since the Paris agreement, SSP1-2.6 might be a better choice

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