

Air Quality Assessment on Regional, Urban and Local Scale-AIR4EU

P. Bultjes (1)

(1) TNO-Apeldoorn, The Netherlands and Free Univ. Berlin (peter.bultjes @tno.nl)

The determination of the air quality situation for constituents as PM10, PM 2,5, NO2, O3 often takes place based on either observations, or by chemical transport modelling. The main purpose of the EU 6e FP project AIR4EU is to develop methods by which air quality assessment is performed using a combination of modelling and observations. The project started by reviewing the existing methods of monitoring and modelling on different spatial scales, regional, urban and local/hot spot scale. As partners in the project, next to six research partners, also seven cities were actively involved, Oslo, London, Rotterdam, Paris, Prague, Rome, Athens, with also a link to the city of Berlin. The reviews also considered the experience, and wishes of the city partners, the users of the methods to be developed. Based on further analysis of the reviews, and the current practice in the cities, recommendations were formulated by which air quality assessment should be performed. These recommendations have been tested in specific case studies in the cities, and have been modified to reflect the results of the case studies. The final result of the project, which will end by december 2006, will be guidelines of air quality assessment based on combining modelling and observations, and air quality maps , especially over urban areas. Two main results of AIR4EU will be presented, data assimilation and the mapping procedure Combining observations and modelling, so data assimilation is common practice in meteorology, but relatively new in air quality/atmospheric chemistry. Both so-called passive data assimilation like Optimal Interpolation and Kriging, as well as active data assimilation like Kalman Filtering and 4-D var have been tested and applied, especially on the regional scale. Examples will be presented of data assimilation using the CTM LOTOS-EUROS over Europe for O3, NO2 and PM. These field can be used as boundary conditions for urban areas. Mapping of air quality is important to show the spatial distribution of air quality. Attempts have been made in AIR4EU to create maps in which also the uncertainty of the concentrations can be shown. Examples will be shown of mapping air quality over urban areas.