



## **Assessment and Mitigation of PM pollution in the border regions of Austria and Slovenia**

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Many cities, towns and regions located at the southern fringe of the Alps face remarkably high PM levels particularly during the winter period. The project PMinter aimed 1) to analyse the air quality in S-Styria, S-Carinthia and N-Slovenia, 2) to evaluate local and regional measures to develop effective air quality management plans and finally 3) to support a sustainable improvement of air quality in the project region. Using wood for residential heating is very popular in Austria and in Slovenia. To assess the contribution from wood smoke to the total PM burden and the impact of regional and large scale transport as well as the impact of secondary aerosols were major goals of PMinter.

Due to the complex terrain air quality and exposure assessment is challenging. To resolve sources which are located in valleys and basins, emissions were computed or processed on 1 km x 1 km resolution for the entire program area. A new combined model approach was developed and tested successfully using a state-of-the-art CTM (WRF/Chem) on the regional scale and the Lagrangian particle model GRAL on the local scale. A detailed analysis and comparisons with measurements and regional/local scale scenario simulations were carried out. Residential heating using wood was identified as the major source and PM component dominant on the “local scale” (~10 km), secondary inorganic aerosol was the dominant PM component on the regional scale (~ 10 km – 150 km) and above.

Various mitigation scenarios for PM were computed. A “local” scenario where individual heating facilities using solid fuels were replaced by district heating and a regional scenario with 35% reduced ammonia emissions from agriculture proved to be most effective.