

**PMinter Air Quality Simulations - A New Holistic Approach**

**From basic data to emissions up to dispersion taking into consideration local/regional/long-distance transport & air chemistry**

**Ulrich Uhrner, Rafael Reifeltshammer, Martin Steiner, Renate Forkel & Bettina Lackner**

**traffic & environment IVT, TU Graz, Uhrner[at]ivt.tugraz.at**

***Abstract***

Many cities and regions in the southern Alpine peripheral and basin locations are confronted with unusually high fine dust pollution, especially in winter. The goal of these model studies is a holistic approach to evaluate causes, but also to define plans for measures at a local (Leibnitz, Maribor, Klagenfurt) as well as interregional level. Therefore, a model approach was developed that, on the one hand, facilitated emissions and the transport of air pollutants from the European scale down to the local scale, and on the other hand, permitted the complex interactions between gaseous emitted air pollutants and the fine dust fraction called "secondary aerosols". Therefore, the main and precursor PM emissions as well as gaseous precursors of PM at a local to regional level were registered or alternatively calculated in order to better represent the situation in valleys/basins but also at higher elevations in contrast to European emission datasets. Comparisons of the modelled fine dust components to filter measurements or alternatively PM10 were good to satisfactory. The main components are mainly the secondary aerosols (main sources are traffic and agriculture), domestic fuel components and components from traffic. Determination of the PM10 background value through model calculations is superior to the methodology of assigning a constant value. Interregional scenarios for nitrogen oxides and ammonia reduction indicate significant, extensive reduction potential for the fine dust.

