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How volcanism impact on the variability of the South American Monsoon System and the associated Atlantic Subtropical Cell

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Large volcanic eruptions can affect the global climate through changes in atmospheric and ocean circulation. Understanding the influence of volcanic eruptions on the hydroclimate over monsoon regions is of great scientific and social importance. The South America Monsoon System (SAMS) is the most important climatic feature of the continent. Both the Intertropical and the South Atlantic wind convergence zones (ITCZ and SACZ, respectively) are fundamental components of the SAMS. They show variations on a broad range of scales, dependent on complex multi-system interactions with the adjacent Atlantic Ocean and teleconnections. Also driven by the winds, the Atlantic Subtropical Cell (STC) is the link between the subduction zone in the subtropical gyre with the tropics. Hence, the STC influence equatorial sea surface temperature variability on interannual to decadal scales in the tropical Atlantic Ocean. In order to improve our understanding of the responses of the ocean-atmosphere system to the volcanic forcing, we aim to identify the dominant mechanisms of seasonal-to-interdecadal variability of the SAMS and the Atlantic STC after large Pinatubo-like (1991) and Tambora-like (1815) eruptions relying on the VolMIP model intercomparison project experiments.