

Compositional analysis of Saharan dust input to  
Guadeloupe (FWI)

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North Africa is the largest dust source area in the world, accounting for 55% of global continental dust emission. We know from long time that these dusts can impact the Atlantic and Caribbean regions [1] and that they are important nutrition source for local ecosystem [2]. Guadeloupe island is largely impacted by Saharan dust events and a large amounts of dust participate to its soil generation [3]. Since two years, atmospheric deposition is continuously sampled and analyzed for elemental composition on a weekly basis at the Observatoire Volcanologique et Sismologique de Guadeloupe (OVSG-IPGP, 15°58'50" N, 61°42'13" W). Elements are separated into marine and crustal origin group. A strong seasonality is observed on the flux of all the measured elements of crustal origin, with peaks situated between April and September. Elemental compositional variations show various contributions of marine and crustal sources. Using compositional data statistical tools, we have found that REEs profiles observed in Guadeloupe are rather stable and comparable with Saharan dust REEs profiles, while other trace elements such as Mo or Mn are more variable.

This study will help us to better understand the Saharan dust contribution to the chemical composition of soils and surface fresh waters of Caribbean.

[1] Prospero et al. (1970) EPSL 9, 287-290 ; [2] Muhs et al. (1990) USGS 33, 157-177 ; [3] Clergue et al. (2015) Chem. Geol. 414, 28-41