Dear editor,

Thank you for your comments and decision. We have modified the abstract and conclusions as requested, by including all changes proposed. You can find the changes made in abstract and conclusion sections at the line number given below. Do let us know if more changes in the wording are needed.

Abstract: L15-L25

"*Large volcanic eruptions can significantly influence the climate system by altering the stratospheric sulfate concentrations, atmospheric radiative balance, stratospheric and surface temperature, and regional hydroclimate. A comprehensive understanding of the volcanically-driven regional hydroclimate response is essential for assessing the socio-economic implications of such short-term episodic climate perturbations, which can lead to droughts, with potential significant impacts to vulnerable civilizations that depend on flooding as a natural crops irrigation mechanism. However, the regional rainfall response to volcanic forcings is substantially dominated by the natural variability in the rainfall response, and which creates a gap in our understanding of how eruptions affect ecohydrological conditions and plant productivity.* "

Conclusion: L682-L765

"*This study utilized the NASA GISS ModelE2.1 (MATRIX) Earth system modeling framework to investigate the mechanisms by which the 1991 Mt. Pinatubo eruption influenced hydroclimatic conditions and water-based drivers of plant productivity. This study successfully demonstrated the potential of volcanically-induced hydroclimate responses in context to complex but directly relevant impact metrics for societal implications, such as agricultural productivity. The application of process-based compound drought indices (SMDI and ETDI) targeting key climate-relevant quantities, including soil moisture, effectively address the challenge posed by the uncertainties associated with regional rainfall responses and presents a better assessment of its impact on plant productivity. Furthermore, the temporal as well as the latitudinal dependence of dominant hydroclimate drivers in shaping regional plant productivity response provides critical insights for understanding and guiding mitigation strategies to address the adverse impacts of such climate perturbation events.*"

L 755-L761

"*Our findings demonstrate that soil moisture conditions across different regions can provide valuable insights into the full impacts on agricultural yields and regional carbon sink responses, particularly under scenarios involving implementation of solar geo-engineering (stratospheric*

aerosol injection) or future large eruptions along with the changes in dynamic vegetation and crop cover. It needs to noted however that although in the future the physical mechanisms of a forcing response would be similar, the societal impact might be muted compared to that on past civilizations, due to present (and future) widespread irrigation practices and river level control in the presence of dams."

Regards,

Ram Singh, on behalf of all co-authors.