POSTER PRESENTATION

P-03. Pilvi Siljamo: Analysis and forecasts of the birch pollen season in Europe using atmospheric and biological models

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The paper presents a forecasting system of birch pollen long-range transport. The system was developed jointly by Finnish Meteorological Institute (FMI), the Aerobiology Unit of the University of Turku and the Department of Forest Ecology of the University of Helsinki in close collaboration with European Aeroallergen Network and 5 other European institutes - within the scope of POLLEN project of Academy of Finland and ESA-PROMOTE GMES Service Element.

Pollen is a known source of allergy-related deceases. The overall prevalence of seasonal allergic rhinitis in Europe is approximately 15%. Observational evidence and a theoretical ground are mounting that the pollen grains of the wind-pollinating plants, despite their large size, can be transported over hundreds and even thousands of kilometres and significantly affect pollen concentration in many regions making it less dependent on the local conditions.

Conventional predictions of pollen concentrations are made using phenological and pollen observations, pollen calendar and weather forecasts. The method works well when the local flowering has started, but is not able to forecast long-range transported pollen before or after local pollination. However, allergic persons should start their medication in advance of exposure to allergens and this can happen even weeks before start of local flowering. Because pollen does not know territorial borders, European wide numerical pollen concentrations forecasts are needed.

The pollen forecasting system consists of several sub-models. The system is based on a numerical weather prediction model (HIRLAM or ECMWF) which gives information to an atmospheric dispersion model (SILAM), to a phenological model (thermal time type) for starting date of flowering and to a pollen release model.

Numerical forecasts of birch pollen concentration in springs have been done at FMI since 2005 and model has been developed throughout these years. User experience at the University of Turku, Aerobiology Unit is positive and the model has improved pollen forecasts, especially in cases of long-range transport.

The recent status of the system and results for a few past years will be presented and their main features and quality will be discussed.