STRATOSPHERIC AEROSOL COMPOSITION OBSERVED BY THE ATMOSPHERIC CHEMISTRY EXPERIMENT FOLLOWING THE 2019 RAIKOKE ERUPTION

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Following the eruption of the Raikoke volcano in 2019, infrared spectra from the Atmospheric Chemistry Experiment satellite[1] were used to evaluate the composition of stratospheric aerosols in the Northern Hemisphere. The layer of aerosols observed after the eruption ranged from 9 to 20 km in altitude and persisted in the stratosphere for several months. This layer was composed nearly entirely of sulfate aerosols, droplets of a mixture of sulfuric acid and water. To determine the aerosol composition, the spectra were modeled using extinction values calculated with Mie scattering code and sulfuric acid optical constants. Contrary to previous reports, there is no evidence of stratospheric smoke being present in the Arctic region.

[1]P. F. Bernath. The Atmospheric Chemistry Experiment (ACE). JQSRT 2017;186:3-16. https://doi.org/10.1016/j.jqsrt.2016.04.006.