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Retrieval of stratospheric aerosol extinction coefficients from sun-normalized Ozone Mapper and Profiler Suite Limb Profiler (OMPS-LP) measurements

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Table S1: Retrieved values of the effective surface albedo for the examples shown in Fig. 3 in the manuscript main text and Fig. S4 below.

	V2.1, Normalization to the reference tangent height			V2.1, Normalization to the solar irradiance			V1.0.9 (same Level 1 data as in V2.1)		
	standard a priori	halved a priori	doubled a priori	standard a priori	halved a priori	doubled a priori	standard a priori	halved a priori	doubled a priori
51°S	0.50	0.51	0.50	0.35	0.36	0.35	0.22	0.27	0.15
21°N	0.50	0.51	0.50	0.31	0.31	0.31	0.00	0.12	0.00
70°N	0.50	0.50	0.50	0.43	0.44	0.42	0.00	0.13	0.00

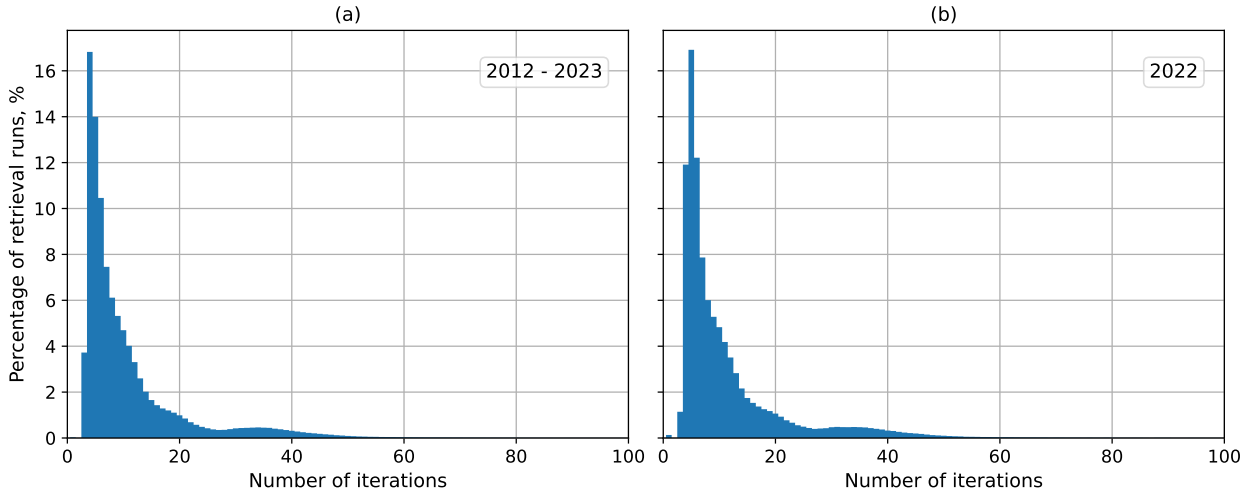

Figure S1: Histogram of the number of iterations needed for a convergence of the retrieval. Y-axis shows a percentage amount of runs converging within a certain number of iterations. Panel (a): all data from 2012 to 2023. Panel (b): the year after the Hunga–Tonga eruption (2022).

