Supplementary Material S1 – Photographic record of the summer 2019 eruptive activity of Stromboli and related deposits

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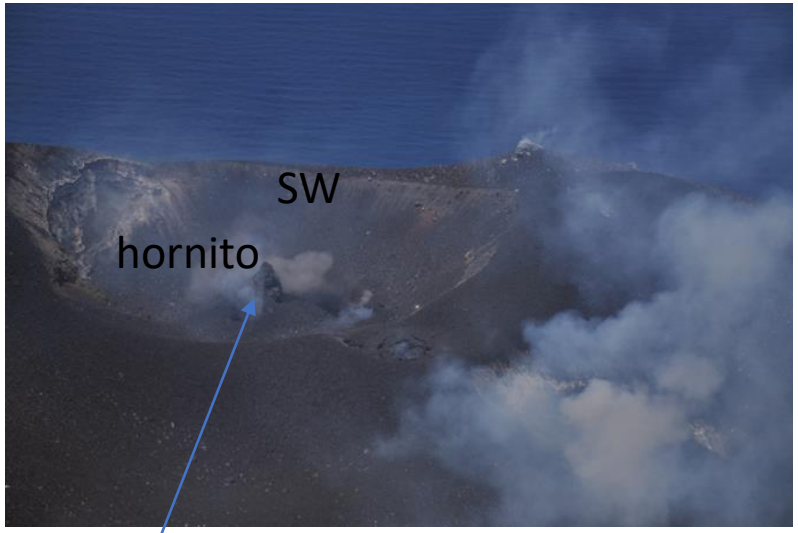
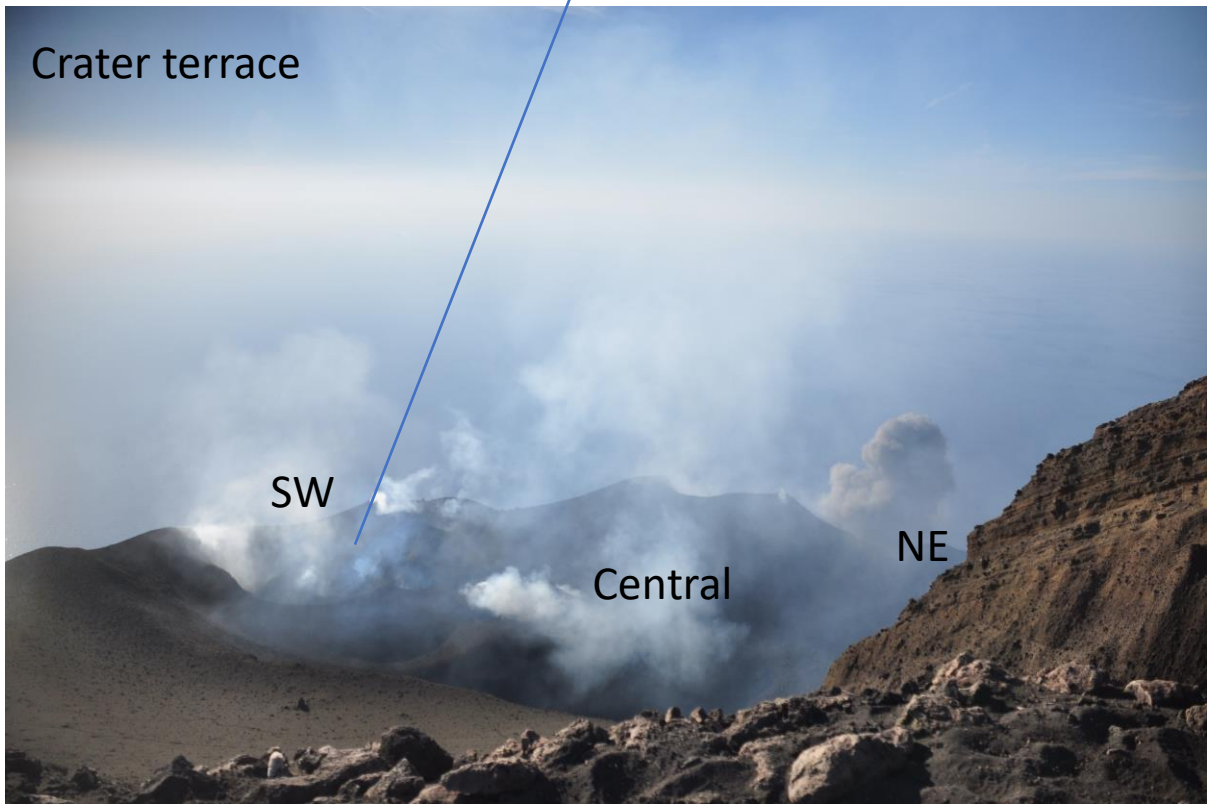
Fig. S1a; 20-23 JUNE 2019





