Formation and dispersal of ash at open conduit basaltic volcanoes: lessons from Etna

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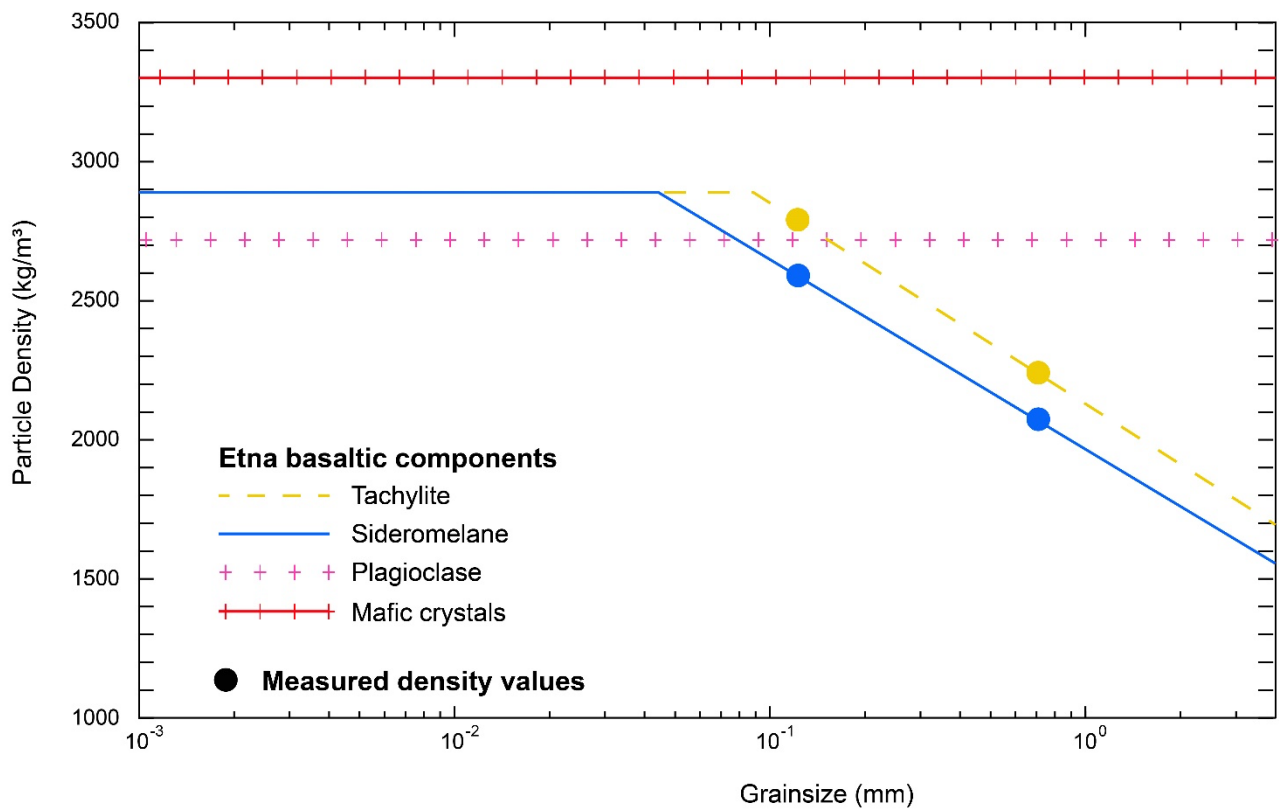
SUPPLEMENTARY DATASET 1

