



Developments in analysis of basaltic ash applied to recent activity at Stromboli and Etna volcanoes

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Volcanic ash is widely distributed and therefore generally safe to collect in real-time, however, there is a paucity of published studies that characterize the textural properties of ash (relative to larger clasts), probably because its small size makes ash inherently difficult to analyze. Recent advances in analytical techniques enable automated, relatively quick, quantitative classification of the morphoscopy and surface chemistry of a hundreds of ash particles using a Field Emission SEM. We present results of such analysis on eight samples of ash collected at different locations from a weak ash-producing event at Etna on 24 November 2006, and seven samples of ash collected during the 2007 eruptive crisis of Stromboli. The latter includes ash from lava-sea water interaction, the paroxysmal explosion on 15 March, and Strombolian explosions at the summit craters. The morphoscopy data can be compared to grain size data collected by conventional techniques, while the surface chemistry data can be considered a proxy for component analysis, as it reflects the degree of crystallinity and alteration of the particles. Our data show that insight into the particle source and eruptive dynamics of both volcanoes can be obtained from this detailed analysis of the ash. In particular, the different sources of ash at Stromboli have distinctive alteration signatures, while the Etna samples show subtle differences that can be related to relatively small-scale plume zonations.