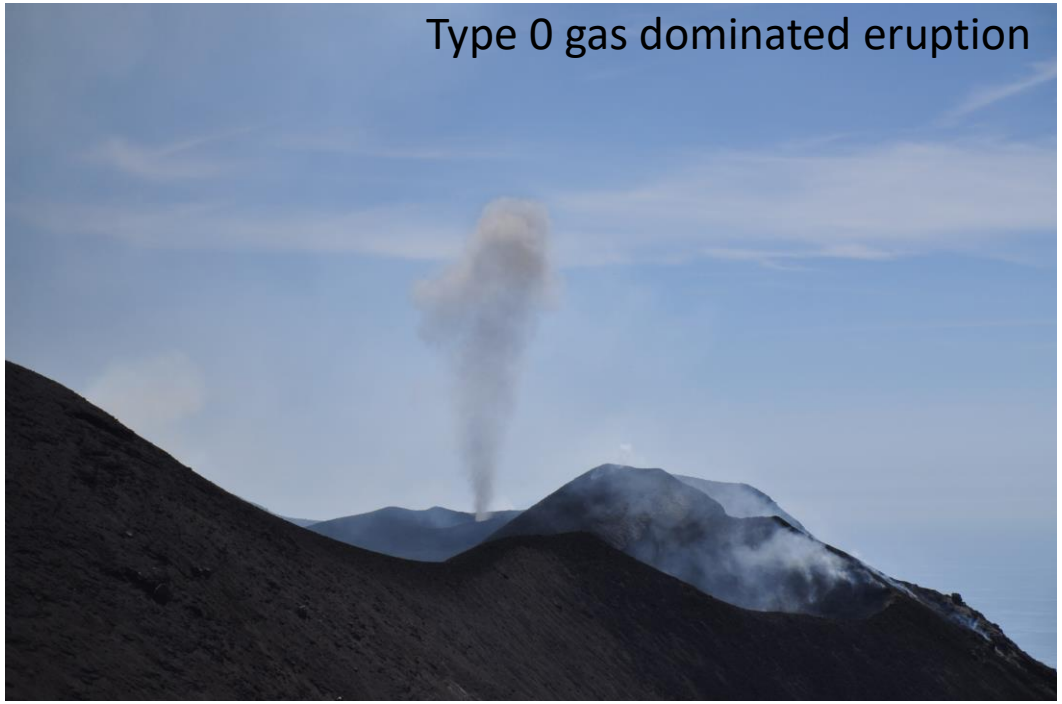
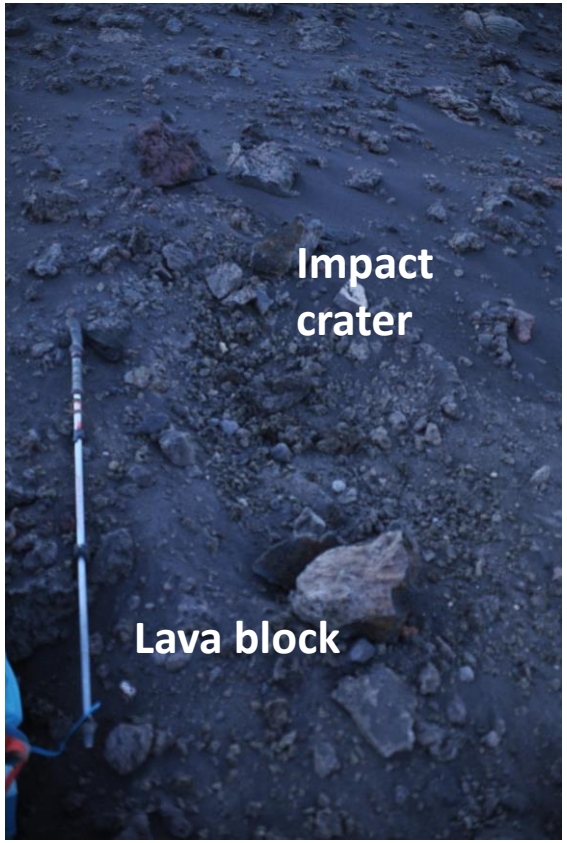


Fig. S1b; 25 JUNE 2019 – MAJOR EXPLOSION, 23:03 UTC



Isopleths (dashed yellow lines) of spatter bombs and lava blocks of the June 25 Major explosion. the dotted black arrows indicate the rolling stone paths, which set fire to the bush below

