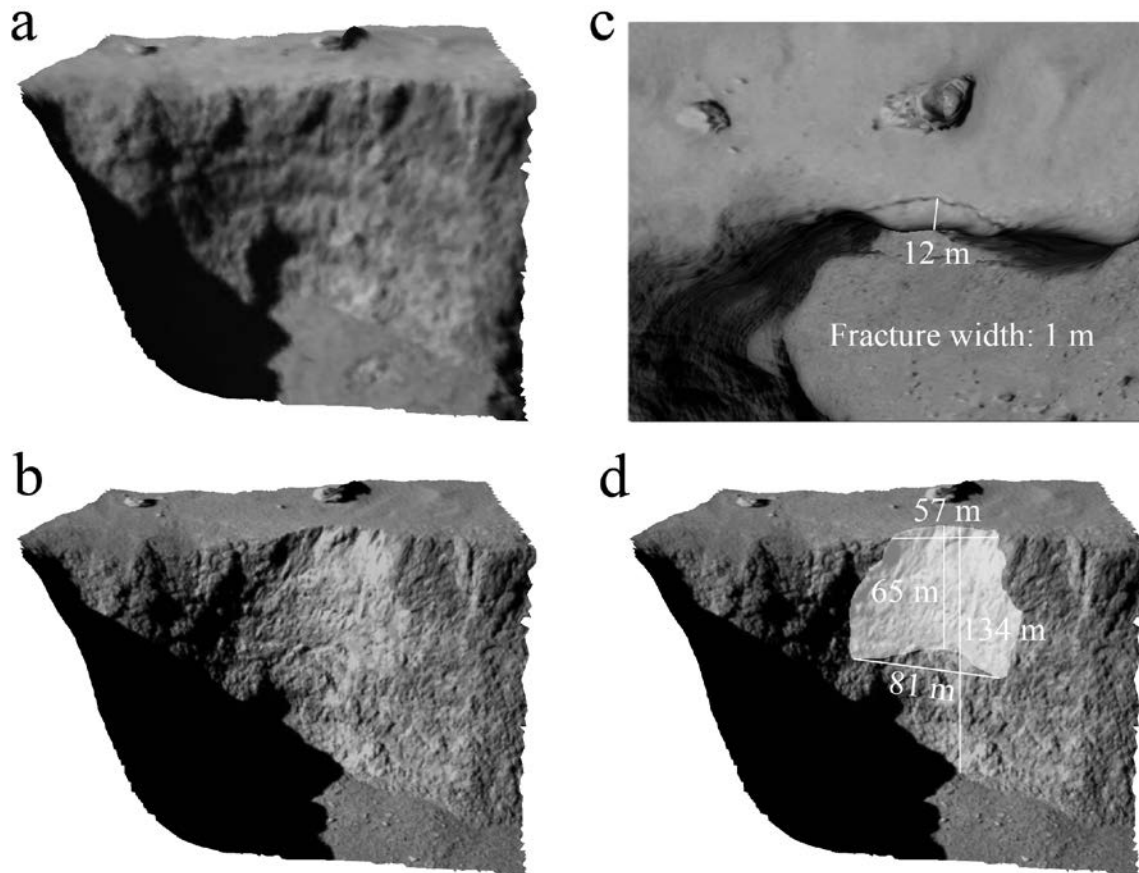


In the format provided by the authors and unedited.

