

Table S1. Date, time, GOES-16 dark pixel BT_{11} and the corresponding minimum–maximum umbrella height (H_U), GOES-17 side view umbrella height, and GOES-17 side view overshooting top height (H_{OT}) for the 30 daytime cases of the April 2021 La Soufrière eruptions plotted in Fig. 13 and Fig. 14. Time refers to the start of the full disk scan. For the GOES-17 side view H_U , a ± 500 m uncertainty range is given (Horváth et al., 2021a).

Date, Time	GOES-16 $BT_{11, \min}$ (K)	GOES-16 min–max H_U (km)	GOES-17 H_U (km)	GOES-17 H_{OT} (km)
09 April, 12:50Z	213.99	13.1–22.3	15.5–16.0	
09 April, 19:10Z	197.39	15.7–18.7	16.5–17.0	
10 April, 09:45Z	191.82	16.4–17.2		22.0
10 April, 10:00Z	197.63	15.3–19.1	18.0–18.5	21.0
10 April, 11:00Z	194.83	15.9–18.8	18.5–19.0	23.0
10 April, 12:20Z	197.63	15.4–19.2	19.5–20.0	21.0
10 April, 13:00Z	194.95	16.2–18.8		20.5
10 April, 13:10Z	196.31	15.8–18.9	18.0–18.5	21.5
10 April, 13:20Z	195.82	15.9–18.9	18.5–19.0	
10 April, 14:50Z	197.27	15.8–18.7	18.0–18.5	21.0
10 April, 16:20Z	245.04	9.3	10.5–11.0	
10 April, 16:30Z	197.27	15.8–18.3	18.0–18.5	23.0
10 April, 18:50Z	207.27	13.8–20.5	16.5–17.0	
10 April, 19:00Z	203.79	14.5–19.8	16.5–17.0	18.0
10 April, 19:10Z	201.25	15.3–19.3	16.5–17.0	
11 April, 10:30Z	275.70	4.4	6.0–6.5	
11 April, 10:45Z	200.71	14.7–19.4	17.5–18.0	19.0

Table S1. Continued.

Date, Time	GOES-16 BT _{11, min} (K)	GOES-16 min–max H _U (km)	GOES-17 H _U (km)	GOES-17 H _{OT} (km)
11 April, 11:00Z	199.02	15.0–19.1	18.0–18.5	
11 April, 11:30Z	252.21	8.3	9.0–9.5	
11 April, 11:45Z	231.42	10.9	12.5–13.0	
11 April, 13:30Z	216.21	12.8–23.5	16.0–16.5	
11 April, 13:40Z	199.59	15.0–19.1	18.5–19.0	21.0
11 April, 13:50Z	200.49	14.8–19.2	18.5–19.0	
11 April, 20:10Z	226.16	11.6	14.0–14.5	
11 April, 20:30Z	200.49	14.9–19.4	16.5–17.0	
11 April, 20:40Z	200.82	14.9–19.5	16.5–17.0	
13 April, 10:45Z	203.38	14.2–19.8	17.0–17.5	20.0
13 April, 12:00Z	263.2	6.4	7.5–8.0	
18 April, 21:00Z	267.86	5.6	6.0–6.5	
22 April, 15:20Z	244.11	9.0	10.5–11.0	