

CLIMATE PROCESSES RELATED TO SAHARAN DUST OVER THE MEDITERRANEAN

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A series of synoptic scale depressions and associated dust storms noted over the Eastern Mediterranean basin during April 1994 and 95 was subsequently followed by the satellite - AVHRR Ch- 1 - observation of high reflectances over the Mediterranean, the Sea of Marmara and the Black Sea which were interpreted as due to occurrence of patchy coccolith blooms during 1994 and confirmed to be the *Emiliania Huxleyi* during 1995.

The blooms were initiated by the photoreduction of atmospheric Fe(III), present in the dust pulse during the day time and its subsequent deposition as Fe(II) and enhancement of the coccolith bloom along the track of the cyclonic depression. Photoreduction cannot take place during the night, but deposition and subsequent settling over the sea surface continues as Fe(III) along the cyclonic depression resulting in a clear geographical separation of the bloom areas and, thereby, the patchy distribution of high reflectance regions seen by the satellite. After the deposition of Fe(II) the coccolith bloom requires 6-8 days, for the formation of detached coccoliths detectable by present day AVHRR Ch-1. This time lag is sufficient for coccoliths to become dispersed by the active mesoscale surface dynamics before detection by the AVHRR sensor. The cloud albedo due to enhanced production of cloud condensation nuclei (CCN), during coccolithophore blooms can enlarge the glaciers towards low latitudes. At its peak the rain belt also shifts over the desert regions and soil erosion terminates which also ceases the production of CCN. It could be the increase in the solar radiation or the dissolved carbon dioxide during the formation of coccolithophore which may shift the climate to interglaciation.



THE IMPACT OF AFRICAN DUST ACROSS THE MEDITERRANEAN



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ABSTRACT BOOK

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