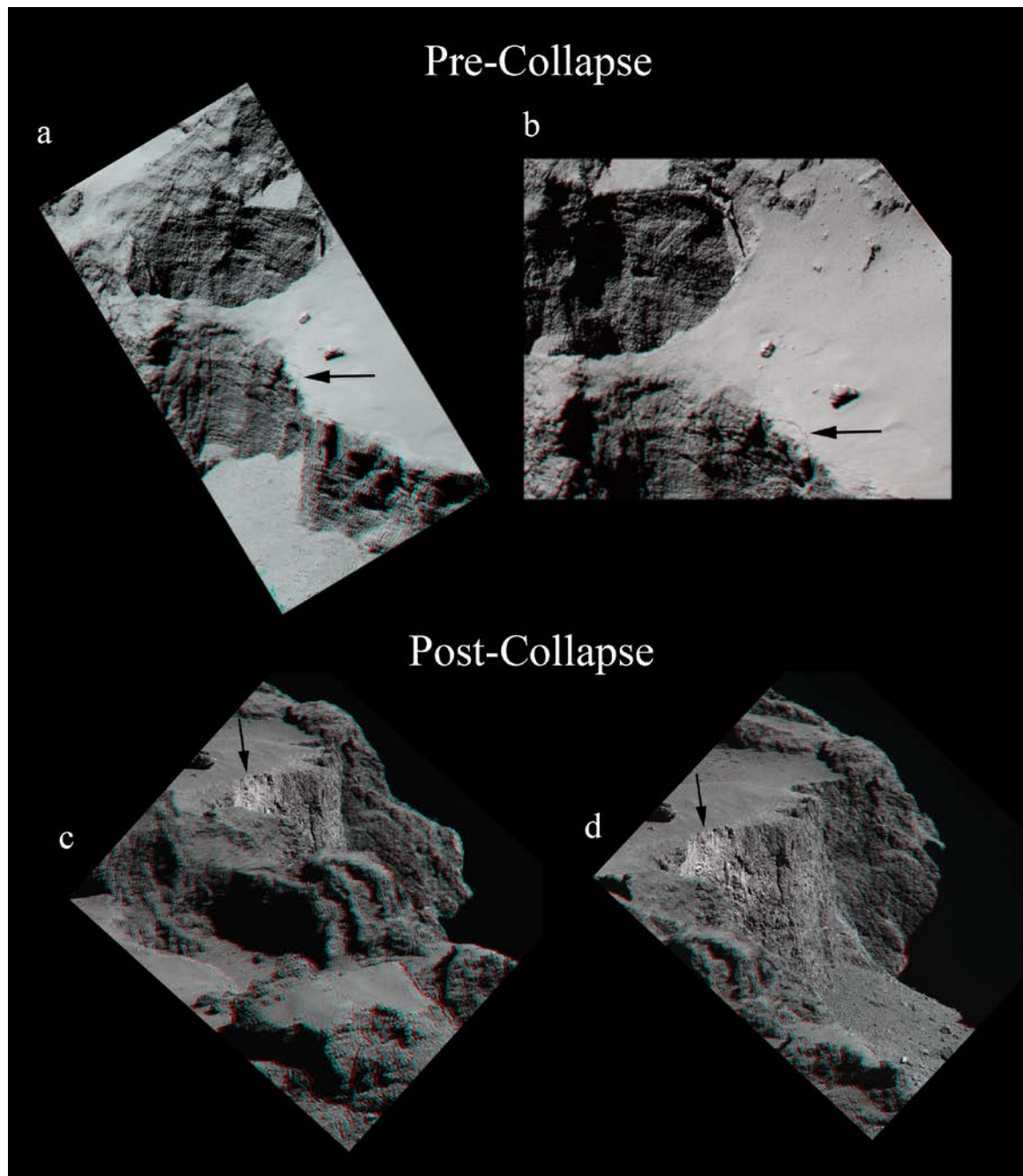
The pristine interior of comet 67P revealed by the combined Aswan outburst and cliff collapse

