

Supplementary photographs of the Hafnarhraun pāhoehoe lobe

Article title: Formation of segregation structures in Hafnarhraun pāhoehoe lobe, SW Iceland: A window into crystal–melt separation in basaltic magma

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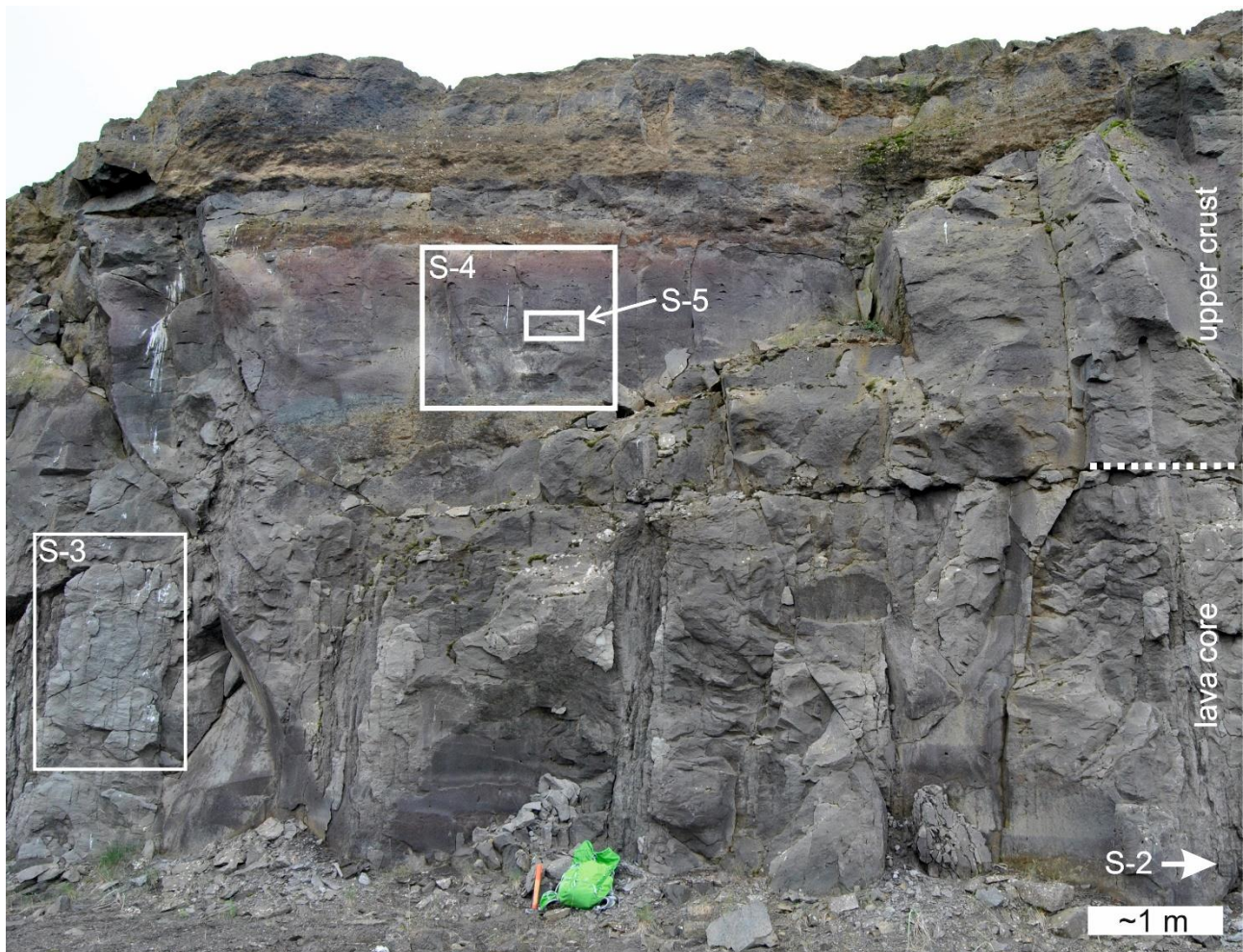


Fig S-1 Overview of a section of the Hafnarhraun pāhoehoe lobe and location of images S-2 to S-5. The basal contact of the lobe is covered in this view but exposed some meters to the right (S-2). In the lava core, abundant vesicles transect nearly the whole height of the core (S-3), from basal crust to the lowermost horizontal vesicle sheet (HVS) at approximate 3 m height. Laterally confined, pod-like or bell-jar shaped HVS and megavesicles abound in the upper crust (S-4 and S-5).