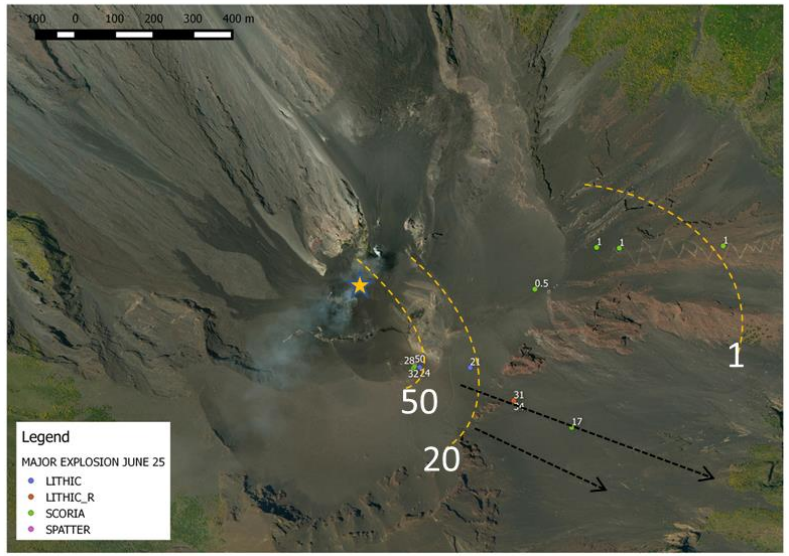
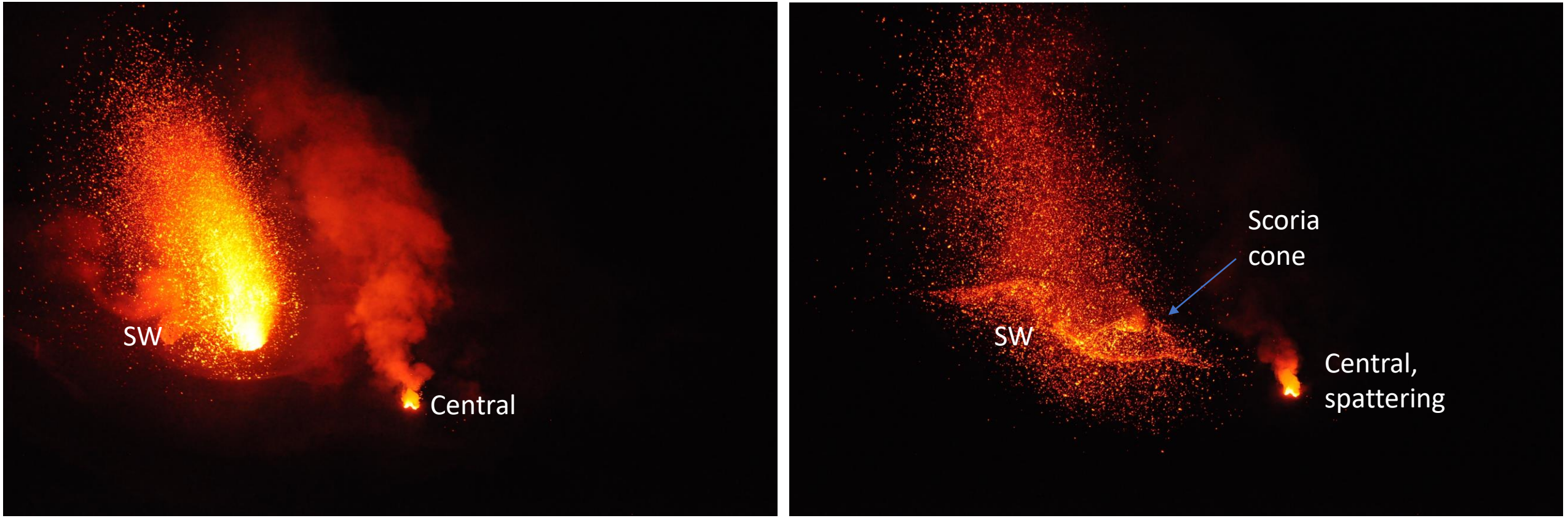


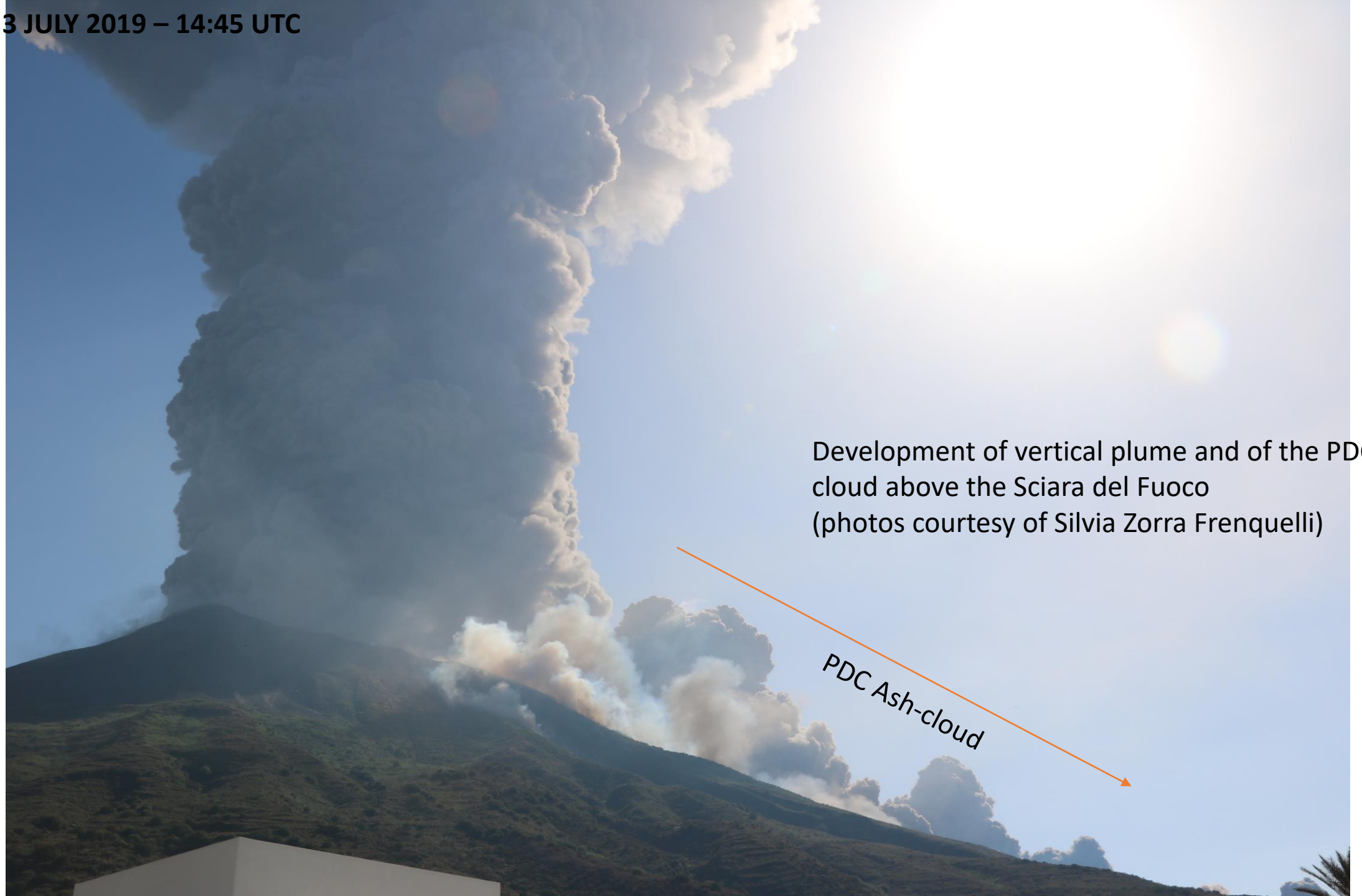
Fig. S1c; 25 JUNE 2019 – MAJOR EXPLOSION, 23:03 UTC