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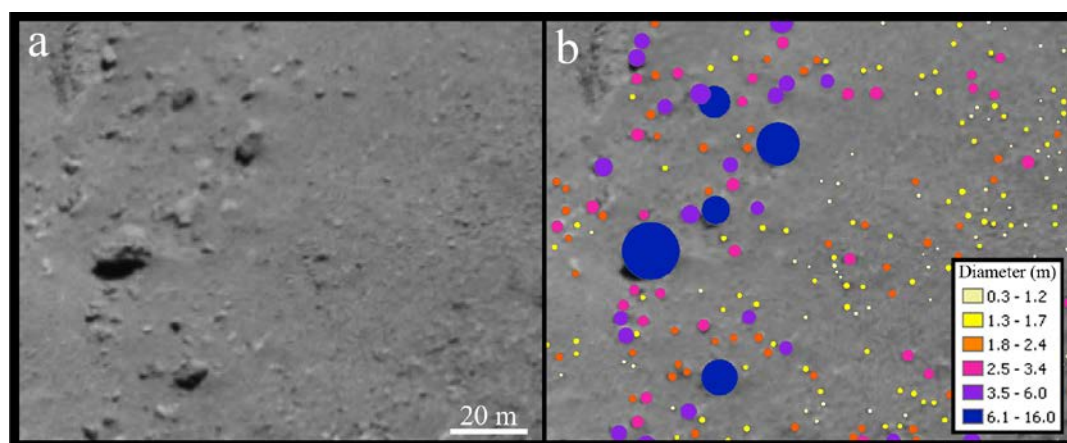
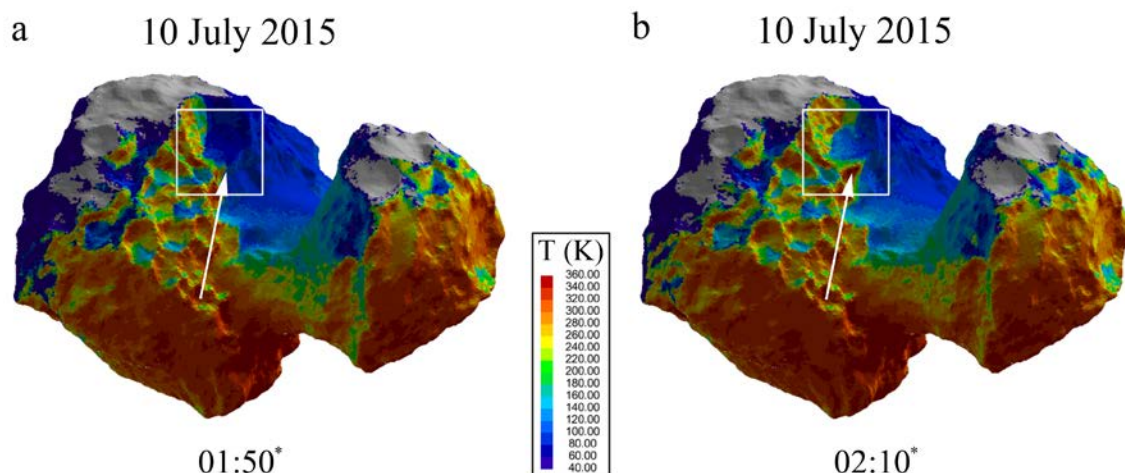
Figures

