



Performances of an experimental platform dedicated to European pollution forecast based on the CHIMERE chemistry transport model driven by the ECMWF meteorological model

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The GEMS european project is dedicated to the definition of the future environmental modeling platforms. In this framework, the CHIMERE chemistry-transport model has been forced to the ECMWF Integrated Forecast System meteorological fields. The CHIMERE model was directly implemented on the ECMWF calculator in Reading (UK) and ran, every day of the 2006 summer, a forecast sequence up to 3 days in advance. Chemical fields concentrations of photoxidants (e.g. O₃, NO₂) and particulate matter (PM₁₀, PM_{2.5}, and their chemical speciation: primary particulate matter, inorganic ions, secondary organic carbon, dust) were hourly estimated on a domain covering the whole western Europe with a half a degree horizontal resolution. The CHIMERE version used is the new parallelised one and this forecasted period was an ideal context for the evaluation of model performances. In addition, a configuration with the NCEP/MM5 meteorological fields was implemented for the summer 2005. The two sets of chemical fields were compared to the available surface network data and we calculated scores for daily ozone maxima over the years 2005 and 2006. The performances of the two configurations were found to be similar although a negative bias was shown when using ECMWF meteorological forcing. Finally, in order to evaluate the gain of using forecasted daily boundary conditions (instead of monthly climatology), the summer 2005 was resimulated using the global fields provided by LMDz-INCA global chemical weather forecast system as boundary conditions. The

scores are improved by increasing the standard deviation of regional forecasts. The effects of long-range transport, vertical transport and recirculation of European high ozone events will be discussed.