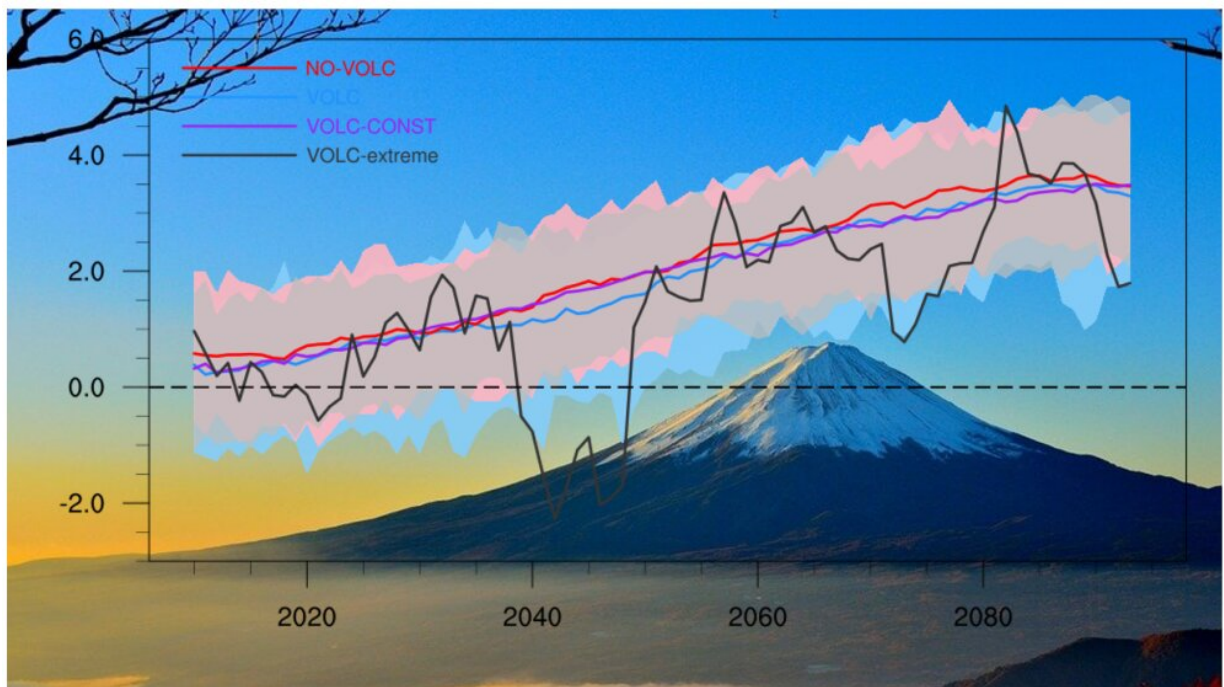


Scientists study potential volcanic impacts on future global land monsoon precipitation changes

March 23 2021, by Zhang Nannan



Changes of global land monsoon precipitation in projections with different eruption scenarios. (Image by MAN Wenmin)

Scientists have found global precipitation significantly decreased in the year following large volcanic eruptions, as evidenced by paleoclimate reconstructions and historical observations. Decreased precipitation is a

robust post-volcano eruption signal in the monsoon climate, and scientists want to explore volcanos' roles in future climate. However, major volcanic eruptions are generally not included in current model projection scenarios because they are inherently unpredictable events.

An international cooperative study led by the Institute of Atmospheric Physics of the Chinese Academy of Sciences reveals the potential volcanic impacts on the future changes of global land monsoon (GLM) precipitation in different projection periods and different monsoon subdomains.

The team used 60 plausible eruption scenarios sampled from reconstructed volcanic proxies over the past 2,500 years, and found that episodic volcanic forcing not only leads to a 10% overall reduction of the GLM precipitation, but also causes larger ensemble spread (~20%) compared to no-volcanic and constant background-volcanic scenarios. Changes in monsoon circulation in the aftermath of [large volcanic eruptions](#) match the global warming response patterns well with opposite sign.

Moreover, volcanic activity is projected to delay the time of emergence of anthropogenic GLM precipitation changes by five years on average over about 60% of the GLM area.

This study, published in *Earth's Future*, is a step toward incorporating volcanic forcing in [future climate](#) projections in a systematic and realistic way.

"I hope it can help develop credible projection of future changes of global monsoon, and understand climate projection uncertainty related to the unknown future [volcanic activity](#)." Said Dr. MAN Wenmin, the lead author of the study.

More information: Wenmin Man et al. Potential Influences of Volcanic Eruptions on Future Global Land Monsoon Precipitation Changes, *Earth's Future* (2021). [DOI: 10.1029/2020EF001803](https://doi.org/10.1029/2020EF001803)

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