

CONNECTIONS BETWEEN PM₁₀, POLLEN AND ATMOSPHERIC POLLUTANTS AT LEÓN (SPAIN)

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INTRODUCTION

Gaseous pollutants and particles coexist in the same medium, the atmosphere, with the possibility of interacting with each other and increasing their adverse impacts due to synergistic effects. Focusing on particulate matter, a wide variety of biogenic particles with a broadly open size distribution (from tens of nanometers to a few hundred micrometers) is present in the atmosphere. These biogenic aerosols are very active for diverse potential diseases. Among them, pollen should be highlighted due to allergy effects [1]. Atmospheric pollutants may have the following direct effects on pollen [2]:

- \succ increase its potential health hazards;
- > alteration of the physicochemical characteristics of the pollen surface;
- change in the allergenic potential and
- decrease in viability and germination.



shown here.

Investigate the relationship between the atmospheric concentration of pollen and the different air pollutants and meteorological parameters in León (Spain).

STUDY AREA

Fig. 1. Location of León, in Spain.

RESULTS

• Monitoring campaign: ✓ 8 - 22 July, 2012

- ✓ University campus of León (Spain) (42° 36' 50" N, 5° 33' 38" W, 846
- m asl). • León:
 - Located in the
 - Northwest of Spain
 - ✓ Mediterranean
 - Pluviseasonal-Oceanic





Fig. 2. Sampling points: 1- Aerosol and gases; 2- Pollen and weather station.

METHODOLOGY





Figure 6. a) Hourly pollen and ozone concentration during the sampling campaign and b) correlation coefficient between pollen concentration and ozone concentration as a function of the gap size (in hours).

Table 1. Weekly carbonyl and pollen concentrations during the sampling campaign.

	10-15/07/2012	16-22/07/2012
	µg/m³	
Formaldehyde	1.4	1.8
Acetaldehyde	1.3	1.5
Acrolein	2.5	2.8
Propanal	0.5	0.5
Butyraldehyde	2.6	2.9
Benzaldehyde	0.3	0.4





115 Ole e 2 profilin: their presence in the atmosphere was scarce or null during the sampling campaign. A daily concentration of 2.44 pg/m³ was registered on the days 10, 11, 16-20 of July. Figure 7. Plant and pollen grains of a) Lolium multiflorum and b) Castanea sativa. REFERENCES [1] Fernández-González D., et al (2010). Clin Exp Allergy, 40,

1701-1708.

[2] Sénéchal H., et al. (2015).

940243, 29 pages.

Scientific World J., Article ID

ACKNOWLEDGMENT: This study was partially supported by the Spanish Ministry of Economy and Competitiveness (Grant TEC2014-57821-R), the University of León (Programa Propio 2015/00054/001), the LIFE programme (AIRUSE, LIFE 11/ENV/ES/000584) and AERORAIN project (Ministry of Economy and Competitiveness, Grant CGL2014-52556-R, co-financed with FEDER funds).

Cl⁻, NO₃⁻, PO₄³⁻, SO₄²⁻, Na⁺, NH₄⁺, k⁺, Mg²⁺, Ca²⁺ – (with R² <0.09). Likewise, significant correlation was not observed between pollen concentration and number of

particles per cubic meter (diameter < 24.3 µm). It should be noted that only some occasional PCASP measurements were available. These results are not