Solubility of metals in aerosol samples from Mount Etna during the EPL-REFLECT campaign

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Aim: preliminary evaluation of the effect of atmospheric processing on the toxicity of volcanic aerosols

Aerosol sampling at the crater “Bocca Nuova”, Etna (3300m asl)
Aerosol samples taken using “Sioutas” samplers in the range 10-2.5μm, 2.5-1μm, 1-0.5μm, 0.5-0.25μm and <0.25μm:
2 samples (2h) at the crater in the plume
1 control samples upwind of the plume
1 sample (24h) in the town of Milo (Italy)
Change in the solubility of metals from the Etna crater (in the plume at 3300m asl) to Milo (downwind the Etna plume at 720m asl)

% solubility in the PM$_{10-2.5}$ fraction

- Sr
- Rb
- Br
- La
- Cd
- Se
- Ga
- Zn
- Cu
- Ni
- Fe
- Mn
- V
- Al

Milo
Etna crater

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Conclusions and future plans

- Atmospheric processing increases the solubility of metals in volcanic aerosols

- To investigate the mechanism by which metal solubility increases during atmospheric processing and transport to the closest inhabited areas

- To evaluate the change in toxicity of the particles due to atmospheric processing