

VARIABILITY OF DUST CONCENTRATION AT GRAN CANARIA ISLAND DURING CANIGO PROJECT.

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The atmospheric input is key factor on particle transport and biogeochemical cycles of trace elements in the CANIGO region. This contribution shows results from daily quantification of dust inputs during 2 years (1997-1998) at the Gran Canaria Island. Results could be used to study the effect of the episodic dust input on the surface oceanic reservoir, their correlation with sinking particulate flux, trace metal distribution in the water column and sediment composition.

Dust concentrations in the air were measured using a high volume capture system equipped with a rectangular head made of PVC. The device was operated during 12 hours daily since December 1996 to January 1999 using a flow of 60 m³/h. The samples were taken daily at "Pico de la Gorra", on the top of Gran Canaria Island (1980 m), in order to avoid the contamination of dust produced by the Island. Glass fiber 8 in x 10 in (Whatman GF/A) and cellulose (Whatman 41) filters were used to collect the material.

The highest values were produced by the intrusion of air masses from the African continent. These events lasted, on average, between three to eight days. Outbreak periods are characterized by concentrations in the air higher than 100 mg /m³. Several authors (Swap et. al. 1996) shows the highest probability of these events between May and October in Bermuda and Barbados. However, in our study area, these events have been produced also in winter during the last two years.

The first year (1997), the highest inputs were measured in winter, early spring and some sporadic events in summer while no significant events were produced during fall. The second year (1998) Saharan dust events were more frequent and intense. The highest loads were registered in winter, summer and fall. The average concentrations in 1997 were 27 µg/m³ while 70 µg/m³ in 1998. The atmospheric load to the Canary Island area were calculated using average dust concentrations in the area.

The outbreaks were often associated with 2 typical meteorological conditions. In winter, events were produced when a high pressure was located on the Sahara area, coming from central Europe. This was favored by the absence of the Azores High and by the south shift of the ITCZ. In summer, outbreaks were produced by NW shift of the Azores High combined with a Low pressure on the North Africa. Trajectories calculated at 850mb and 500mb were used to trace the origin of air masses during these events.

REFERENCES

- Swap, R.; Ulanski, S.; Cobbet, M. and Garstang, M. (1996). Temporal and spatial characteristics of Saharan dust outbreaks. *J. of Geophys. Res.*, vol. 101, nº D2, pp.4205-4220.