Fig S-2 Basal contact between the Hafnarhraun pāhoehoe lava lobe (upper half of the photograph) and underlying lava (lower half of the photograph). Pipe vesicles (PV) and small vesicle cylinders (small VC) are marked.



Fig S-3 Vesicle cylinders (VC) in the Hafnarhraun pāhoehoe lobe are continuous cylindrical structures that transect nearly the whole lava core. They are distinguished from the surrounding lava by their high vesicularity and darker color. The contact between VC and the surrounding lava is sharp.

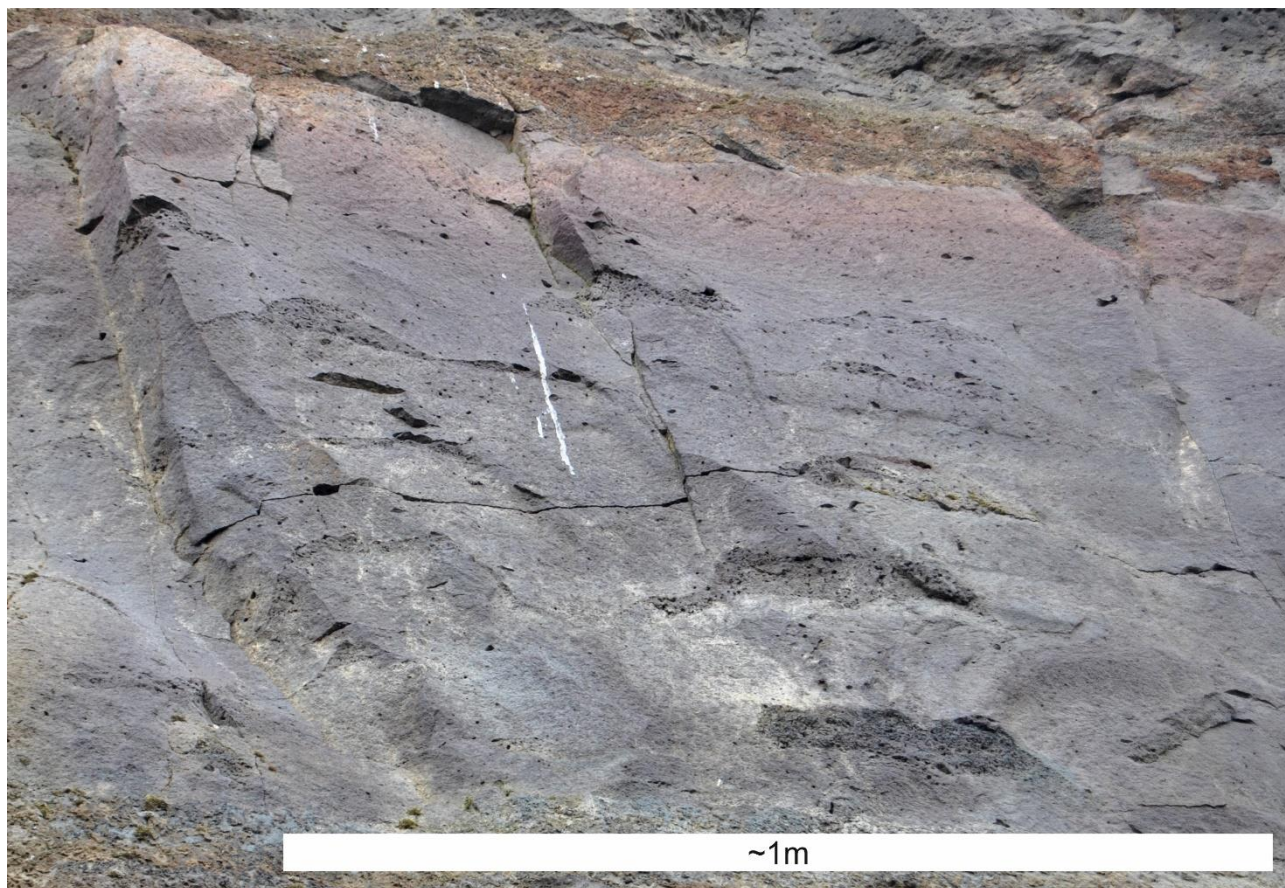


Fig S-4 A photograph of the horizontal vesicle sheets (HVS) in the upper crust of the Hafnarhraun pāhoehoe lobe taken from the ground level. Although the lowermost HVS at 3-meter-height has a lateral extent of ~15 m, HVS in the upper crust are laterally confined (< 3 m in extent) on the exposed plane of the quarry wall, and have pod-like or bell-jar shapes.



