

MODELLING STUDY OF FINE AEROSOL AND PHOTOOXIDANTS DURING WINTER AT THE MEDITERRANEAN

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EXTENDED ABSTRACT

A detailed modelling study has been performed to evaluate the physical, chemical and meteorological processes responsible for the production of photochemical oxidants and fine particles at the southern Mediterranean. The region of concern is between the Attica peninsula and the island of Crete, which in general is characterized by high values of photooxidants, even at remote sites. Simulations are performed by the UAM-AERO mesoscale air quality model, using the CBM-IV chemical module. State-of-the-art modules are used for the calculation of ozone and other important gaseous photochemical pollutants. The area is characterized by a heavy sea-salt and african dust load. Several modifications have been made to the original code to include the effect of these parameters, as well as the role of the biogenic pollutants. The meteorological input data are provided by the RAMS prognostic meteorological model. EMEP emission data (1999) are used, while the input background values are provided by the EMEP and CTM-NILU regional models. The simulation period under study in the current paper is 6-14 January, 2001. The model results are evaluated through comparison with the measurements carried out at the Finokalia station (January, 2001). The predicted values seem to be in agreement with the experimental data. Calculated pollutant levels show the importance of long range transport, as well as the significance of natural and biogenic sources. The obtained results improve our understanding of the wintertime tropospheric chemistry at the Eastern Mediterranean region, as well as, give valuable information concerning the dynamics/characteristics of ozone and fine particles.

Key words: Photooxidants, fine particles