Fig. S1d; 2 JULY 2019



Intense and frequent Type 1 strombolian fountains from the SW crater and continuous spattering from the Central crater characterised the night before the paroxysm

Fig. S1e; 3 JULY 2019 – 14:45 UTC



Development of vertical plume and of the PDC ash-cloud above the Sciara del Fuoco
(photos courtesy of Silvia Zorra Frenquelli)

Fig. S1e; 3 JULY 2019 – 14:45 UTC

Fig. S1g; 3 JULY

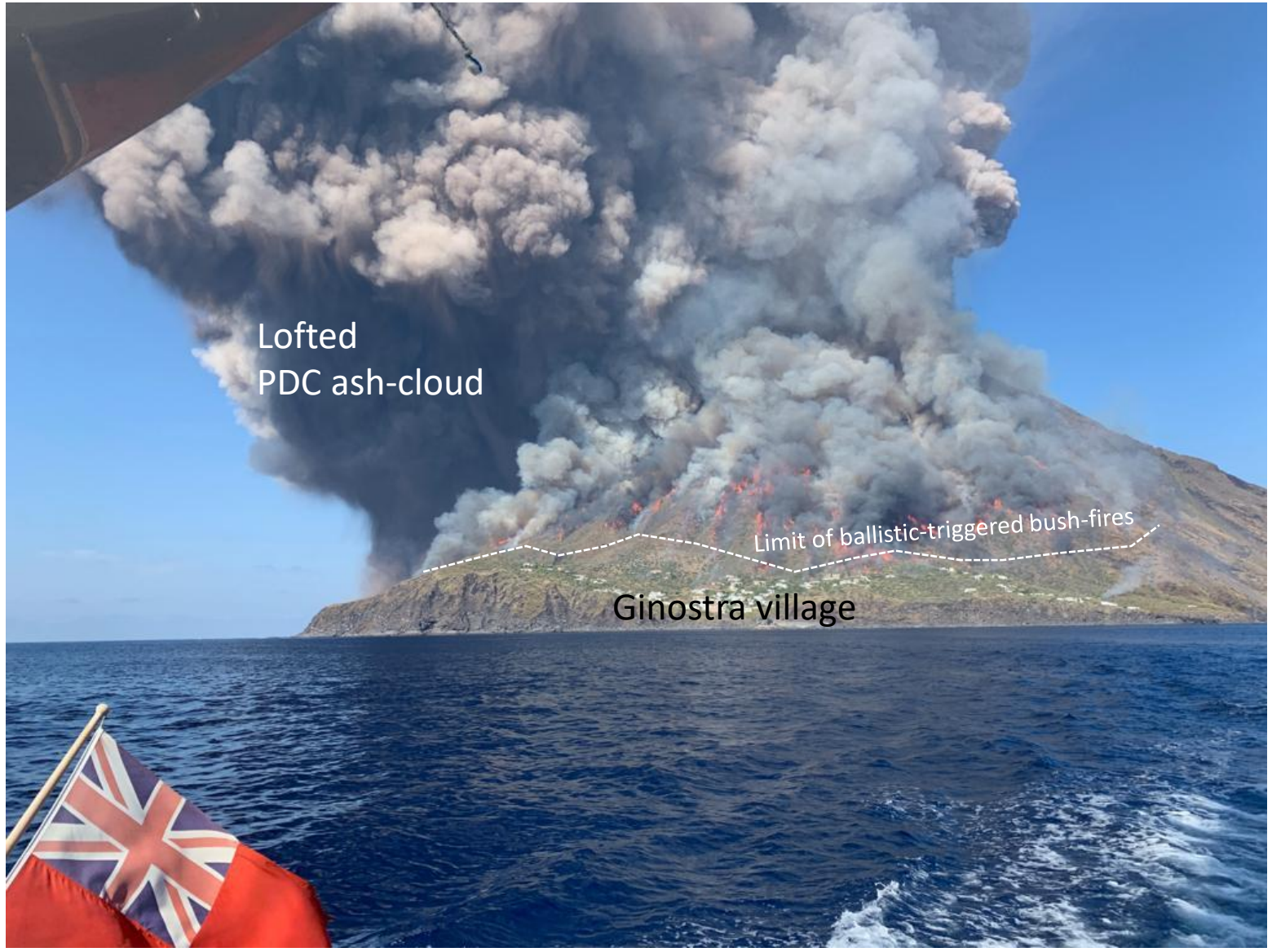


Photo courtesy of Saloua Rinauro

Fig. S1h; 3 JULY

