

Poster session c4

POLLEN AND FUNGAL SPORE DISPERSAL / LONG DISTANCE TRANSPORT

Spread of *Ambrosia artemisiifolia* in Ticino (Switzerland)Köhler, B.¹; Clotti, V.²; Maspoli, G.² & Gehrig, R.¹¹ MeteoSwiss, 8044 - Zurich (Switzerland).² The Cantonal Museum of Natural History, 6900 - Lugano (Switzerland).

In Switzerland the highest pollen concentration of *Ambrosia artemisiifolia* has always been measured in Ticino. For the last six years the seasonal pollen index (SPI) has varied between 196 and 432 for Lugano and between 128 and 260 for Locarno. As parts of northern Italy and especially the region Lombardy are invaded by *Ambrosia artemisiifolia*, it was assumed that most of the *Ambrosia* pollen measured in Ticino were transported by wind to Switzerland. Up to now it has been unclear to what extent *Ambrosia* has already invaded Ticino and whether the measured pollen perhaps also come from local *Ambrosia*-populations. To answer this question a joint project between MeteoSwiss and the Cantonal Museum of Natural History Lugano was started in summer 2003 to investigate the distribution of *Ambrosia* in Ticino.

The results of mapping (which is still in progress) showed that the occurrence of this species had been underestimated. A total of 76 locations with *Ambrosia* were found, 19 of these are populations with more than 100 plants, furthermore the borders of the highway between Chiasso and Mendrisio are strongly invaded.

Most affected was the Mendrisiotto region, which is the southernmost part of Ticino and near to the Italian border; but also in the Luganese (region about 15 km north of the Italian border) major locations were found, whereas in the Magadino plain (north Ticino) only single locations were detected.

In our study we found new agents of dispersal other than the birdseeds: The use of Italian sand (contaminated with *Ambrosia* seeds) for construction sites, dispersal by compost on fields and different agents along the highway.

Additionally to the two pollen traps of Lugano and Locarno (National Swiss pollen network) we installed traps in Mezzana and Cadenazzo in our field study of 2003. Corresponding with the mapping results the highest values were reached in Mezzana (Mendrisiotto) with an SPI of 1015; in Lugano the SPI reached 260 and in Locarno 148 whereas the *Ambrosia* pollen concentration in Cadenazzo (Magadino plain) with an SPI of 96 was lower. An analysis of the pollen data in correlation with the wind data will show whether an important part of the measured *Ambrosia* pollen in Ticino is local or not.

Palynological study of air environment over the oceans

Safarova, S.

Institute of Oceanography, Russian Academy of Sciences, 36, Nakhimosky pr. Moscow, 117997, Russia.

The study of aerosol (mainly pollen and spores) over the oceans was conducted during expeditions of the Institute of Oceanology, Russian Acad. Of Sci. on board of scientific research vessels.

Aerosol matter was taken by the net method on route the vessels. The research included qualitative and quantitative composition of the eolian suspension, granulometric composition, organic composition (by spore and pollen analysis), mineralogical (by x-ray-diffractometric analysis - in different part of the ocean). Also highly sensitive atomic-fluorescent methods of analysis and atomic-absorption methods were used together with direct electrothermal atomisation of microsamples improved by us which allow to define traces of metals in microsamples at the levels of ultra-low natural concentrations.

Studies of aerosol are relevant to the problems of atmospheric pollution ecology, climatology and eolian transport of sedimentary material to the oceans. Oceanic aerosols are multi-component and include biogenic material of continental and marine origin pollen, spores and fragments of terrestrial plants, diatoms, products of

rock weathering and volcanic ash. Particles of industrial origin are specially abundant in the proximity of continents.

Using the results of the qualitative and quantitative analyses, data on wind direction vegetation type on the nearby land concentration of spores and pollen in aerosols, and type of anthropogenic components in samples, the route of the aerosol transportation can be established. We conclude that climatic and circumcontinental zonation regulates distribution of the eolian suspended material above the Indian, Atlantic and Pacific oceans.

Poster session c5

APPLIED AEROBIOLOGY: AGRICULTURE

Aerobiological techniques in the control of the olive grove productivity

Carrasco, M.; Candau, P.; González Minero, F. J.; Morales, J. & Ogalla, V. M.

Dpto. de Biología Vegetal y Ecología, Facultad de Farmacia, Universidad de Sevilla, 41012 - Sevilla.

The olive grove in the county of Seville, is one of the main economic and social resources of the region, generating the manpower during the months of December to February. They are those of smaller labor activity in the rural means. Nowadays, the olive groves in Andalusia, in connection with the high competition of the seed oils, won't be able to subsist more than in the measure in that their production techniques are modernized. We expose the results of a method to analyze the control of the productivity of the olive grove where they are related the contained of pollen in the air with meteorological variables. During the years 1993 to 2003, an aerobiological sampling of the atmosphere in Seville using a volumetric sampler model Burkard, located 18 meters on the level of the sea in the Faculty of Pharmacy. They have been related the data obtained in front of meteorological data corresponding to the years 1993-2003 statistically. To be able to carry out statements analysis, it has been necessary the calculation of the MPP (period of main pollination) of the taxon *Olea europaea*. This calculation has been carried out of 90% of the annual quantity of obtained pollen. The data have been treated using linear regression analysis where we have used two types of variables, a dependent variable (Kg aceituna/ Ha) and an independent variable (grains of pollen and meteorological data). As a result, we obtain a predictive model of the annual production of the olive grove of the county of Seville it foresaw to their gathering, alternative to the traditional method.

Aspergillus fumigatus monitoring at a composting facility treating biosolidsSánchez-Monedero, M. A.^{1,2}; Stentiford, E. I.¹; Purcell, B.³ & Roig, A.²¹ School of Civil Engineering, The University of Leeds, LS2 9JT Leeds, UK.² CEBAS-CSIC, Campus Universitario de Espinardo, 30100 - Murcia, Spain.³ WS Atkins Environment, Ltd, UK.

Aspergillus fumigatus (AF) is one of the fungal species of major concern in organic waste management due to its abundance and potential risks for humans. Air monitoring was carried out at a composting plant processing green wastes and sewage sludge using forced aeration in a static pile at the initial stage followed by windrowing in the open.

A six stage Andersen impactor was used to collect the airborne AF spores at three critical locations in the plant: inside the composting hall, on the open area next to the windrows and on top of the biofilter which took exhaust air from the forced aeration composting system. AF concentrations were recorded during normal