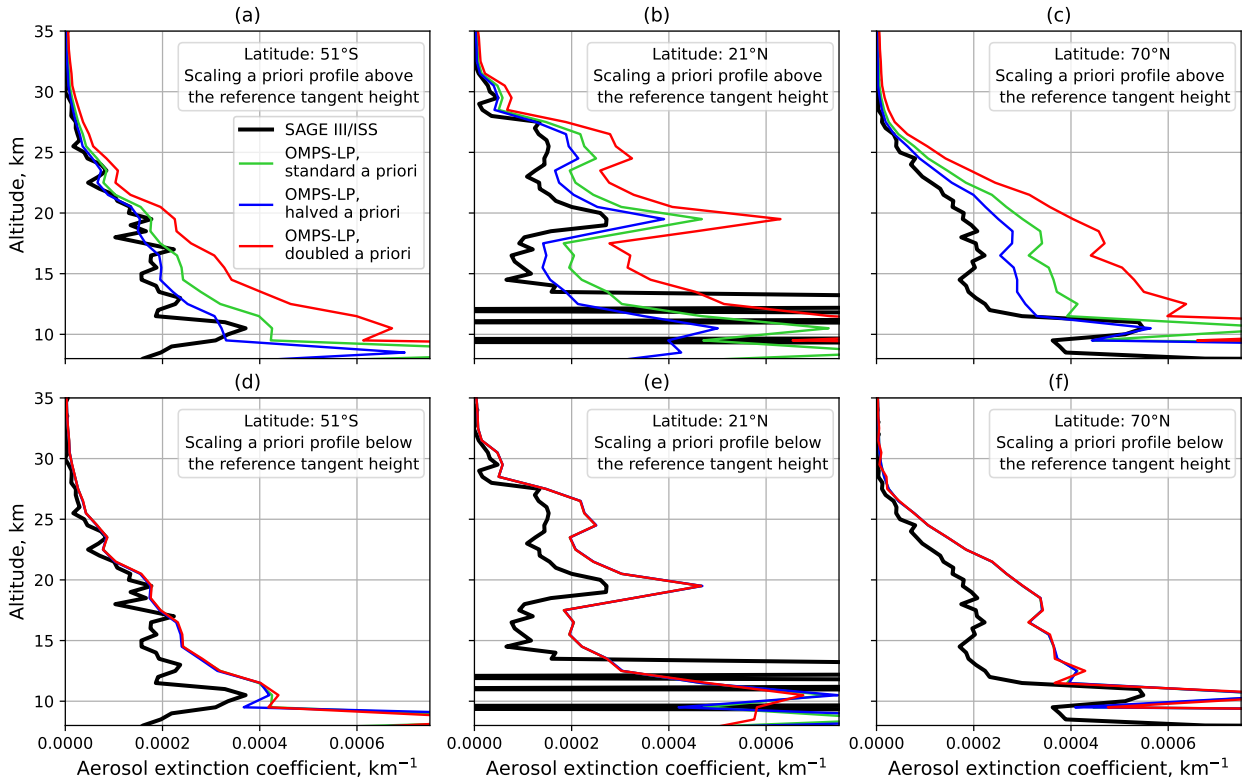

Figure S2: Dependence of the retrieval results on the a priori aerosol extinction profile for the University of Bremen retrieval using the normalization to the limb measurement at the reference tangent height. Panels (a) – (c): scaling a priori profiles at and above the reference tangent height (36 - 50 km). Panels (d) – (f): scaling a priori profiles below the reference tangent height (0 – 36). The comparisons are done for three example OMPS-LP measurements. Panels (a) and (d): January 6, 2018, 15:04:37 UTC; 51°S, 14°W. Panels (b) and (e): January 22, 2018, 10:20:45 UTC; 22°N, 43°E. Panels (c) and (f): July 25, 2018, 04:39:29 UTC; 70°N, 107°E.

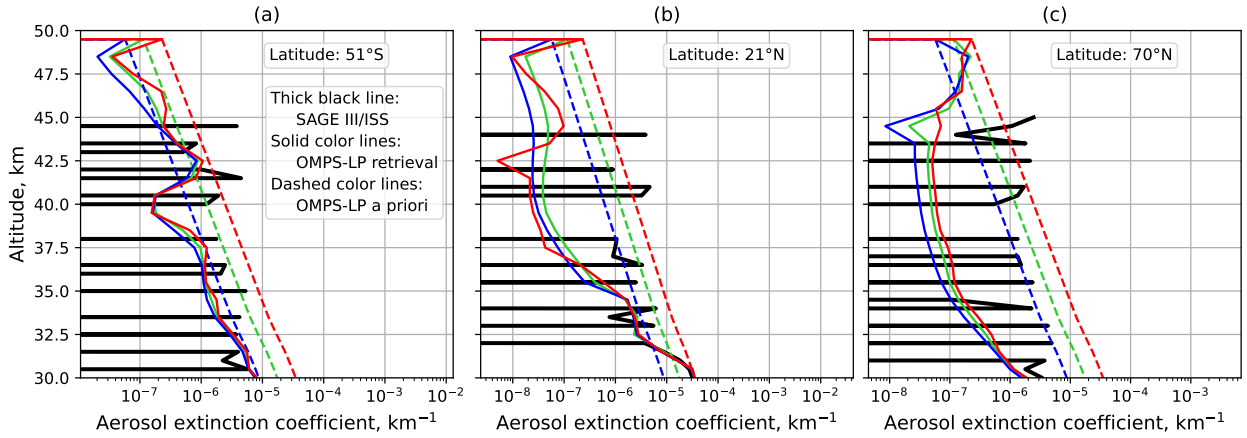

Figure S3: Dependence of the retrieval results on the a priori aerosol extinction profile for the University of Bremen retrieval using the normalization to the solar irradiance. Panel (a): January 6, 2018, 15:04:37 UTC; 51°S, 14°W. Panel (b): January 22, 2018, 10:20:45 UTC; 22°N, 43°E. Panel (c): July 25, 2018, 04:39:29 UTC; 70°N, 107°E.

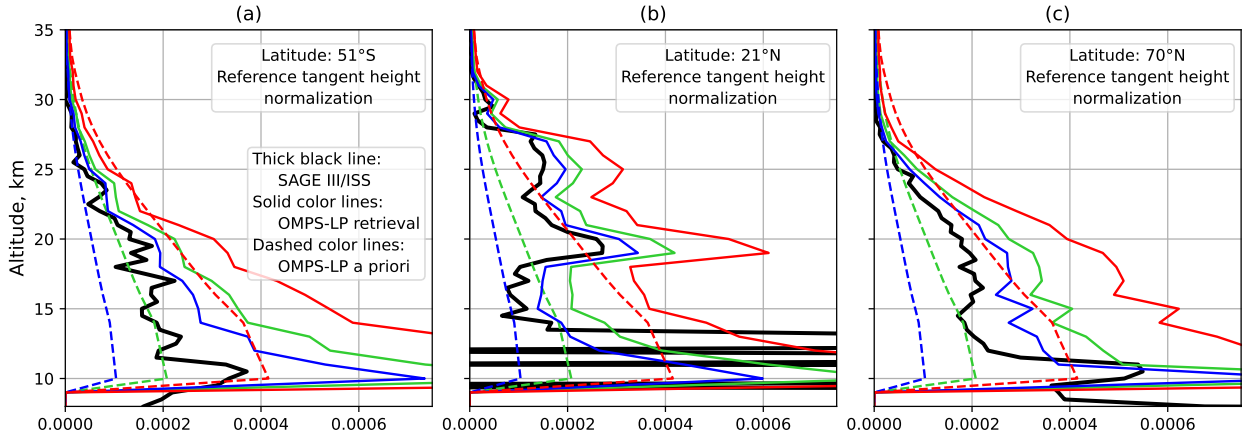

Figure S4: Dependence of the retrieval results on the a priori aerosol extinction profile for the University of Bremen retrieval V1.0.9 (but using the same Level 1 data as V2.1). Panel (a): January 6, 2018, 15:04:37 UTC; 51°S, 14°W. Panel (b): January 22, 2018, 10:20:45 UTC; 22°N, 43°E. Panel (c): July 25, 2018, 04:39:29 UTC; 70°N, 107°E.