



Modelling of reactive chemistry in tropospheric volcanic plumes

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Bromine oxide has been measured in the plumes of several passively degassing volcanoes. In previous studies we compared field measurements from Mt. Etna, Italy with results from a one-dimensional model that was initialised with volcanic plume compositions according to a thermodynamic model. In this paper, assumptions behind this initialisation will be revisited highlighting the importance of the initial mixing conditions as well as meteorological conditions. Scenarios from several volcanoes will be presented. This paper will discuss short-range and long-range effects of volcanic plumes on tropospheric chemistry and will address a number of important open questions such as the speciation of chlorine, sulphur - halogen interactions and the interaction of halogens with mercury. I will present new model results to help identify the involved processes and implications and to direct future field work.