

METAL DEPOSITION FLUXES TO THE CANARY BASIN FROM AFRICAN DUST

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ABSTRACT

African dust transport constitutes a large fraction of the annual atmospheric deposition in the Canary Islands. The analyses of aerosol samples and deposition measurements and its effects in marine ecosystems have been carried out during CLIMAAT (MAC/2.3/A3) and CLIMAAT II (03/MAC/2.3/A5) and CLIMARCOST (05/MAC/2.3/A1) INTERREG IIIB Projects. Dust sampling was carried out at three sample stations located in Gran Canaria (28° 06' N, 15° 24' W; Taliarte at sea level (a.s.l.), Tafira 269 m a.s.l., Pico de la Gorra 1930 m a.s.l.). A seasonal pattern of dust outbreaks was observed with maximum dust concentrations in winter and summer. The maximum deposition fluxes were observed during winter when large quantities of dust are carried out of North-western Africa, in particular from Saharan source regions. Winter events account up to one third of the total annual flux.

The most important African dust events were chemically characterised. The dry metal deposition fluxes were estimated from 2004 to 2006. The dry fluxes of Al, Fe and Mn have been estimated assuming that the elements deposition velocity for coarse particles is 2 cm s^{-1} and for Cd, Cr, Cu, Pb and Zn primarily associated with submicrometer particles with a mean value of 0.1 cm s^{-1} .