

Description of Additional Supplementary Files

File name: Supplementary Data 1

Description: Exponential and power law equations characterizing the vesicle size distributions of samples from the Fontana Lapilli, Masaya Triple Layer and Etna eruptions.

File name: Supplementary Data 2

Description: Tortuosity, presented as the mean value and standard deviation for each sample.

File name: Supplementary Data 3

Description: Results of the sensitivity analysis, performed using the Masaya Triple Layer composition and initial conditions, for a conduit radius of 25 m, 10 m and 5 m.

File name: Supplementary Data 4

Description: Results of the sensitivity analysis using the Etna 122 BC composition and initial conditions.