

Keynote Address: The 2022 Hunga Tonga-Hunga Ha'apai Eruption: NOAA's Rapid Response

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The Hunga Tonga - Hunga Ha'apai (HTHH) volcano, located in South Pacific, erupted on Jan. 13 and 15, 2022, putting significant amounts of material into the stratosphere. The lower stratospheric winds at the time of the eruption were blowing toward the west, with expected transit of the volcanic plume to over Reunion Island in about a week. As there had not previously been fresh in situ stratospheric measurements of a volcanic plume that soon after eruption, efforts were made to bring aerosol and SO₂ in situ balloon payloads to Reunion Island immediately after the eruption. This was only possible because of the existing Balloon Baseline Stratospheric Aerosol Profiles (B²SAP) program. Measurements of the HTHH plume showed extremely large water vapor perturbations due to the eruption, and further analysis has shown that the water vapor excess accelerated conversion of SO₂ gas to sulfate aerosol. Modeling work is ongoing to understand possible impacts on stratospheric ozone and dynamics over the next few years.