This supplementary material accompanies the article:

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Fe-rich filamentary textures unveil timescales of magmatic interaction before the onset of high-energy explosive events at basaltic volcanoes

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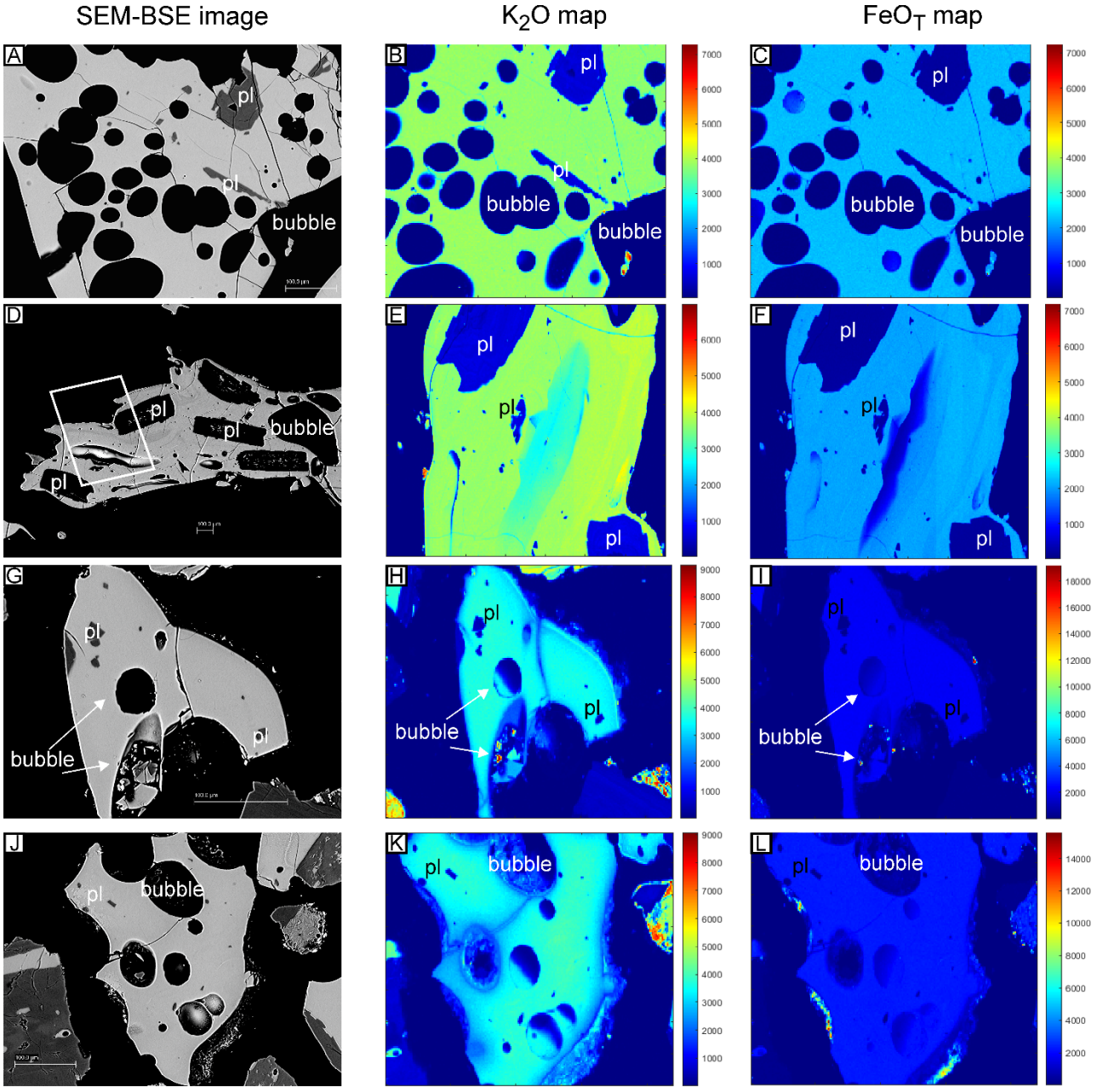
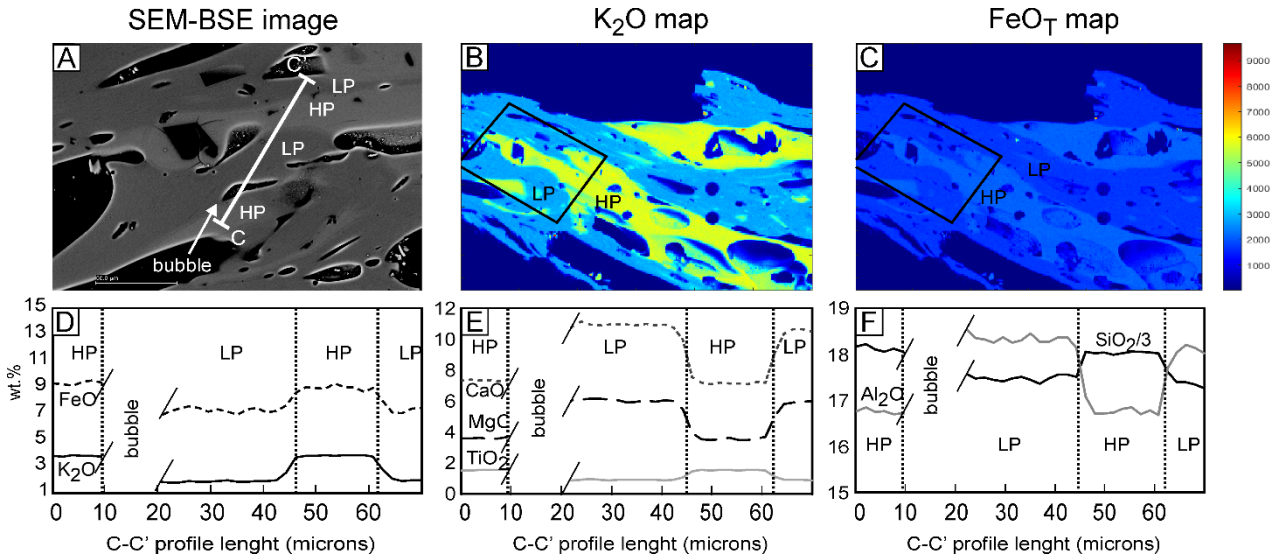
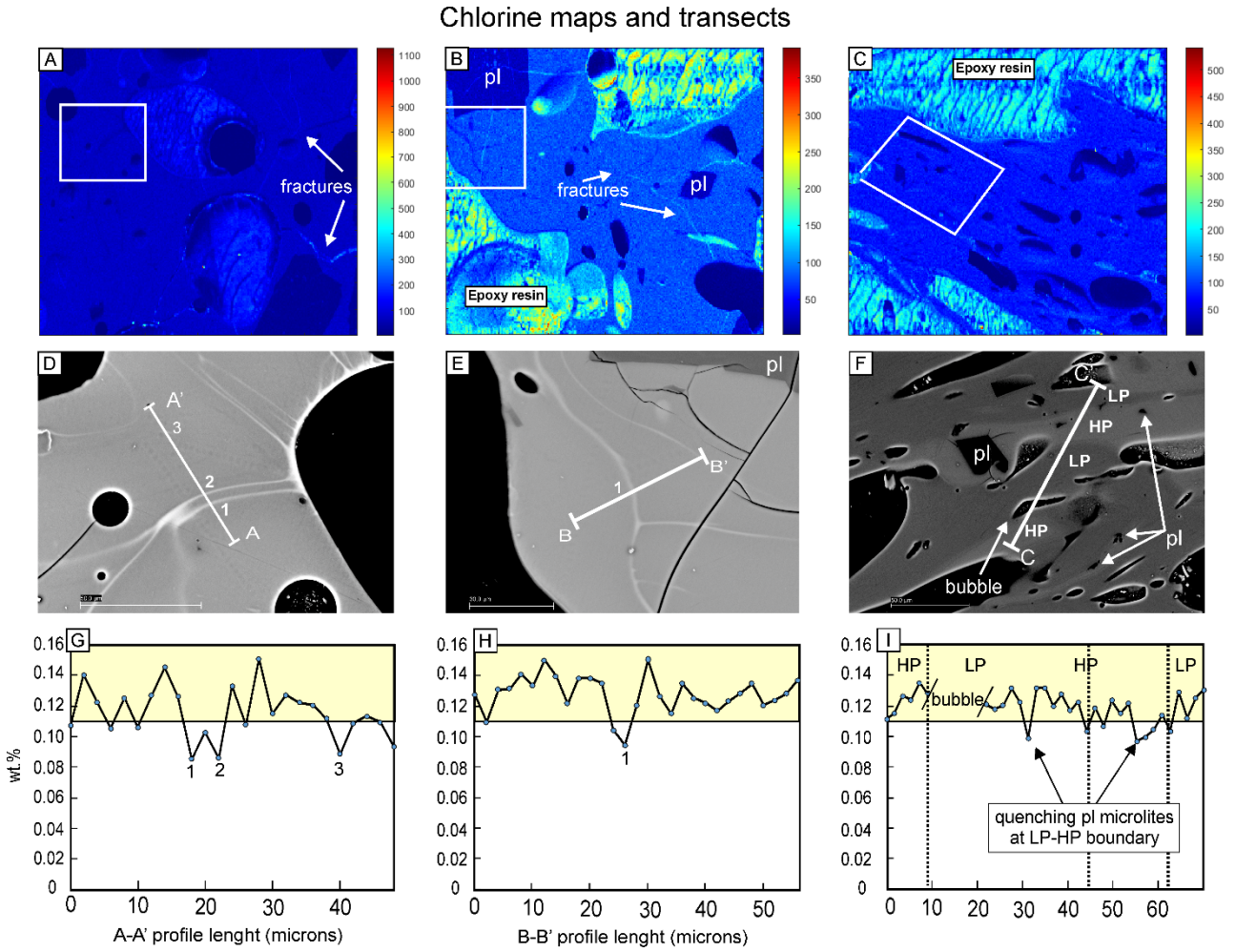
Supplementary figures and captions



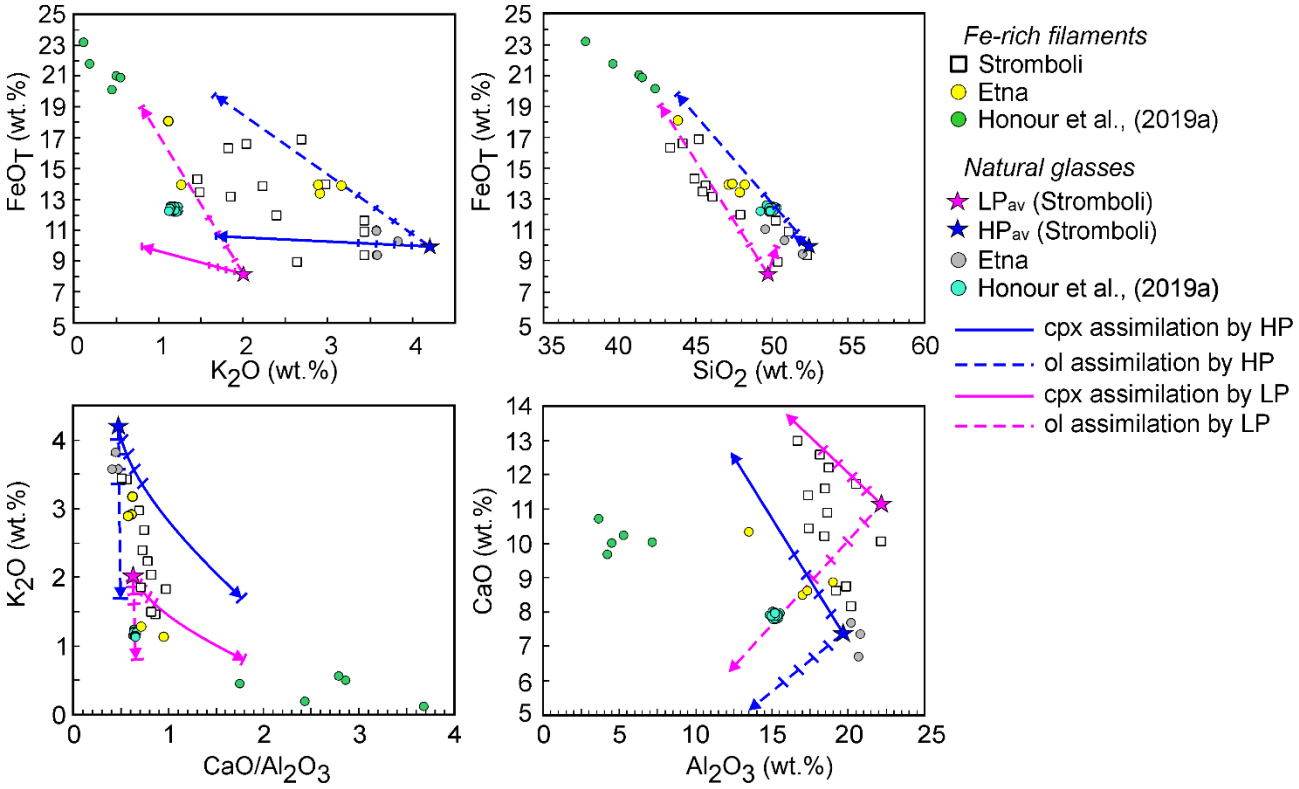