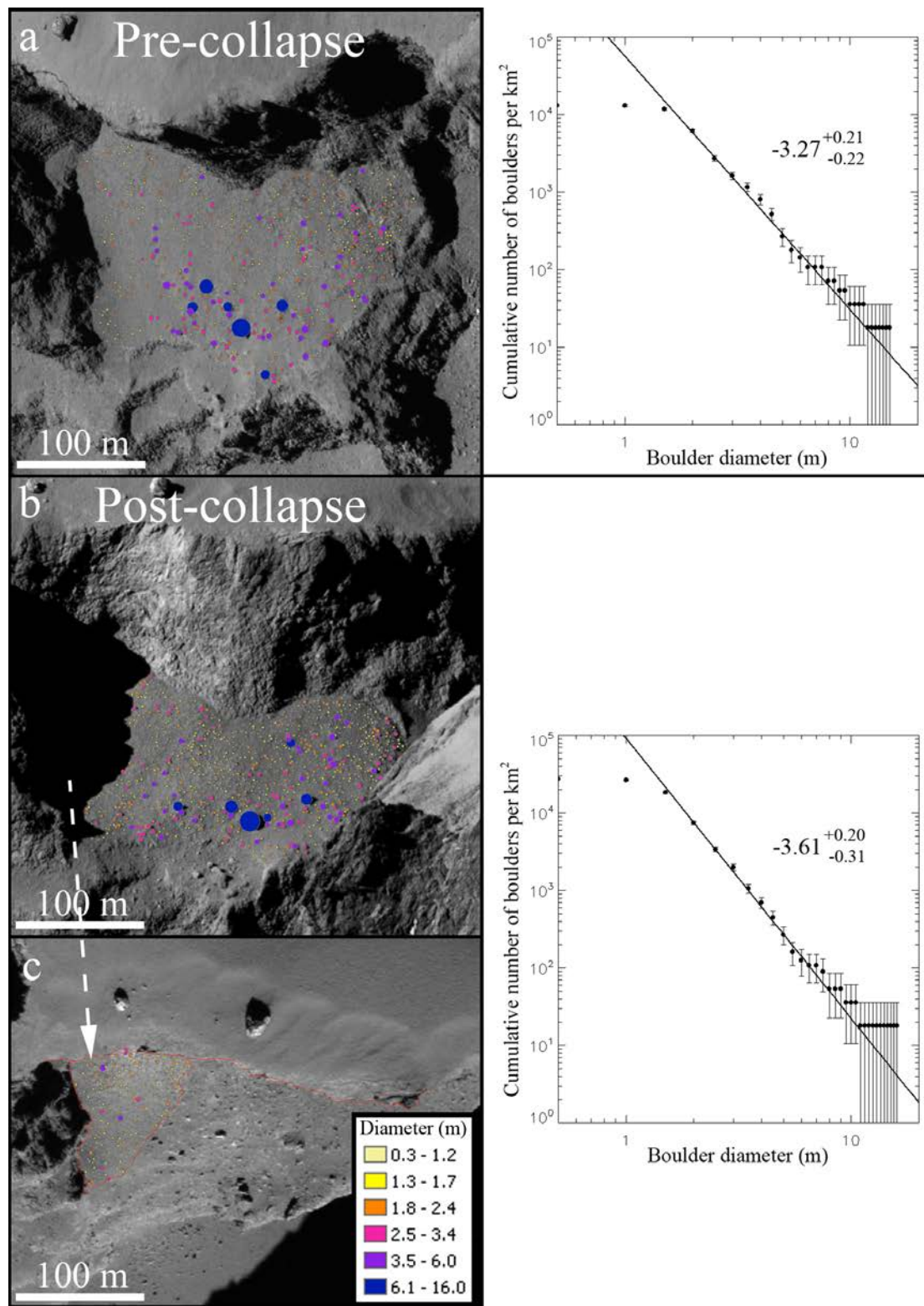


Supplementary Figure 1. **a**, 3D view of the Aswan cliff before the collapse (see Fig. 2c for context). **b**, 3D view of the cliff after the breakdown. **c**, 3D view showing the maximum distance between the pre-collapse overhang and the new cliff edge. The fracture width is also indicated. **d**, dimensions of the detached wall computed on the 67P shape model.

