



## **What role for volcanoes in future climate projections?**

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Despite ample evidence for volcanic impacts on climate, volcanic forcing has so far been excluded or poorly represented in future climate projections. From the analysis of a 21st century simulation ensemble with 60 plausible realisations of future volcanic activity, consistent with apparent activity over the past two millenia, we show that the projected range in global temperature inter-annual variability and decadal-scale trends is significantly enhanced when volcanism is taken into account. Chances for simulating a 10-year "global warming pause" increase by more than 50%, while the probability for obtaining anomalously strong warming surges is less affected. This study provides a probabilistic framework for including volcanic forcing uncertainty into climate projections, and thus may constitute a step towards improved future climate assessment.