P.060 | Below cloud scavenging of pollen during rainfall events (2012-2018) in NW Spain

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BACKGROUND AND OBJECTIVES

Nowadays, air pollution is one of the main concerns of human health. It is caused by several pollutants, such as bioaerosols (like pollen, fungal spore, bacteria), that are related to human diseases such as influenza, lungs diseases and allergies. One of the main sinks of bioaerosols is the scavenging by rain. The main aim of this study is to analyze the evolution of pollen concentration during rain events with different rain intensities.

MATERIAL AND METHODS

Between 2012 and 2018 in the NW Spain (León) a sampling campaign was carried out. The instruments used were: i) a Laser Precipitation Monitor to register rain variables on a 1-minute basis; ii) a volumetric Hirst type spore-trap to estimate the hourly pollen concentration; iii) a Davis weather station to register the meteorological variables. 20 types of pollen were selected, those that cause more respiratory allergies and with the highest concentration in León. Below Cloud Scavenging has been analyzed through the scavenging efficiency ($\Delta C\%$) estimated as $\Delta C\% = ((C2-C1)/C1)100$ to evaluate the change in pollen concentration (C) between the times t1 and t2. A selection criterion of events has been applied on meteorological and rain variables, to extract the influence of meteorological variables during rain events. Besides, the correction by the daily pattern of each type of pollen has been taken into account to eliminate its influence.

RESULTS

184 rain events met the selection criteria. They presented a mean duration of 119 minutes, a mean rain accumulated of 2.30 mm and a mean rainfall intensity of 0.59 mm h-1. 78 % of the total events presented effective scavenging (mean $\Delta C\%$ = 46±28 %). Events with intensities between 1-5 mm h 1 caused the highest scavenging (67 %) on pollen concentration. With low intensity (

CONCLUSIONS

Rain characteristics affect the effective scavenging of pollen and this washing effect depends on the type of pollen. Thus, this kind of studies constitutes a valuable tool for the pollen forecast after a rainfall event.

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