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Stratospheric Aerosol Perturbations Caused by the 2024 Ruang Eruption

On April 18, 2024, the Ruang volcano in North Sulawesi, Indonesia, erupted, sending volcanic materials up to 20 km altitude and drifting west of the Island. On April 29, Ruang erupted again, this time reaching an altitude of 21 km and following a similar trajectory to the earlier eruption. OMPS-NM UV measurements indicated that the volcanic clouds were primarily composed of sulfur dioxide (SO2), with estimated amounts of 0.25 and 0.16 Tg for the two eruptions, respectively.
This study utilized space-based observations of SAGE III onboard ISS, OMPS LP on board the Suomi NPP and NOAA-21 satellites to monitor the evolution and transport of the Ruang volcanic plume as it circulates the globe. Initially, the two volcanic plumes remained separate for the first ten days. Over time, the volcanic aerosol began to mix, making it increasingly challenging to distinguish between them.
For the first two months following the eruption, the primary aerosol layer was confined within the tropical pipe. Subsequently, there was a gradual poleward and downward transport to the Southern Hemisphere (SH), which intensified during the SH winter.

Topic

Aerosols and clouds

Author: TAHA, Ghassan (Morgan State University and NASA GSFC)

Co-authors: Dr JAROSS, Glen (NASA GSFC); COLARCO, Peter (NASA GSFC); Dr LOUGHMAN, Robert (Hampton University)

Presenter: TAHA, Ghassan (Morgan State University and NASA GSFC)