Eruption plume drifed to southwest where Ginostra village was hot by 35-45 minutes of pumice lapilli fall (photo to the left taken from the S. Vincenzo square in Stromboli village; photo to the right taken from offshore courtesy of Alessandro Fabrizi)

Fig. S1i; JUL 3 FALL DEPOSITS

Continuous pumice lapilli cover above house roofs in Ginostra Village

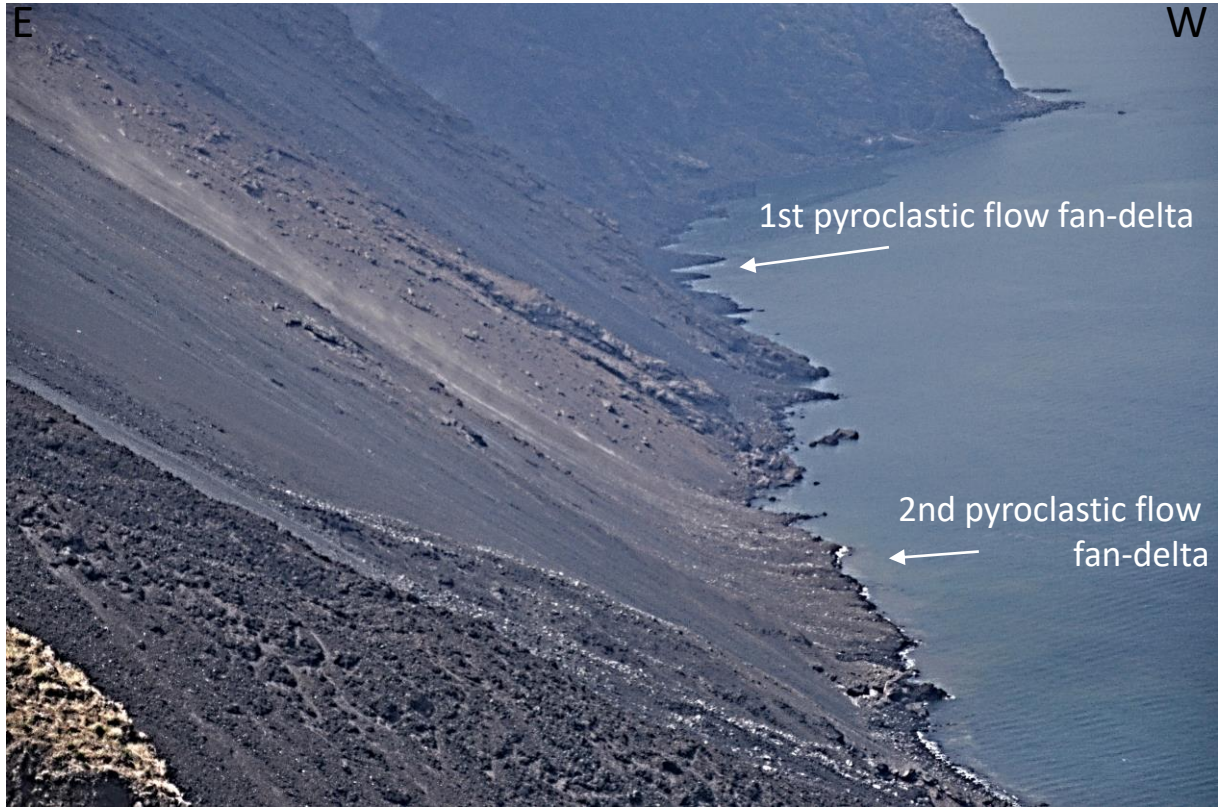
Continuous pumice lapilli cover at Ginostra Village harbour; pumice rafts float in the bay

Fig. S1j; JUL 3 FALL DEPOSITS

Droplets of fine ash preserved as final fall deposit on a boat at Ginostra harbour

