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CHARACTERIZATION OF BIOAEROSOLS BY TWO DIFFERENT METHODS: OPTICAL MICROSCOPY AND A WIDEBAND INTEGRATED SPECTROMETER

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A bioaerosol sampling campaign was carried out in May and June, 2015, at the university campus of León, Spain. Two different instruments were used:

i) a Wideband Integrated Bioaerosol Spectrometer (WIBS), that continuously measures bioaerosol concentration -in the size range from 0.5 to 20 µm-, using light induced fluorescence and provides a classification in four groups (bacteria, fungi, pollen or "other");

ii) a volumetric Hirst spore trap that collects pollen grains and allows a later Optical Microscope analysis. It is a sampler for particles between 2 and 200 µm in diameter with a flow of 10 L min^{-1}.

Hourly and daily optical microscopic counts were carried out by the method recommended by the Spanish Aerobiological Network, based on four longitudinal transects along the slides (Galán et al., 2007). The reading of the four bands represents 12.5% of the total sampling area, which is within the limit recommended by the European Aerobiology Society (EAS). Furthermore, the hourly distribution of the bioaerosol concentration as a function of the wind speed and direction was also represented and analysed.

Bioaerosol represented up to 25% of the total particle concentration in the measured size range during the studied period. The number of pollen types present in the atmosphere was 35, with Pinus, Plantago, Poaceae, Quercus, Rumex and Urticaceae contributing together 50% of the atmospheric pollen concentration.

The results obtained from data collected by both instruments were analysed and compared.

Galán, C., Cariñanos, P., Alcázar, P., Domínguez, E., 2007. Spanish Aerobiology Network (REA): Management and quality manual, in: Córdoba., S.d.P.U.d. (Ed.), Córdoba (Spain).