CHEMICAL COMPOSITON OF MARINE AEROSOL IN A MEDITERRANEAN COASTAL ZONE DURING THE FETCH EXPERIMENT

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Chemical composition of marine aerosol was studied during the FETCH experiment that took place in the North-western Mediterranean Sea in March/April 1998. Coastal marine aerosols were collected using a 13 stages low-pressure impactor and analyzed by ionic chromatography. Samples having continental or marine origin were characteriezed in order to better understand the processes affecting chemical composition of particles when advected over a coastal zone. Strong anthropogenic influence has been observed up to 100 km from the coast illustrated by:

-NH_4/nss-SO_4 association with ratios ranging from 1 to 2, and for some case NH_4/nss-SO_4-NO_3 tri-correlations

-chloride depletion associated with super-micron NO3, indicating previous reaction between nitric acid and NaCl.

-high sub-micron NO3 percentages when the air mass was rain washed.

On another hand, creation of new submicron particles are not visible in our areas from bubble bursting nor from DMS oxidation products, as nss-sulfates and MSA condense on the numerous preexisting particles rather than nucleate. Formation of sea salt super-micron aerosol takes rapidly place to represent 70 % of the total ionic species as soon as 25 km from the coast.