

Stratospheric sulfate optical depth (post-Pinatubo conditions) (reference: September 1991–August 1992)	0.11 ± 0.02 (ULAQ-CCM) 0.13 ± 0.02 (SAGE II) 0.13 ± 0.02 (AVHRR)
Sulfate $r_{\text{eff}}$ (μm) (30–100 hPa, 25° S–25° N) (post-Pinatubo conditions) (reference: September 1991–August 1992)	0.54 ± 0.06 (ULAQ-CCM) 0.58 ± 0.06 (SAGE II)
Sulfate $r_{\text{eff}}$ (μm) (30–100 hPa, 25° S–25° N) (volcanic unperturbed conditions) (reference: 1999–2000)	0.19 ± 0.02 (ULAQ-CCM) 0.22 ± 0.02 (SAGE II)
Ice mass mixing ratio (mg kg <sup>-1</sup> ) (150–200 hPa) (reference: 2003–2012)	3.3 ± 0.2 (ULAQ-CCM) (HOM) 0.1 ± 0.1 (ULAQ-CCM) (HET) 3.5 ± 0.4 (MERRA-2) 3.2 ± 0.4 (ERA5)
Ice mass mixing ratio (mg kg <sup>-1</sup> ) (200–300 hPa) (reference: 2003–2012)	3.8 ± 0.5 (ULAQ-CCM) (HOM) 0.6 ± 0.2 (ULAQ-CCM) (HET) 5.5 ± 0.8 (MERRA-2) 5.7 ± 0.9 (ERA5)
Ice mass mixing ratio (mg kg <sup>-1</sup> ) (350–400 hPa) (reference: 2003–2012)	2.4 ± 0.4 (ULAQ-CCM) (HOM) 0.1 ± 0.1 (ULAQ-CCM) (HET) 2.6 ± 0.5 (MERRA-2) 2.7 ± 0.7 (ERA5)
Tropospheric ice $r_{\text{eff}}$ (μm) (reference: 2003–2012)	31.3 ± 3.1 (ULAQ-CCM) (HOM) 34.6 ± 3.8 (ULAQ-CCM) (HET) 33.4 ± 2.1 (MODIS)
Tropospheric ice optical depth (reference: 2003–2012)	0.37 ± 0.03 (ULAQ-CCM) (HOM) 0.04 ± 0.01 (ULAQ-CCM) (HET) 0.62 ± 0.04 (MERRA-2) 0.65 ± 0.06 (ERA5)