INFLUENCE OF THE AFRICAN DUST ON PM10 AND PM2.5 AIRBORNE PARTICULATE MATTER LEVELS AT CASTELLON (SPAIN)

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Time series levels of atmospheric particulate matter (TSP, PM10 and PM2.5) were studied at twelve air quality monitoring stations at Castellón, in a Mediterranean Spanish area. During a period of seven months from February to August 2003 daily samples were collected by means of a Rupprecht-Patashnick PM10 and PM2.5 samplers and a MCV-TSP sampler using quartz-fiber filters as collection media. After analyzing daily variations, attention was focused on the detection of high TSP/PM10/PM2.5 events and on the identification of their natural or anthropogenic origins. Back-trajectory analysis and TOMS-NASA aerosol index was used to identify African dust intrusions, source origin and impact on TSP/PM10/PM2.5 levels. Mean daily TSP/PM10/PM2.5 levels were compared with the forthcoming limit values of the EU Air Quality Directive EC/30/1999, and the results showed that the daily limit values established for 2010 would only be met at rural stations. PM levels at urban background, urban and industrial sites would exceed the 2010 objectives. Only levels at the urban-background stations would meet the requirements for 2005. A strong correlation between high levels on PM10 and PM2.5 with African intrusions were observed and confirmed by the Ca enrichment of the samples. The results highlight the role of Saharian dust contributions when implementing the limit values of the EU directive. Acknowledgements Authors are grateful to Fundació-Caixa-Castelló-Bancaixa for financial support throws the P1-1B2000-05 project. JM Delgado is grateful to the Generalitat-Valenciana for the FPI-grant. A. Aparici is grateful to Universitat Jaume I for the “colaboración-de-tercer-ciclo” grant.