

## **Etna-Nuc campaign: Aerosols in the Etna passive plume.**

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Campaign period: from 31/05 to 07/06/2016

Etna volcano, through its passive plume, continuously eject a remarkable melt of gases and aerosols in the upper troposphere where they can have a long residence time and an impact on clouds formation (Charlson and Heitzenberg, 1995 and Makkonen et al., 2012). This phenomenon can impact the climate on many timescales. The main objective of this campaign was to obtain innovative measures on full size range of particles (from nano to micron particles) in the passive plume in order to improve the nucleation and magnification schemas on the basis of gaseous compounds in meteorological models. To capture the particles of the plume, we planned to send five instruments at Osservatorio Astrofisico di Serra La Nave which is situated at 1500 m above sea level, 7 km away South-East of the Etna vent. Respecting the budget, we sent only 3 of them, the SMPS, the OPC (GRIMM) and SO<sub>2</sub> analyzer. Unfortunately, the OPC did not work correctly during the implementation of the operation. However, we obtained SO<sub>2</sub> and SMPS data. Both are operating simultaneously and continuously since the beginning of June. As first results, the nucleation phenomenon has been observed several times since this period and the nucleation event frequency is estimated to be 79% for July. Compare to other altitude sites we notice that it is a very high value. We are currently applying the same method for August and September and doing an interpolation with SO<sub>2</sub> data.