

AN EVALUATION OF VOC PREDICTIONS OVER SPAIN

Garcia Vivanco, M., Palacios, M., Palomino, I. and Ortiz, A.

Abstract: Ground-level ozone concentrations in the lower atmosphere are still exceeding thresholds established in EU legislation to protect human health and prevent damage to ecosystems. According to Directive 2002/3/CE on air pollution by ozone, EU Members States have to inform the public when hourly average ozone concentrations exceed the information threshold of 180 g/m³ and the alert threshold of 240 g/m³. Models have become a suitable tool to provide a complete coverage of the territory. In the European Framework Directive on Air Quality, modelling is considered a complementary method for air quality assessment.

A correct prediction of ozone levels in the atmosphere must be based in an also satisfactory representation of ozone precursor levels. The gas-phase chemistry of the troposphere involves the oxidation of organic compounds in the presence of oxides of nitrogen under the action of sunlight. In this paper we evaluate the performance of the CHIMERE model for six individual non-methanic hydrocarbons (ethane, ethane, propene, formaldehyde, acetaldehyde and isoprene). The evaluation was done using all the 2003 and 2004 daily values recorded at one EMEP site.

The model system was applied over a domain of 0.02° grid resolution. Emissions were derived from the annual totals of the EMEP database for 2003 and 2004. As input meteorological fields, outputs from MM5 model were used, forced with AVN data. When comparing model VOC predictions to observations a reasonably agreement is observed for both 2003 and 2004. Besides time series showing model and observed values for the six hydrocarbons, a statistical evaluation is also included.