



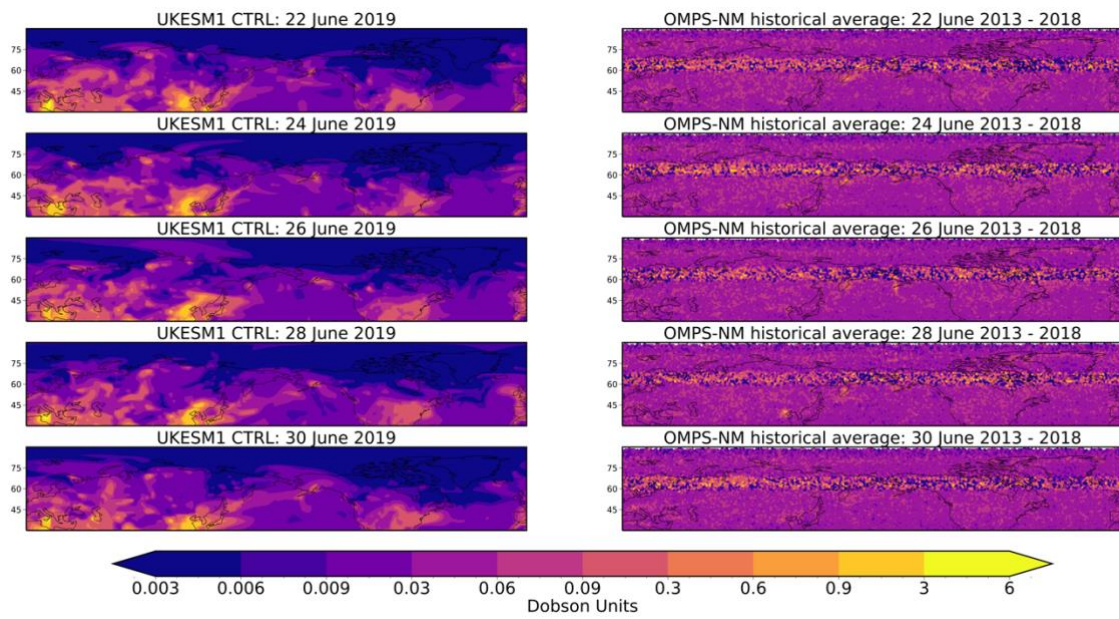
*Supplement of*

## **Including ash in UKESM1 model simulations of the Raikoke volcanic eruption reveals improved agreement with observations**

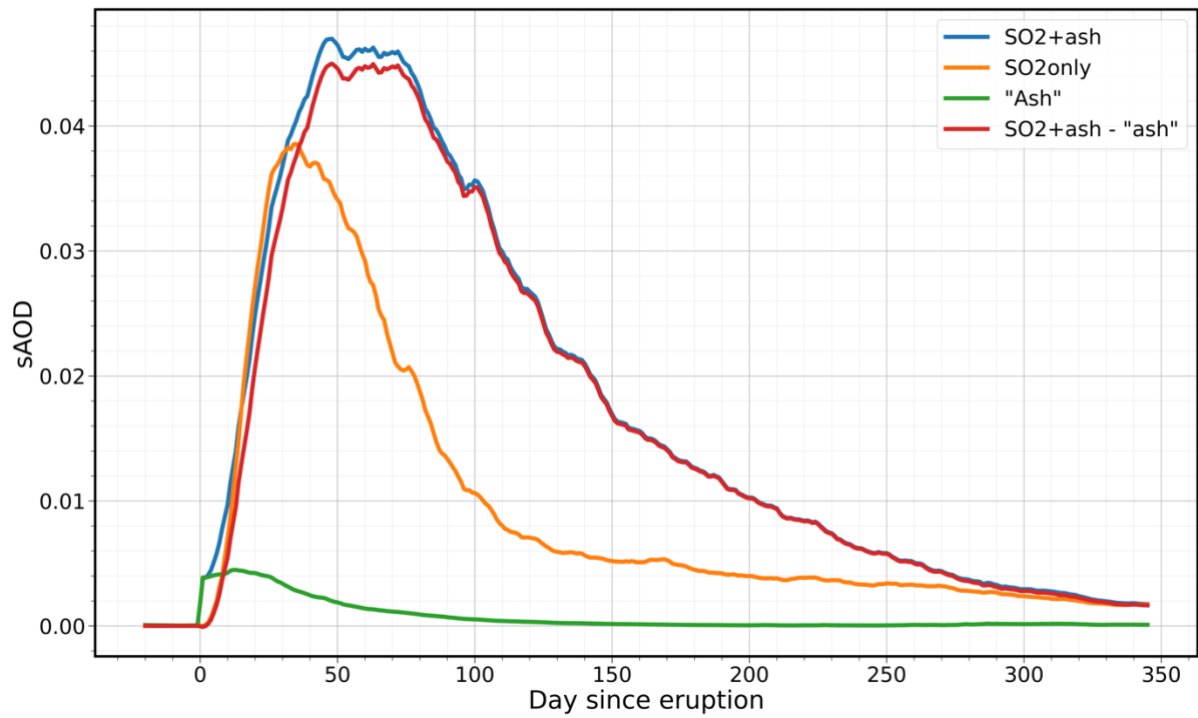
**Alice F. Wells et al.**

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**Figure S1:** Geographic evolution of column integrated SO<sub>2</sub> plume in Dobson Units (DU) for the UKESM1 CTRL simulation (left) and the long-term background SO<sub>2</sub> burden derived from OMPS-NM for the years 2013–2018 (right).



**Figure S2:** Daily stratospheric aerosol optical depth (sAOD) at 550nm averaged over 30–90°N. UKESM1 SO2only (orange) and SO2+ash (blue). CLASSIC dust sAOD (green) and SO2+ash minus CLASSIC dust sAOD (red).