PREV'AIR, A modeling platform for the air quality predictability study

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Since 2003, the PREV'AIR forecasting system delivers daily air quality forecast over western Europe. It results from an agreement between local networks, ministries, industrial consortium and research laboratories.

The core of the PREV'AIR system are numerical air quality simulation models, meteorological forecast data and near-real time air quality observations. Each day, PREV'AIR delivers forecast maps up to three days in advance for ozone, NO2, PM2.5 and PM10. Different spatial scales are considered: from global to European and France. Maps of daily peak and averaged forecast concentrations are issued. These numerical air quality forecast data are thus delivered to air quality monitoring networks asking for this service. In addition, the available ozone observation data are used to correct the ozone peak simulated by the PREV'AIR system for the day before and to built realistic 'analysis' maps.

We first present a synthesis of the results. For example and for surface ozone concentrations forecast during the whole summer of 2004, the bias is less than 5 ug/m3, with a RMSE less than 19 ug/m3 and a correlation factor of 0.82. This shows that the PREV'AIR system is able to forecast a large majority of the pollution events observed over Europe. An anaylsis of the causes of these errors is given. This gives further insights into where efforts have to be done in air quality modeling.

In the framework of the GMES PROMOTE and GEMS european projects, PREV'AIR will quickly evolve in the next few years: we present, in the second part, the current

projects concerning the models used. This includes developments both for meteo-rology and chemistry-transport modeling (CTM), particularly for aerosols (including dust). We also discuss about the extension of the optimal interpolation approach to others pollutants such as NO2 and particulate matters, as well as the developement of variational assimilation of satellite data. Finally, the PREV'AIR is open to integrate new meteorological and CTM concentrations fields outputs in its analysis chain in order to improve its forecast scores.

All the PREV'AIR data are freely available through the Internet (http://www.prevair.org).