

# ABSTRACT FORM



**Scientific sessions:** Aerobiologia Inquinamento e Cambiamento Climatico

## VARIATIONS IN POLLEN CALENDARS ALONG TIME AT MALAGA (SOUTHERN SPAIN)

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### Introduction

Pollen calendars are graphical representations that summarize the general annual dynamics of the more abundant airborne pollen types detected in the atmosphere of a certain location. To elaborate them, it is recommended to have continuous pollen sampling data from a period of, at least, 5 years in order to such pollen calendar be representative. However, the annual pollen dynamics can suffer changes in a medium or long term due to climate and land use changes, so the pollen calendars can therefore, show variations over time.

The aim of this study was to detect whether or not changes have occurred in the pollen calendar of Malaga city (southern Spain) during a 30-year period, as well as to analyze their possible causes.

### Materials and Methods

The aerobiological data were obtained by means of a Hirst-type volumetric pollen trap installed on the roof of the Faculty of Sciences, University of Malaga (Spain). Pollen samples were mounted and counted following the methodology proposed by the Spanish Aerobiology Network (Galán et al. 2007). A pollen calendar was elaborated for each 10-year period (i.e., 1992-2001, 2002-2011 and 2012-2021) using the AeRobiology R package (Rojo et al. 2019). This computational tool integrates the methodology developed by Spieksma et al. (1995), and the exponential classes proposed by Stix and Ferretti (1974).

### Results and Discussion

Despite the three pollen calendars obtained were elaborated for the same sampling location, there were some important changes in the intensity and temporality of the airborne concentrations detected for some pollen types. These changes can be related to variations in the land uses near the

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city and temperature variations due to climate change. For example, in the case of *Olea* pollen, a raise was observed in pollen levels detected during the last decade due to an increase in the olive crop surface in nearby areas. This pollen type has also advanced the start of its pollination period, maybe due to the temperature increase in the months prior to flowering. In other cases, such as *Pinus* and *Amaranthaceae*, their pollen concentrations decreased due to the land use changes promoted by the city growth. Moreover, an increase of the levels of *Platanus* pollen can be observed due to the ornamental trees that were planted in the west part of the city.

### Conclusions

Pollen calendars should be updated along time in order to maintain their utility, given that it is possible to find some trends in the temporality and intensity of the pollen season of some taxa that can modify substantially this graphical representation.

### References

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### Acknowledgements (Funds)

This work was partially financed by the Ministry of Science and Innovation of Spain and FEDER fundings inside the Operational Plurirregional Program of Spain 2014-2020 and the Operational Program of Smart Growing (Project Environmental and Biodiversity Climate Change Lab, EnBiC2-Lab). A. Picornell was supported by a postdoctoral grant financed by the Ministry of Economic Transformation, Industry, Knowledge and Universities of the Junta de Andalucía (POSTDOC\_21\_00056).