Fig. 1.1: Density profiles used for the different textural components in the ash settling modelling. The profiles follow typical density variations with grainsize that are well documented in the literature (Rossi et al., 2021; Cashman and Rust 2016; Eychenne and Le Pennec 2012). Density values for tachylite and sideromelane in the 710-1000 and 125-180 μm grainsize fractions were derived from vesicularity measurements performed by SEM image analysis (see methods section).
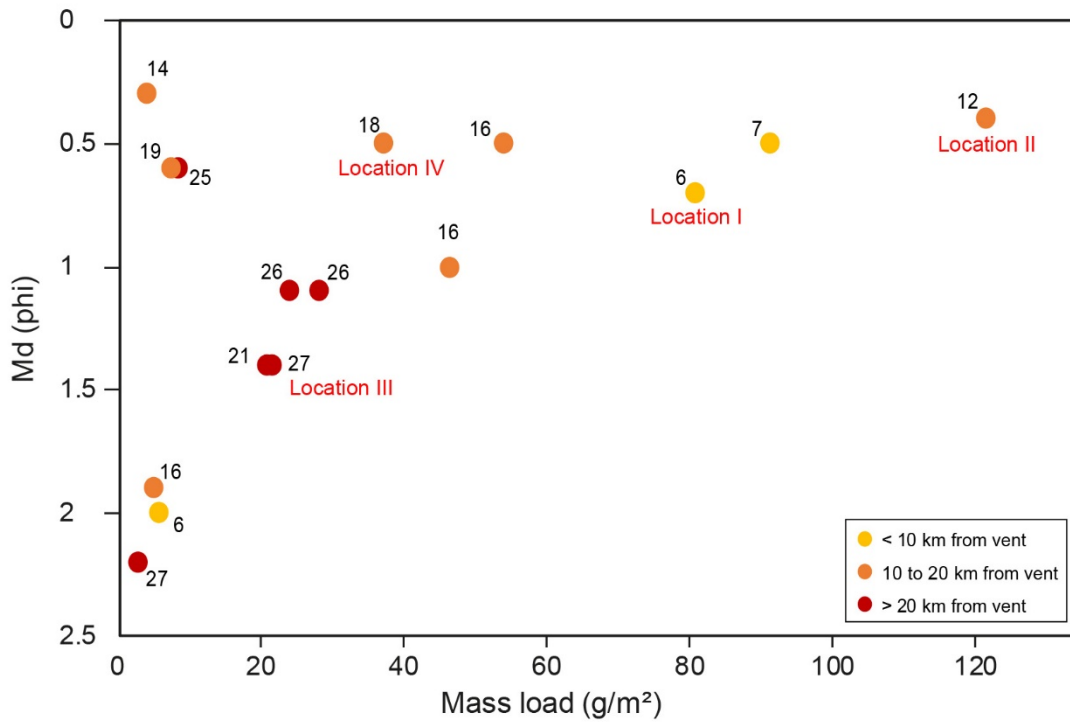
Fig. 1.2: Variations of Mass load (g/m²) vs. Median diameter (phi) in the 21 May 2016 Etna tephra fall deposit. The data points are coloured according to the distance from vent of the sampling location. The distance of the sampling location in km is indicated as labels. The four sampling locations studied in this work are also indicated.
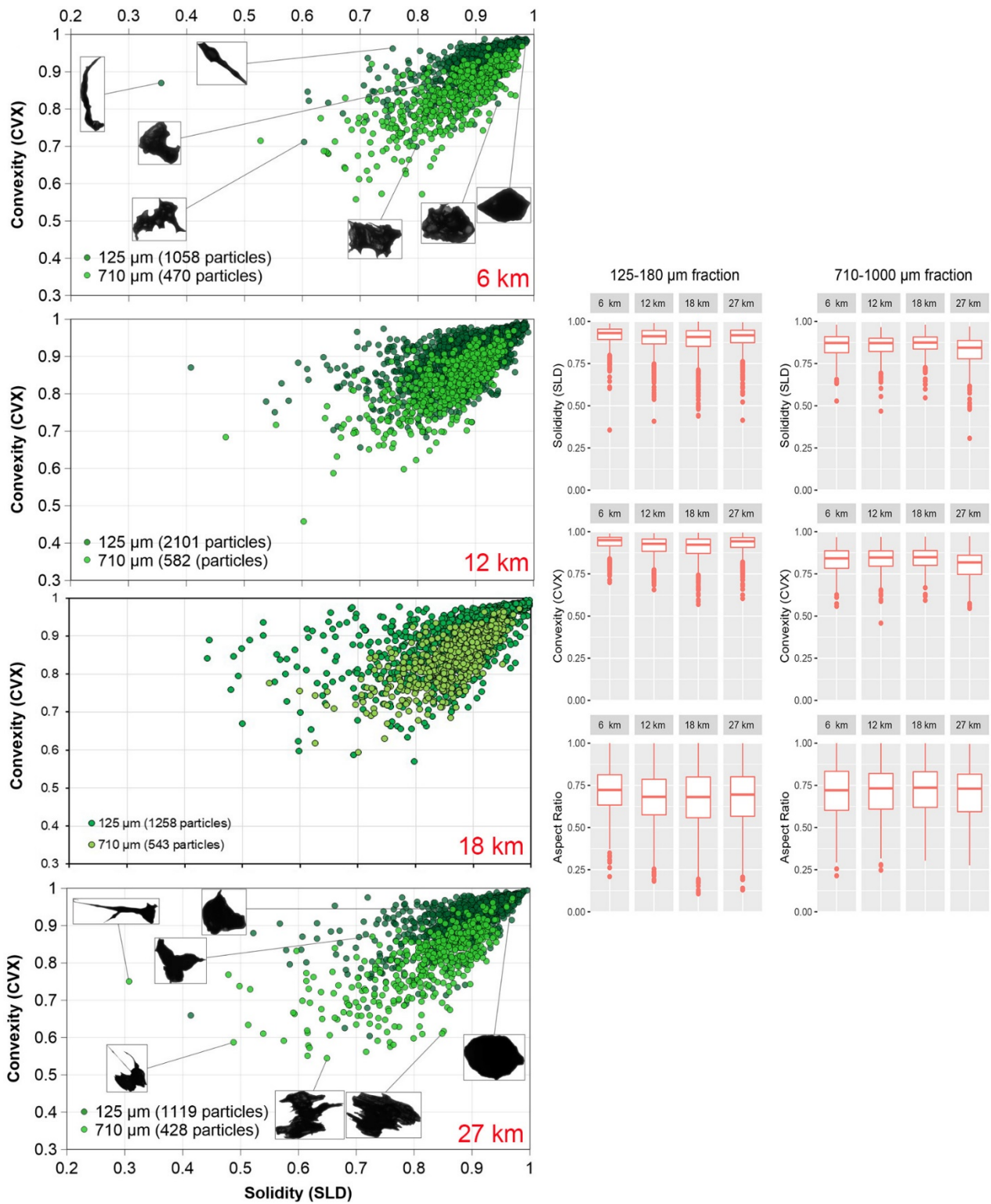
Fig. 1.3: Morphological parameters of the 125-180 and 710-1000 µm ash fractions at locations I (6 km from vent), II (12 km from vent), IV (18 km from vent) and III (27 km from vent), acquired by Morphologi G3 analyses. The scatter plots present Solidity vs. Convexity parameters of 125-180 µm particles, and 710-1000 µm particles. Boxplots of the total ash for solidity, convexity and aspect ratio, distinguished by location. The boxplots are Tukey whiskers plots (where the thick middle line is the median, the lower and upper hinges are the 25th and 75th percentiles, the lower and upper whiskers extend from the hinge to the smallest or largest

value no further than 1.5 x the inter quartile range, i.e. distance between the first and third quartiles, outliers are plotted individually).