

ification with depth the thickness 2mm) represent and 11 years i.e. the resolution could not be. From these samples of pine pollen (grains) accumulated as a continuous last 1000 years. values varying between 600 and 800 in well below 200 in the reference to the average values illustrated in g in terms of the forest suggest that during the forest was certainly as present day but that in during the little Ice Age, south. We would like, the reconstruction quantifies of temperature and than just qualitatively. The pollen has increased last 50 years but this due to July temperature mental record shows no last 100 years with the st century. On the other mit has been moving length of the growing g, potentially allowing So, although the recent eat shows variations and cold summers the pine pollen is most likely the volume in the pollen

of annual arboreal pollen for delimiting tree lines in exploring models of pollen of Palaeobotany and Paly-

Dicks S, Heino S, Kubin, E. d deposition pollen samplers ric dispersal of different pol- ple from northern Finland. 5-296.

Conifer pollen abundance for summer temperature: latitudinal forest limit in Quaternary Science 2009;

Aalto T, Salminen H. Past reconstructed from needle s sylvestris at the northern or evaluating palaeoclima- Silva Fennica 2008; 42:

ormunen H. Absolute pollen len vegetation relationships d. Journal of Quaternary 24-736.

AB, Broström A, Sugita S, f tree volume and tempe- resolution record of pollen in northern Finland Journal ace In review.

3rd September 2012 ORAL SESSIONS
OPENING SESSION
Hialine project: allergen release from pollen across Europe

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Objectives: Exposure to allergens is one of several factors determining sensitization and allergic symptoms in individuals. Exposure to aeroallergens from pollen is assessed by counting allergenic pollen in ambient air. However, proof is lacking that pollen count is representative for allergen exposure. Exposure to allergen is poorly monitored by only monitoring pollen count. Monitoring the allergen itself in ambient air might be an improvement in allergen exposure assessment as has been demonstrated in a prior study in the frame of the MONALISA project. The main objective of the HIALINE-project has been to implement an outdoor allergen early warning network, in addition to the pollen forecasts. Monitoring the allergens themselves together with pollen in ambient air might be an improvement in allergen exposure assessment. It has been also investigated whether meteorological factors in an effort to predict the effect of climate change on the allergenicity of pollen.

Methods: Airborne pollen and the major allergens from the top 3 airborne allergens in Europe (Phl p 5, Bet v 1 and Ole e 1) have been sampled across 9 European countries during 2009-11. Airborne pollen has been measured by using a Hirst type volumetric spore trap. Aeroallergens have been collected with a ChemVol®2400 high-volume cascade impactor, being extracted and analyzed by allergen specific ELISA's. Particulate matter (PM) in ambient air was fractioned into >PM10 (XL) and 10 µm > PM > 2.5 µm (M). Allergen forecast has been calculated by incorporating the SILAM chemical transport model and compared with the observations of HIALINE.

Results: In general it has been observed similar profiles for airborne pollen and aeroallergens content in the air, being aeroallergens more associated to XL fraction stage. On the other hand, it has been detected allergenic activity out from pollen season, especially in the case of M stage. Smaller particles are more exposed to medium-long distant transport. Moreover, results have provides strong evidence that similar value of airborne pollen evokes different ambient air allergen loads in different geographical areas. Even more, when the same area is considered the allergen load of the pollen can vary within the season. Pollen differs in allergen release between European countries. Our study supports the importance of the aeroallergen quantification together with airborne pollen counts, in order to define the outdoor air allergenic load.

Conclusions: Under these results, the expected outcomes are the implementation of a network of European outdoor allergen measurements to better predict allergic symptoms. Also the climatic factors that govern allergen exposure in outdoor air will be established. These can be used to calculate the effect of climate change on the health effects of airborne allergens. Polleninfo.org offers a new tool on Patient's Hayfever Diary (PHD).

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Short-term effects of exposure to birch, grass and ragweed pollen on clinical symptoms of pollinosis in a panel study of 200 patients in France

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Objectives: Few panel studies on the relationship between the concentration of air allergenic pollen and intensity of symptoms have been so far carried out with a significant number of hay-fever patients and adequate statistical methods. The present study aims at comparing daily recorded symptoms of allergic patients with airborne pollen concentrations of birch, grasses and ragweed.

Methods: Three different panels were used: for birch 61 patients (March-April 2010), grasses 106 patients (April-August 2010), and for ragweed 37 patients (July-September and 2010). RNSA and MeteoSwiss provided the pollen data. Statistical analysis for correlation data was used (Generalized estimating equations and Generalized additive mixed models) to assess the symptoms (rated from 0 to 3).

Results: The proportion of patients having symptoms to birch pollen with serious nasal, ocular and bronchial symptoms was linear up to pollen concentrations of 110, 70 and 70 grains/m³ respectively and reached a plateau above these thresholds. For an increase of 10 grains/m³, odds ratios (OR) were 2.01, 4.80 and 2.97, respectively. For grass pollen the increase of 10 grains/m³ resulted in an increase of ocular and nasal symptoms (OR 1.06 and 1.08), respectively. The relation between bronchial symptoms and pollen was linear (OR: 1.026). The rate of patients with various types of symptoms increased in a linear and significant way with exposure to ragweed pollen, more in 2009 than in 2010. For an increase of 10 grains/m³, OR of ocular symptoms was 1.324 in 2009 and 1.049 in 2010. No trigger threshold was observed for any of these three pollen types.

Conclusions: The clinical response in sensitized patients exposed to pollen varied during the pollen season. With increasing birch pollen concentrations, nasal, ocular and bronchial symptoms increased up to a saturation point when symptoms were maximal for all patients. For grasses pollen, nasal and ocular symptoms similarly increased up to a saturation point. The relationships between bronchial symptoms and grasses one the one hand and all symptoms and ragweed pollens on the other are linear. This seems to be related to the slow but continuous increase in the number of patients having these symptoms throughout the season.