

INFLUENCE OF LONG-RANGE TRANSPORT ON AIR QUALITY IN NORTHWESTERN IBERIA

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INTRODUCTION

Atmospheric transport and dispersion of air pollutants are key factors in the study of air quality. These processes can promote the cleaning of the local atmosphere and/or the arrival of pollutants from sources located far away from the study point. These pollution incomings can cause important impacts on the levels of air pollutants of the places affected. Numerous scientific studies have found a relationship between the PM concentration and multiple health problems, including asthma, bronchitis and acute respiratory symptoms (Chu et al., 2015). In the Mediterranean countries, desert dust particles transported have a strong impact on air quality (Tchepel et al., 2013).

The aim of this study is to analyze the frequency of the arrival of pollutants from three different sources: Saharan dust intrusions, biomass combustion and european sulfates to León (Spain) from 2005 to 2016.

STUDY AREA



Figure. 1. Location of León (Spain)





RESULTS



CONCLUSIONS

- Intrusions of the three types of pollution outcomes studied in León (Saharan dust, biomass combustion and European sulfates) are mostly present during the spring and summer months.
- An irregular trend of Saharan dust intrusion events is observed. For biomass combustion, a significant increase in the number of events has been observed during the last 5 years. Regarding European sulfates, CALIMA database is limited, so it was not possible to obtain conclusive results. Saharan dust intrusions are the type of event that exceeds in a higher percentage (15%) the PM₁₀ daily legislative limit (50 µg/m³), which reached a maximum concentration of 124 µg/m³. In the case of events with European sulfates and emissions from biomass combustion, the percentage of days
- with exceedances was 5% and 3%, with a maximum concentration of 69 and 52 µg/m³, respectively. When comparing PM10 concentrations during Saharan dust intrusions with those from the previous five days, a 31% increase was observed. This percentage was 14% for the biomass combustion episodes. The application of the Kruskal-Wallis test allowed to verify the significant differences of the
- concentrations between the days with intrusion and the previous five days (p <0.05). In relation to the weather types characteristic of the intrusions studied, a clear predominance of the anticyclonic category for the three types of events was observed.

L ACKNOWLEDGMENT: This work was partially supported by the Spanish Ministry of Economy and Competitiveness (Grants TEC2014-57821-R, BES-2015-074473 -F. Oduber- and CGL2014-52556-R, AERORAIN co-financed with FEDER funds), the University of León (Programa Propio 2015/00054/001). F. Oduber also acknowledges the grant BES-2015-074473 from the Spanish Ministry of Economy and Competitiveness. We we like express their gratitude to the CALIMA project. would

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