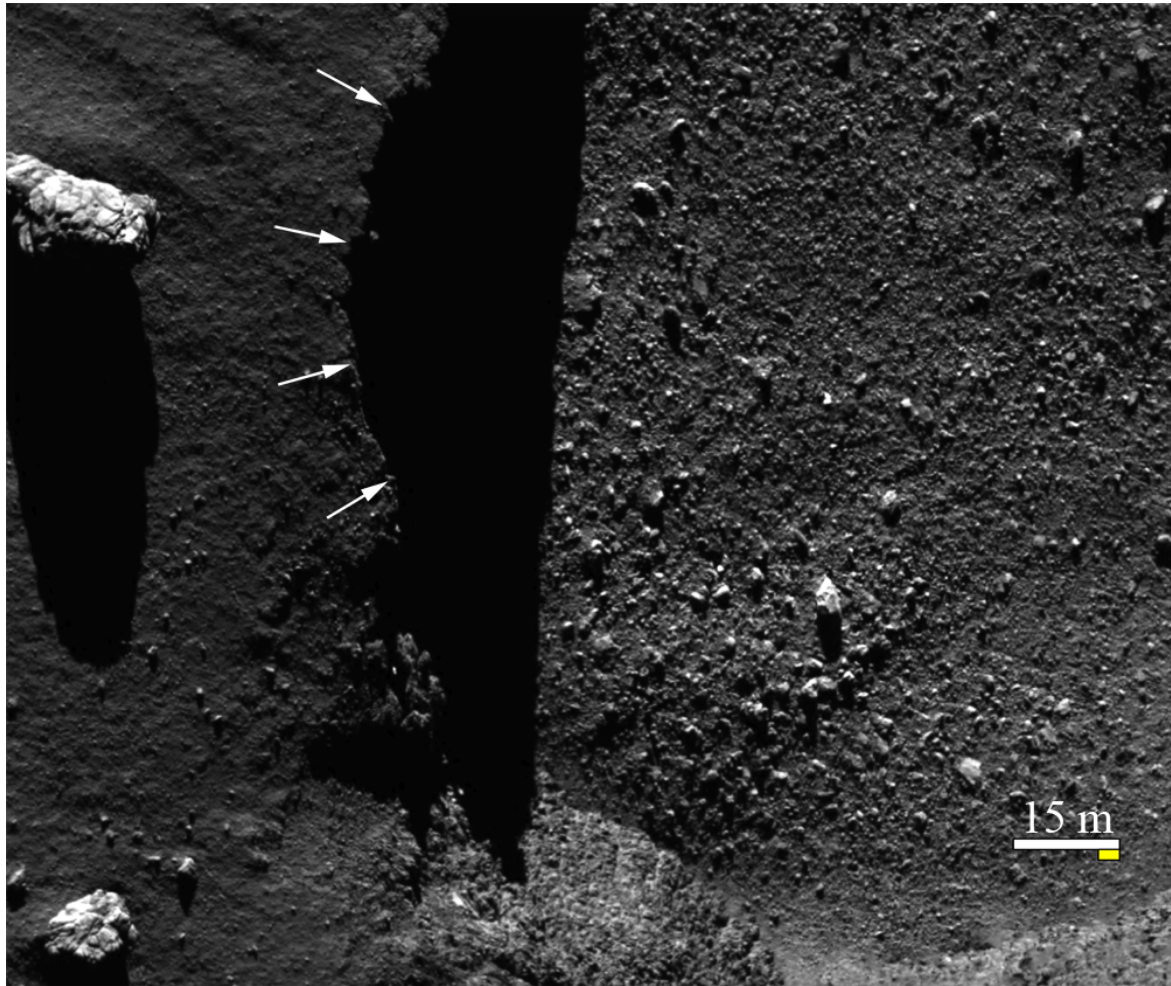


Supplementary Figure 2. Four different anaglyph views prepared for evaluating the considered volume of the overhang that detached in July 2015. The black arrows show the location of the fracture before the collapse, and the edge of the new cliff after the breakdown.

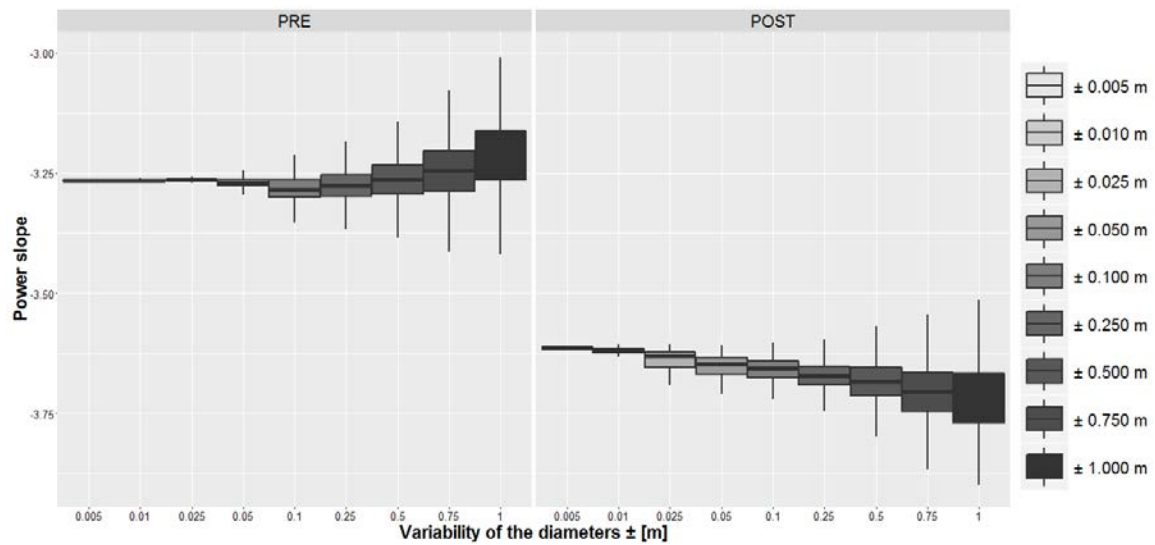




Supplementary Figure 5. First column: the three NAC images overlaid with the spatial distribution of the boulders grouped in size (m). Second column: the SFD of the boulders computed for the pre- and the post-collapse (both computed in the 1.5-6.5 m range, see Supplementary Table 2), together with the corresponding power-law index.



Supplementary Figure 6. OSIRIS NAC image obtained on 6 August 2016 at 16:56:48 UT from a distance of 7.80 km from the surface and a corresponding scale factor of 0.14 m/pixel. The white bar is 15 m long, while the yellow one is 3 m. It is evident how the typical sizes of the chunks below the cliff are below 3–3.5 m. The white arrows mark the limit of the collapsed cliff.



