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Daily air quality forecast (gases and aerosols) over Switzerland. Modeling tool description and first results analysis.

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Map3D, the acronym for "Mesoscale Air Pollution 3D modelling", was developed at the EFLUM laboratory (EPFL) and received an INNOGRANTS awards in Summer 2007 in order to move from a research phase to a professional product giving daily air quality forecast. It is intended to give an objective base for political decisions addressing the improvement of regional air quality. This tool is a permanent modelling system which provides daily forecast of the local meteorology and the air pollutant (gases and particles) concentrations. Map3D has been successfully developed and calculates each day at the EPFL site a three days air quality forecast over Europe and the Alps with 50 km and 15 km resolution, respectively (see http://map3d.epfl.ch). The Map3D user interface is a web-based application with a PostgreSQL database. It is written in object-oriented PHP5 on a MVC (Model-View-Controller) architecture. Our prediction system is operational since August 2008. A first validation of the calculations for Switzerland is performed for the period of August 2008 - January 2009 comparing the model results for O3, NO2 and particulates with the results of the Nabel measurements stations. The subject of air pollution regimes (NOX/VOC) and specific indicators application with the forecast will be also addressed.