



## **The environmental effects of volcanic ash: truths, misconceptions and emerging questions**

Pierre Delmelle

Université catholique de Louvain, Earth & Life Institute, Environmental Sciences, Belgium ([pierre.delmelle@uclouvain.be](mailto:pierre.delmelle@uclouvain.be))

Ash emissions are the major product of volcanic explosive eruptions. Ash has long been associated with various environmental effects. Most often, the extent of ash emission may be limited to a few dozen kilometres around the volcano. However, the Earth's history is punctuated by high-magnitude volcanic eruptions, and these may have induced broader scale impacts on terrestrial and/or aquatic ecosystems. While several properties of ash are evoked to describe how it interacts with a given environmental compartment; for example, surface chemistry, soluble fluoride content, iron solubility, grain size, colour, etc., there remains important uncertainties as well as some misconceptions. Moreover, new questions about the influence that voluminous ash emissions and deposits may have on the chemistry of the atmosphere, the biogeochemistry of the ocean, continental weathering fluxes and carbon sequestration in soils are also emerging. The objective of this talk is (i) to provide a critical discussion of what we know and do not know about the environmental effects of ash, and their drivers, on different temporal and spatial scales, and (ii) to suggest a few areas that would benefit from fresh investigations.