Supplementary Figure 7. Sensitivity analysis - box plots of the power-law indices obtained by varying the size of the identified boulders by different values, i.e. from ± 0.005 to ± 1.000 m. The upper and lower hinges correspond to the 25th and 75th percentiles; the whiskers extend from the minimum to the maximum values.

Tables

Figure (Panel)	Instrument	Acquisition time (year-month-dayThh.mm.ss) in UTC	Rosetta-Sun distance (AU)	Phase Angle (°)	Filter	Wavelength (nm)	Rosetta - 67P center distance (km)	Spatial Scale (m/pixel)
1a	OSINAC	2015-07-04T16.33.32	1.33	89.70	F23	535.7	173.84	3.24
1b	NavCam	2015-07-10T02.36.35	1.31	90.04	/	/	156.58	15.81
1c	OSINAC	2015-07-15T12.51.35	1.29	89.55	F22	649.2	164.51	3.06
1d	OSINAC	2015-12-26T17.05.04	1.97	89.44	F22	649.2	77.05	1.41
2a	OSINAC	2014-09-19T13.42.48	3.33	68.82	F22	649.2	28.29	0.50
2b	OSINAC	2015-03-20T01.17.47	2.05	50.99	F22	649.2	80.72	1.48
2c	OSINAC	2016-06-08T14.34.26	3.16	46.82	F22	649.2	29.72	0.52
2d	OSINAC	2014-09-21T01.09.01	3.32	62.32	F22	649.2	27.61	0.48
2e	OSINAC	2014-09-22T04.44.19	3.31	67.85	F22	649.2	28.14	0.49
2f	OSINAC	2016-05-18T23.53.37	3.03	89.60	F22	649.2	8.40	0.12
3a-d	OSINAC	2015-07-19T04.06.41	1.28	89.13	F23	535.7	179.87	3.35
3a-d	OSINAC	2015-07-19T04.06.52	1.28	89.13	F22	649.2	179.87	3.35
3a-d	OSINAC	2015-07-19T04.07.04	1.28	89.13	F41	882.1	179.87	3.35
3a-d	OSINAC	2015-07-19T04.07.16	1.28	89.13	F24	480.7	179.87	3.35
3a-d	OSINAC	2015-07-19T04.07.27	1.28	89.13	F71	989.3	179.86	3.35
3a-d	OSINAC	2015-07-19T04.07.42	1.28	89.13	F27	701.2	179.86	3.35
3a-d	OSINAC	2015-07-19T04.07.54	1.28	89.13	F51	805.3	179.86	3.35
3a-d	OSINAC	2015-07-19T04.08.05	1.28	89.13	F61	931.9	179.86	3.35
3a-d	OSINAC	2015-07-19T04.08.18	1.28	89.13	F28	743.7	179.85	3.35
3a-d	OSINAC	2015-07-19T04.08.29	1.28	89.13	F16	360.0	179.85	3.35
3a-d	OSINAC	2015-07-19T04.08.42	1.28	89.13	F15	269.3	179.85	3.35
3e-i	OSINAC	2016-08-06T07.08.36	3.52	72.39	F24	480.7	8.35	0.12
3e-i	OSINAC	2016-08-06T07.08.48	3.52	73.39	F22	649.2	8.35	0.12
3e-i	OSINAC	2016-08-06T07.08.59	3.52	74.39	F41	882.1	8.35	0.12
5a	OSINAC	2014-09-21T02.34.51	3.32	62.37	F41	882.1	27.59	0.48
5b	OSINAC	2016-06-08T14.34.26	3.16	46.82	F22	649.2	29.72	0.52
5c	OSINAC	2016-06-18T01.36.36	3.22	68.63	F22	649.2	30.85	0.54
Suppl. 2a	OSINAC	2014-09-21T01.09.01	3.32	62.32	F22	649.2	27.61	0.48
Suppl. 2a	OSINAC	2014-09-21T01.09.52	3.32	62.32	F41	882.1	27.61	0.48
Suppl. 2b	OSINAC	2014-09-21T01.42.48	3.32	62.34	F22	649.2	27.6	0.48
Suppl. 2b	OSINAC	2014-09-21T01.43.39	3.32	62.34	F41	882.1	27.6	0.48
Suppl. 2c	OSINAC	2016-08-06T07.08.36	3.52	72.39	F24	480.7	8.35	0.12
Suppl. 2c	OSINAC	2016-08-06T07.08.59	3.52	72.38	F41	882.1	8.35	0.12
Suppl. 2d	OSINAC	2016-08-06T07.23.36	3.52	72.15	F24	480.7	8.35	0.12
Suppl. 2d	OSINAC	2016-08-06T07.23.59	3.52	72.14	F41	882.1	8.35	0.12
Suppl. 4	OSINAC	2014-09-21T02.34.51	3.52	62.37	F41	882.1	27.59	0.48
Suppl. 5a	OSINAC	2014-09-21T02.34.51	3.32	62.37	F41	882.1	27.59	0.48
Suppl. 5b	OSINAC	2016-06-08T14.34.26	3.16	46.82	F22	649.2	29.72	0.52
Suppl. 5c	OSINAC	2016-06-18T01.36.36	3.22	68.63	F22	649.2	30.85	0.54
Suppl. 6	OSINAC	2016-08-06T16.56.48	3.52	77.54	F22	649.2	9.34	0.14