Figure_S1 Stromboli ash and lapilli from "normal activity" of 11 April 2022 (A-F) and 29 June 2022 (G-L). On the left, SEM-BSE images of the clasts; in the middle, Potassium map; on the right, Iron map. pl= plagioclase. Lapilli from "normal activity" of 11 April 2022 (D) show a non-homogeneous gray tone of the groundmass glasses, resulting in 2-4% of variation in major oxides.



Figure_S2 Ash from 28 August 2019 paroxysm of Stromboli. A) SEM-BSE image of groundmass with different gray tones representing the LP (dark) and HP (light) melts mingled together. C-C^1 represents the track of the EMPA compositional profile. B) and C) are the K_2O and FeO_T compositional maps, respectively. In D), E) and F) are reported the variations of major oxides along the profile C-C^1. On the left side, the profile is interrupted by the presence of a bubble. It is worth noting the sharp contact between the two melts showing strong difference in composition.



Figure_S3 Chlorine distribution in the groundmass glasses of 13 May 2022 “major explosion” (A,B; D,E; G;H) and of the paroxysm of 28 August 2019 (C,F,I). A-C) EMPA compositional maps; D-F) SEM-BSE images with compositional profile traces. The numbers correspond to the points where the profile intercepts the Fe-rich filaments; G-I) variation of the Chlorine content (in wt.%) along the compositional profiles.



Figure_S4 Bivariate compositional diagrams for Fe-rich filaments and glasses in Stromboli and Etna products (this work) compared with a selection of data from Honour et al. (2019a). Mass balance vectors are also shown, depicting the Fs_{18} cpx (continuous lines) and Fo_{71} olivine (dashed lines) assimilation by both HP (blue star) and LP (magenta star) average (av) starting compositions at Stromboli (see Table S2 for calculation details).