Pumice lapilli at Ginostra pier – GIN1 sampling site, see S3a for location

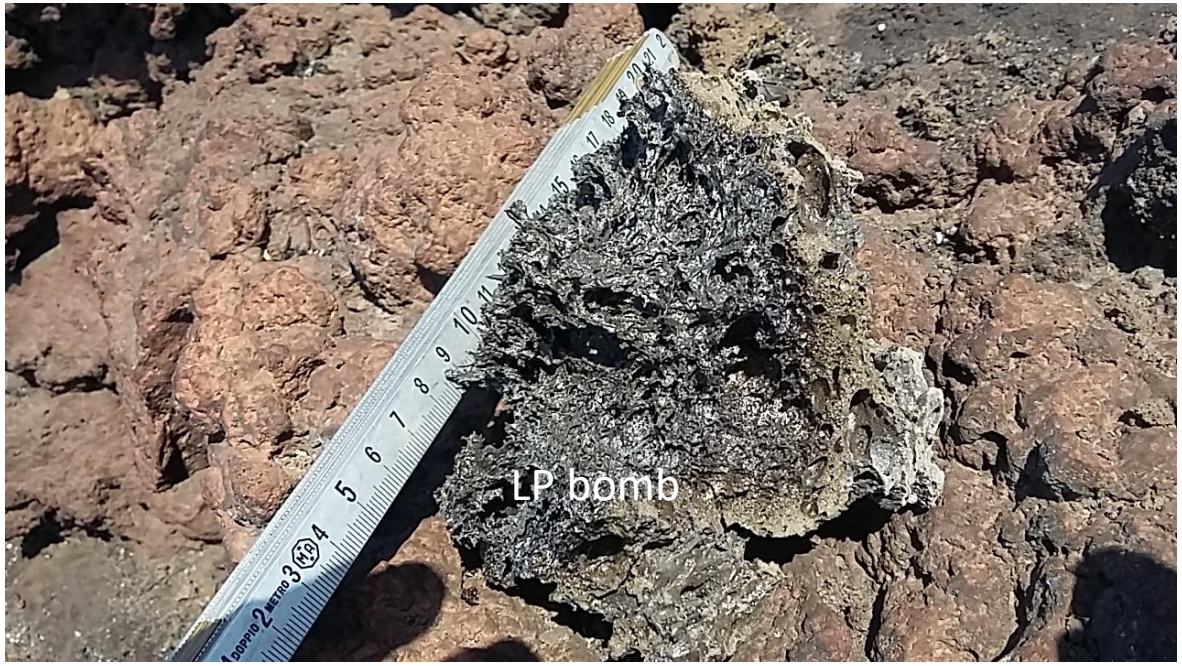
Fig. S1k; JUL 3 PYROCLASTIC FLOW DEPOSITS



The two pyroclastic flows formed during the July 3 paroxysm left hot, steaming deposits and smal fan deltas at the base of the Sciara, later covered by lava blocks and eroded away

Fig. S1l; JUL 3 FALL DEPOSITS

Ballistic bombs of olive-brown (golden) aphyric pumice (LP magma), and lava blocks coated by HP scoria landed incandescent and set fires in the bush around Ginostra at elevations as low as < 200 m a.s.l. GIN 3 and OST13 sampling sites – see S3a for location



