



Towards a street-level pollen concentration and exposure forecast

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Atmospheric pollen are an increasing source of nuisance for people in industrialised countries and are associated with significant cost of medication and sick leave. Citizen pollen warnings are often based on emission mapping based on local temperature sum approaches or on long-range atmospheric model approaches. In practise, locally observed pollen may originate from both local sources (plants in streets and gardens) and from long-range transport. We argue that making this distinction is relevant because the diurnal and spatial variation in pollen concentrations is much larger for pollen from local sources than for pollen from long-range transport due to boundary layer processes. This may have an important impact on exposure of citizens to pollen and on mitigation strategies. However, little is known about the partitioning of pollen into local and long-range origin categories.

Our objective is to study how the concentrations of pollen from different sources vary temporally and spatially, and how the source region influences exposure and mitigation strategies.

We built a Hay Fever Forecast system (HFF) based on WRF-chem, Allergieradar.nl, and geo-statistical downscaling techniques. HFF distinguishes between local (individual trees) and regional sources (based on tree distribution maps). We show first results on how the diurnal variation of pollen concentrations depends on source proximity. Ultimately, we will compare the model with local pollen counts, patient nuisance scores and medicine use.