Seminário ICT

Organização: ICT

Atmospheric Sciences Water and Climate

Ecologial studies in Aerobiology

Oradora: Rosa Pérez Badia. Associate Professor of Botany. Institute of Environmental Sciences. Faculty of Environmental Sciences and Biochemistry. University of Castilla-La Mancha, Espanha

Data: 11 de Dezembro de 2018
Local: Anfiteatro 1 (CLAV)
Hora: 14h 30min

In this lecture, we present a selection of different results of aerobiological research in which the concentration and distribution of the pollen grains in the atmosphere are studied related to phenology, meteorological variables, vegetation and land use. These results provide the scientific basis to evaluate the presence of aeroallergens in the atmosphere.

The processes involved in the formation and germination of pollen grains, as well as their presence and behavior in the atmosphere depend on extrinsic factors related to the environment and intrinsic factors that concern the biology of the species that determines the particularities of the phenological cycle and floral development, the rate of pollen production, the characters that confer the aerovagant capacity to the pollen grains, among other features.
In this sense, studies that combine phenology, pollen production, long-distance transport and aerobiology are increasingly frequent. As an example o f these studies, we present the results of the works carried out in the center of Spain.

The concentrations of atmospheric pollen, its dynamism or temporal evolution and particularly its relationship with atmospheric conditions are also aspects widely studied in aerobiology. Meteorological variables such as temperature, solar radiation or relative humidity are determining factors in the concentration of pollen because they affect the development of plants, regulate the dehiscence of the anthers and therefore cause a greater or lesser release of pollen. Once the pollen has been released, variables such as the direction and speed of the wind and precipitation determine its dispersive capacity and its transport in the atmosphere. There are numerous papers that establish predictions of pollen concentrations of different pollen types such as grasses, cypresses, olive trees, etc., using as independent variables the meteorological variables and as mathematical models regression s, decision trees, etc.

The knowledge of the geographical distribution of plants and vegetation allows to determine the origin of pollen sources that together with the influence of the

meteorological variables such as the direction of the wind, determine the presence of the different pollen types in the atmosphere. The flora and vegetation are linked to the biogeographical and bioclimatic characteristics, and together with the human actions define the natural and anthropic vegetal landscape of a territory. As an example of the above mentioned, we present the results of a work carried out in the city of Guadalajara (central Spain).

In summary, all of these studies provide the scientific basis to evaluate the presence of aeroallergens in the atmosphere and are very useful for the preventive treatment of allergies. They allow to predict atmospheric concentrations of allergenic pollen, identify sources of emission and origin of the pollen grains and as a consequence plan actions in the urban flora to mitigate the effects of allergies in cities.