Supplementary Table 1. List of all images used in this work. OSINAC refers to the OSIRIS Narrow Angle Camera images, while NavCam refers to the Rosetta Navigation Camera image.

Pre					
Bin	Frequency	Cumulative no.	Error cumul. no.	Cumulative no. sq. km	Error cumulative no. sq km
1.5	312	657	25.63	11784	459.73
2.0	193	345	18.57	6188	333.14
2.5	61	152	12.33	2726	221.13
3.0	26	91	9.54	1632	171.09
3.5	20	65	8.06	1166	144.60
4.0	16	45	6.71	807	120.32
4.5	14	29	5.39	520	96.59
5.0	5	15	3.87	269	69.46
5.5	2	10	3.16	179	56.72
6.0	2	8	2.83	143	50.73
6.5	0	6	2.45	108	43.93
7.0	0	6	2.45	108	43.93
7.5	2	6	2.45	108	43.93
8.0	0	4	2.00	72	35.87
8.5	1	4	2.00	72	35.87
9.0	0	3	1.73	54	31.07
9.5	1	3	1.73	54	31.07
10.0	0	2	1.41	36	25.36
10.5	1	2	1.41	36	25.36
11.0	0	1	1.00	18	17.94
11.5	0	1	1.00	18	17.94
12.0	0	1	1.00	18	17.94
12.5	0	1	1.00	18	17.94
13.0	0	1	1.00	18	17.94
13.5	0	1	1.00	18	17.94
14.0	0	1	1.00	18	17.94
14.5	0	1	1.00	18	17.94
15.0	0	1	1.00	18	17.94
15.5	0	1	1.00	18	17.94
16.0	1	1	1.00	18	17.94

Post					
Bin	Frequency	Cumulative no.	Error cumul. no.	Cumulative no. sq. km	Error cumulative no. sq km
1.5	613	1028	32.06	18438	575.06
2.0	226	415	20.37	7443	365.38
2.5	78	189	13.75	3390	246.57
3.0	52	111	10.54	1991	188.96
3.5	20	59	7.68	1058	137.77
4.0	14	39	6.24	699	112.01
4.5	10	25	5.00	448	89.68
5.0	6	15	3.87	269	69.46
5.5	2	9	3.00	161	53.81
6.0	1	7	2.65	126	47.45
6.5	0	6	2.45	108	43.93
7.0	1	6	2.45	108	43.93
7.5	2	5	2.24	90	40.11
8.0	0	3	1.73	54	31.07
8.5	0	3	1.73	54	31.07
9.0	1	3	1.73	54	31.07
9.5	0	2	1.41	36	25.36
10.0	0	2	1.41	36	25.36
10.5	1	2	1.41	36	25.36
11.0	0	1	1.00	18	17.94
11.5	0	1	1.00	18	17.94
12.0	0	1	1.00	18	17.94
12.5	0	1	1.00	18	17.94
13.0	0	1	1.00	18	17.94
13.5	0	1	1.00	18	17.94
14.0	0	1	1.00	18	17.94
14.5	0	1	1.00	18	17.94
15.0	0	1	1.00	18	17.94
15.5	0	1	1.00	18	17.94
16.0	1	1	1.00	18	17.94

Supplementary Table 2. The frequency and cumulative numbers, both absolute and per km² of the pre- and post-collapse boulder analysis. The yellow row indicates the size limit used to compute the power-slope indices.

Videos

Supplementary Video 1. Video representation of the illumination conditions at the Aswan cliff and plateau on 10 July 2015.