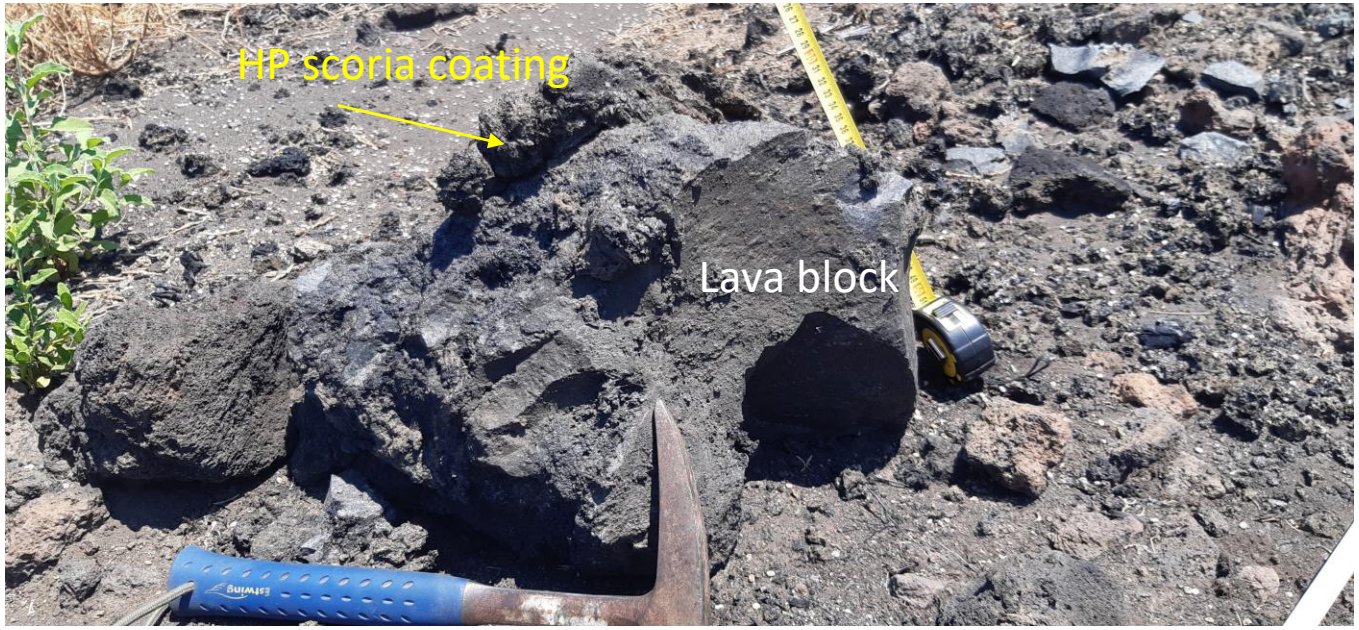
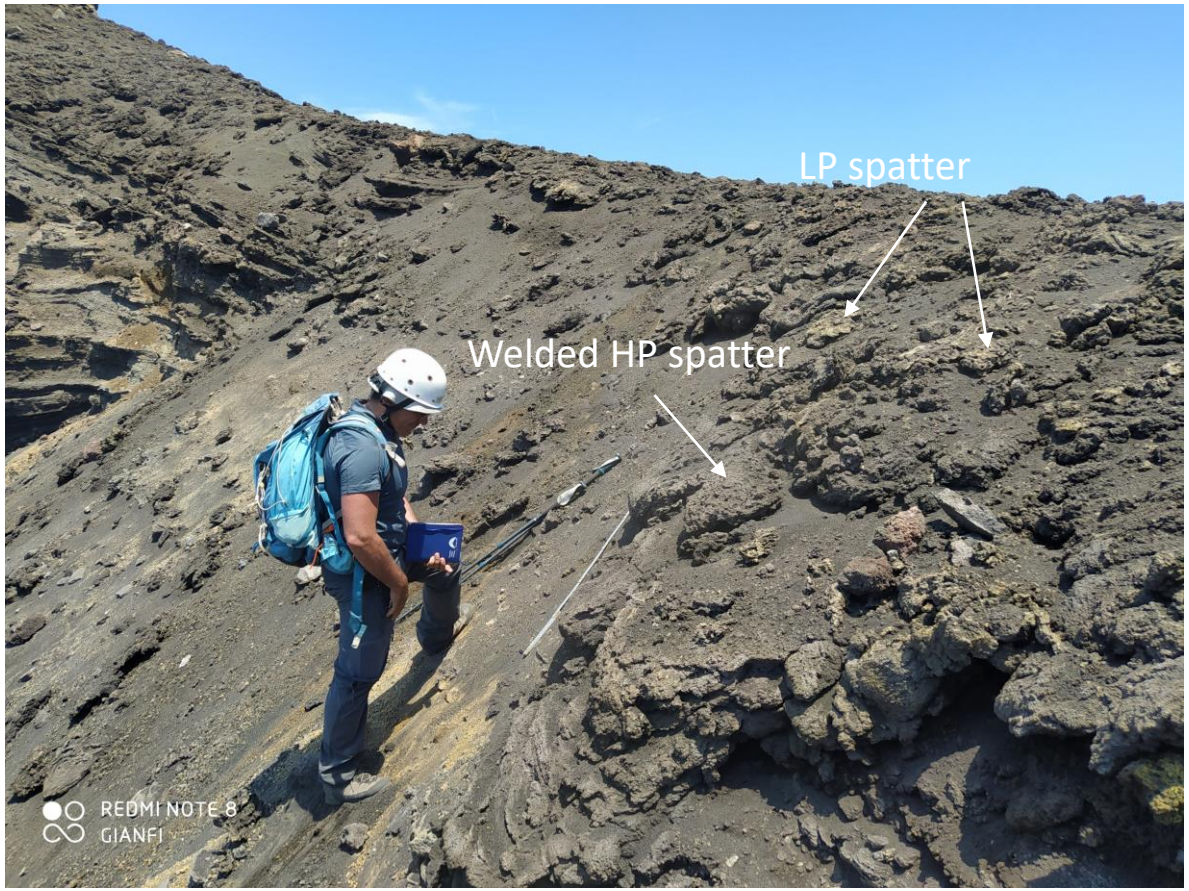


Fig. S1m; JUL 3 FALL DEPOSITS

Ballistic bombs on the northern slope of the volcano were mostly made of black-dark porphyritic scoriae (HP magma), found no lower than 400 m a.s.l.
GIN 5 sampling site – see S3a for location

