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Variations and trends of Fagaceae pollen in Northern Sardinia, Italy

Annalisa Canu (1), Grazia Pellizzaro (1), Bachisio Arca (1), and Arnoldo Vargiu (2)
(1) CNR-IBIMET, CNR, Sassari, Italy (a.canu@ibimet.cnr.it), (2) Osservatorio Aerobiologico SS1

The aim of this study is to analyze variations in the start and the end dates of pollen season, date of maximum concentration peak, pollen season duration, pollen concentration value and Seasonal Pollen Index of airborne Fagaceae pollen series recorded in Sassari, Northern Italy, and to evaluate their relation to meteorological data.
Daily pollen concentration data were measured from 1986 to 2008 in a urban area of northern Sardinia (Italy) using a Burkard seven-day recording volumetric spore trap.
The date of the peak occurrence was defined as the day when the cumulated daily pollen values reached the 50 % of the total annual pollen concentration. Meteorological data were recorded during the same period by an automatic weather station. Cumulative Degree days were calculated, for each year, from different starting dates using the daily averaging method.
The correlation between meteorological variables and the different characteristics of pollen seasons was analyzed using Spearman's correlation tests.
In the city of Sassari the Fagaceae airborne pollen content was mainly due to Quercus. The main pollen season took place from April to June. The longest pollen season appeared in the year 2002. The cumulative counts varied over the years, with a mean value of 5,336 pollen grains, a lowest total of 550 in 1986 and a highest total of 8,678 in 2001. Daily pollen concentrations presented positive correlation with temperature, and negative with relative humidity ($p<0,0001$) and with rainfall. In addition, Cumulative Degree days were significantly correlated with the dates of maximum concentration peak ($p<0,0001$).