Fig S-5 A close-up photograph of a horizontal vesicle sheet (HVS) in the upper crust of the Hafnarhraun pāhoehoe lobe.

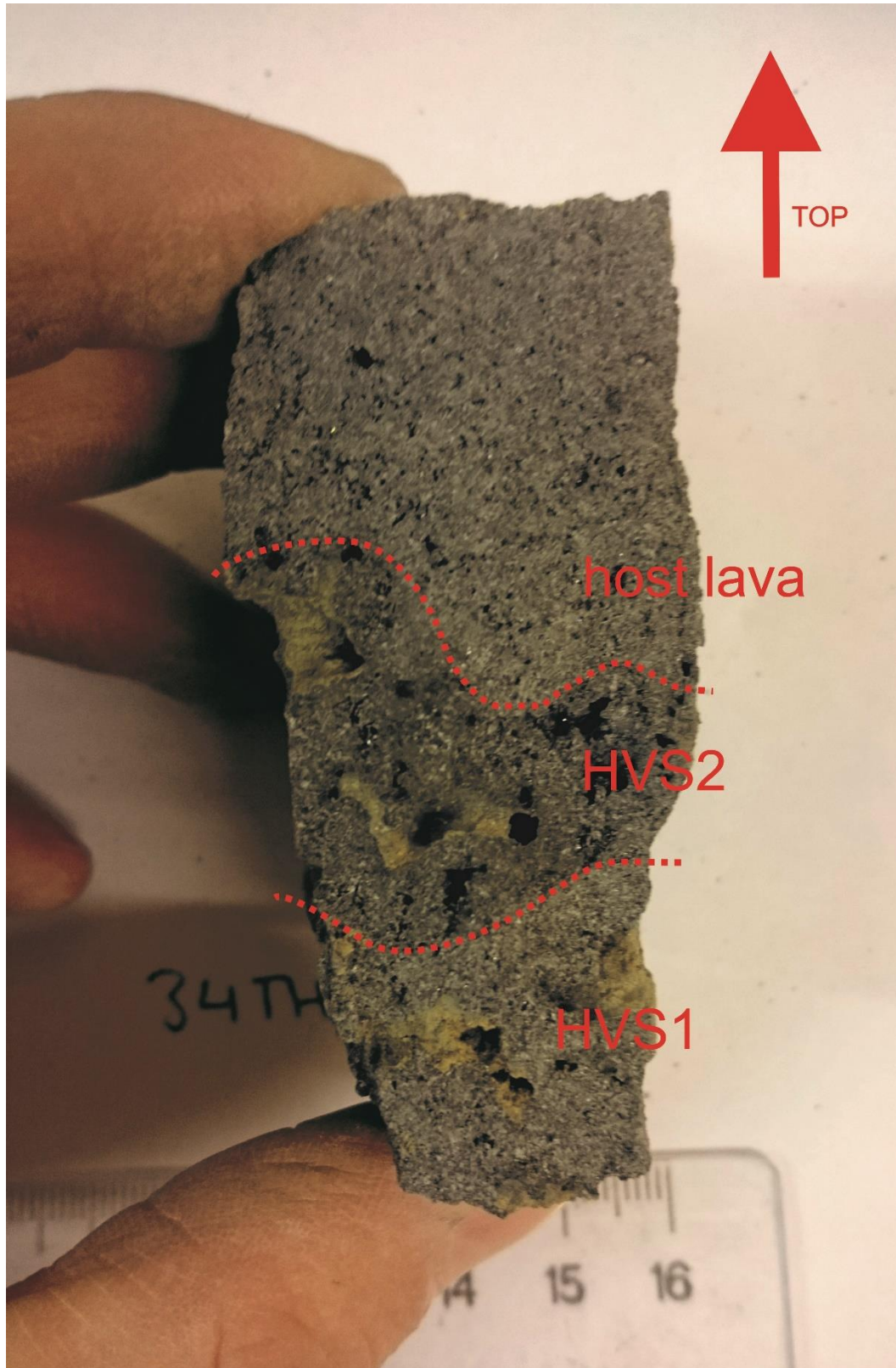


Fig S-6 When processing a horizontal vesicle sheet (HVS) in sample 34TH15, we found that it was composed of two distinct segments (HVS1 and HVS2). The upper segment has a more evolved composition (lower MgO and higher FeO) and corresponds to a group of HVS we refer as Type 2 Horizontal vesicle sheets (HVS2). The lower segment of the HVS has only modestly differentiated composition in comparison to the host lava, typical of Type 1 Horizontal vesicle sheets (HVS1).