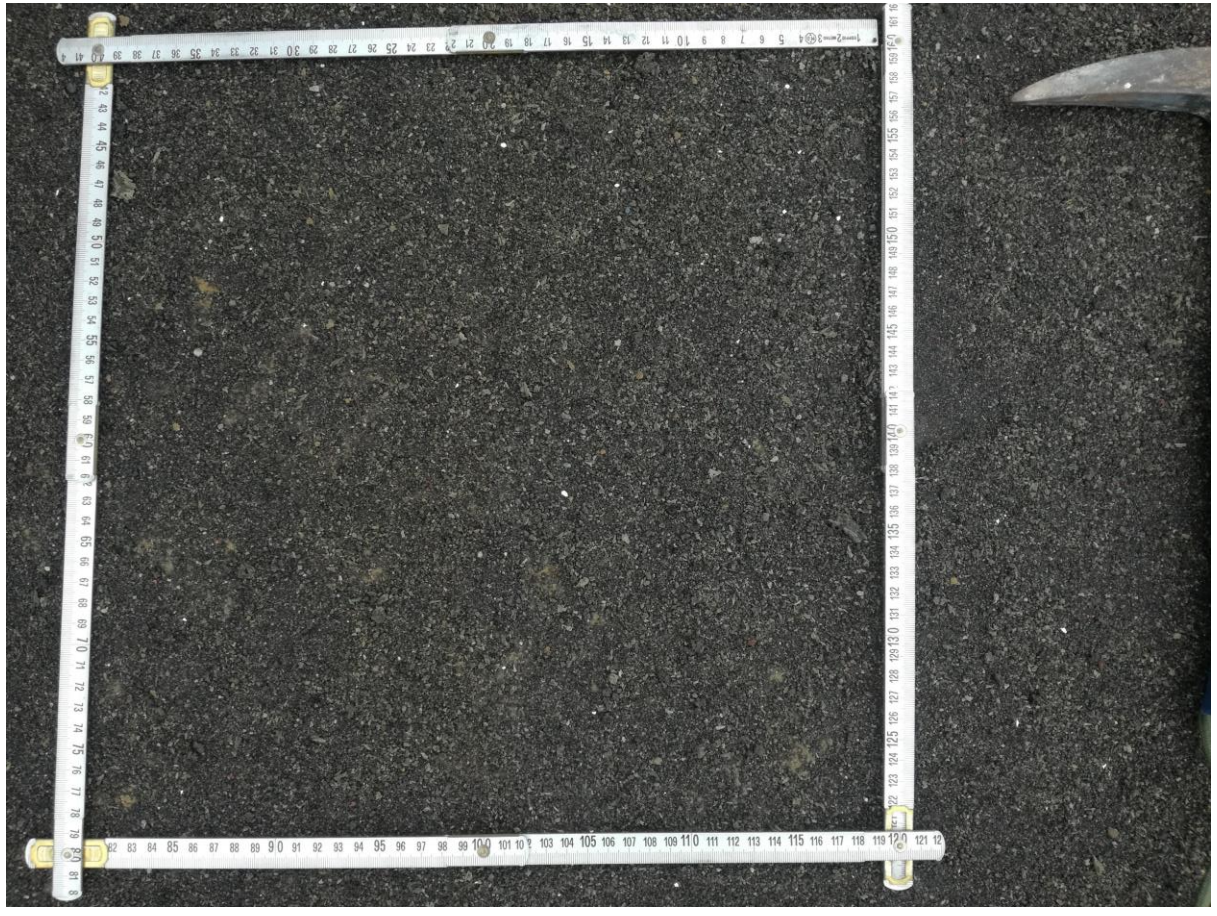
Fig. S1n; JUL 3 FALL DEPOSITS

Continuous welded spatter cover at Il Pizzo (918 m a.s.l.), 35 cm thick. The photo was taken on September 5, but the welded deposit made of HP spatter at the base and LP spatter atop is entirely attributable to the July 3 paroxysm. The August 28 paroxysm launched in this area only scattered lava blocks.
OST22 sampling site; see S3a for location

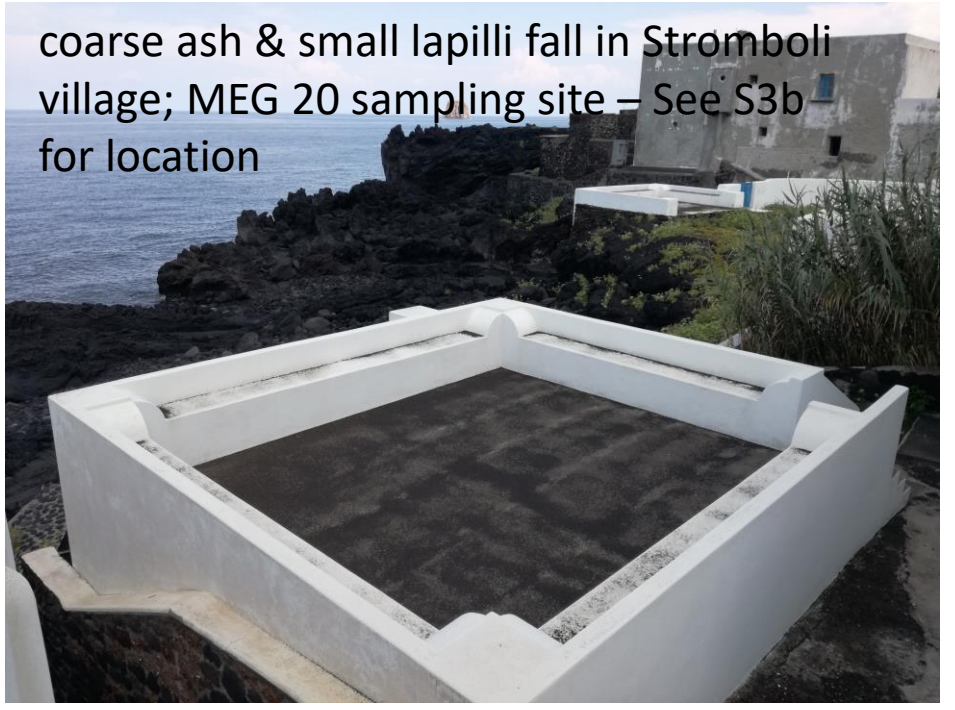


Scattered LP spatter bombs of July 3 eruption at summit Helipad (850 m a.s.l.); we counted 22 of them on the 70 m^2 of the helipad, the largest 120 cm in max diameter
MEG 17 sampling site; see S3 for location

Fig. S1o; 28 AUGUST 2019 FALL DEPOSITS



Pumice coarse ash & small lapilli fall in Stromboli village
MEG 2 sampling site – See S3b for location



coarse ash & small lapilli fall in Stromboli village; MEG 20 sampling site – See S3b for location

Max pumice lapilli size in Stromboli village
MEG 9 sampling site – See S3b for location