



Saharan dust inputs to western North Atlantic Ocean with three years time series

Yangjunjie Xu (1), Rémi Losno (1), Céline Dessert (1), Fabrice Monna (2), Vincent Robert (1), Jessica Chane-Teng (1), and Marie Boye (1)

(1) University Denis Diderot, Institut de Physique du Globe de Paris, France, (2) ArTHéIS, Université de Bourgogne, France (Fabrice.Monna@u-bourgogne.fr)

North Africa is the largest dust source area in the world, accounting for 55% of global continental dust emission [1]. These dust can be transported over long distance and have an environmental impact on ocean after deposition through biogeochemical processes [2], they are also important nutrition source for North Tropical Atlantic Islands [3].

Since three 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) situated in the Western North Atlantic Ocean and an average deposition flux of 10 g/m²/year is measured at La Guadeloupe Island.

A strong seasonality is observed on the flux of elements of crustal origin such as Fe with the largest flux observed between April and September. The seasonality and annual variations of the deposition composition on major, minor and traces including rare earth elements are studied and it turns out that: (i) deposition samples collected during the summer months have a major element composition close to crust, (ii) samples collected during the winter months are dominated by sea salt. (iii) rare earth elements exhibit a stable profile during the whole year. (iv) interannual variation of composition is observed between samples for all the elements including REEs profiles.

This study will help us to better understand the Saharan dust impact on the Caribbean basin.

[1] Muhs et al. (1990) USGS 33, 157-177; [2] Martin et al, Nature 331, pages 341–343 (28 January 1988); [3] Clergue et al. (2015) Chem. Geol. 414, 28-41