



## **Two contemporaneous processes of volcanic ash formation at Stromboli volcano, Italy**

Ulrich Kueppers (1), Daniele Andronico (2), and Jacopo Taddeucci (3)

(1) Ludwig Maximilian University Munich (LMU), Experimental & Physical Volcanology, Munich, Germany (u.kueppers@lmu.de), (2) INGV Catania, Italy, (3) INGV Rome, Italy

Explosive volcanic eruptions involve the fragmentation and ejection of pyroclasts. Volcanic ash is the smallest grain size fraction and can be generated by a plethora of processes inside the conduit, during the rise of the gas-particle mixture in the conduit or the eruption column as well as during the (sub)-horizontal transport before final deposition.

Volcanic deposits are commonly used to infer for fragmentation and emplacement processes. Different fragmentation modes, eruption styles and emplacement dynamics can be deciphered. Additionally, the characterisation of clasts of different types is used to infer for the ratio of fresh magma to older/altered lava or significantly older country rocks.

During a 10 days observation period in May 2013, The North-East Crater of Stromboli volcano (Italy) showed weak explosive eruptions every 10-30 minutes that emitted incandescent blocks and lapilli to heights of up to 200 m above the crater as well as large amounts of black scoriaceous ash. The larger clasts were landing in the vicinity of the crater and continued rolling down the Sciara del Fuoco. Immediately upon impact, light brown ash was lofted by the rolling blocks and dispersed by the wind. These two kinds of primary volcanic ash were deposited together. The black ash is more angular and generally exhibits a higher porosity (magma with the highest porosity) whereas the brown ash (abrasion of rolling lapilli and bombs) can be significantly denser. This quasi-contemporaneous generation of fresh volcanic ash by two distinctly different processes has to be taken into consideration when discerning the ratio of juvenile/lithic components at explosive volcanoes.