

Towards a better assessment of the historical climate of Extremadura region (SW Spain)



José Manuel Vaquero¹, María Cruz Gallego², Víctor M. S. Carrasco², Nieves Bravo-Paredes², MaríaÁngeles Obregón², Carlos Lara²

¹ Universidad de Extremadura, Departamento de Física, Mérida, Spain (jvaquero@unex.es)

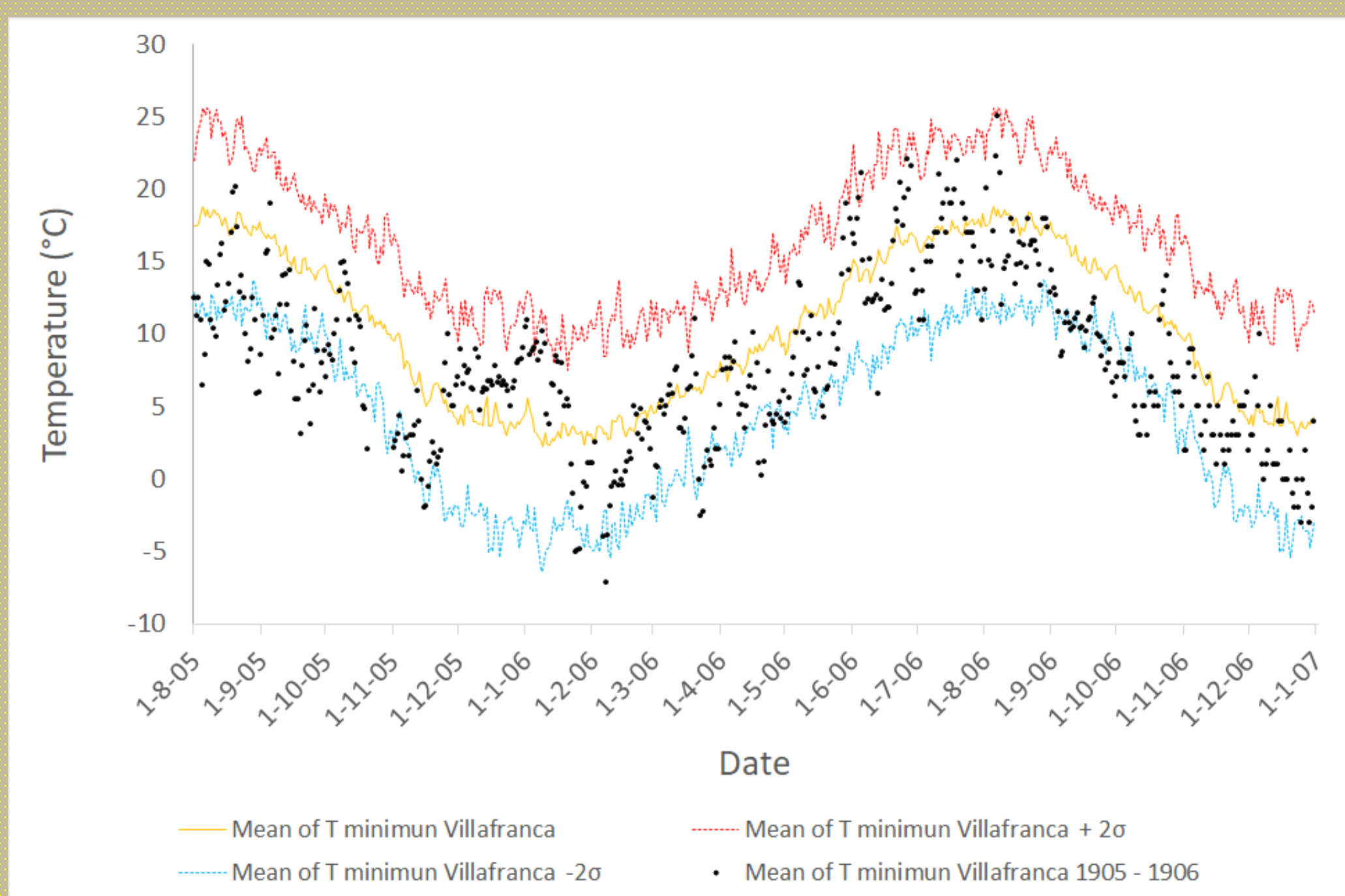
² Universidad de Extremadura, Departamento de Física, Badajoz, Spain



ABSTRACT

Our efforts to a better understanding of the historical climate of the region of Extremadura (interior of the SW Iberia) have been directed in two main aspects. First, we have tried to recover all the meteorological data of the pre-instrumental period. Second, we have been working on the localization and analysis of proxy data, including “*pro-pluvia*” rogation ceremonies and a chronology of catastrophic floods in this region.

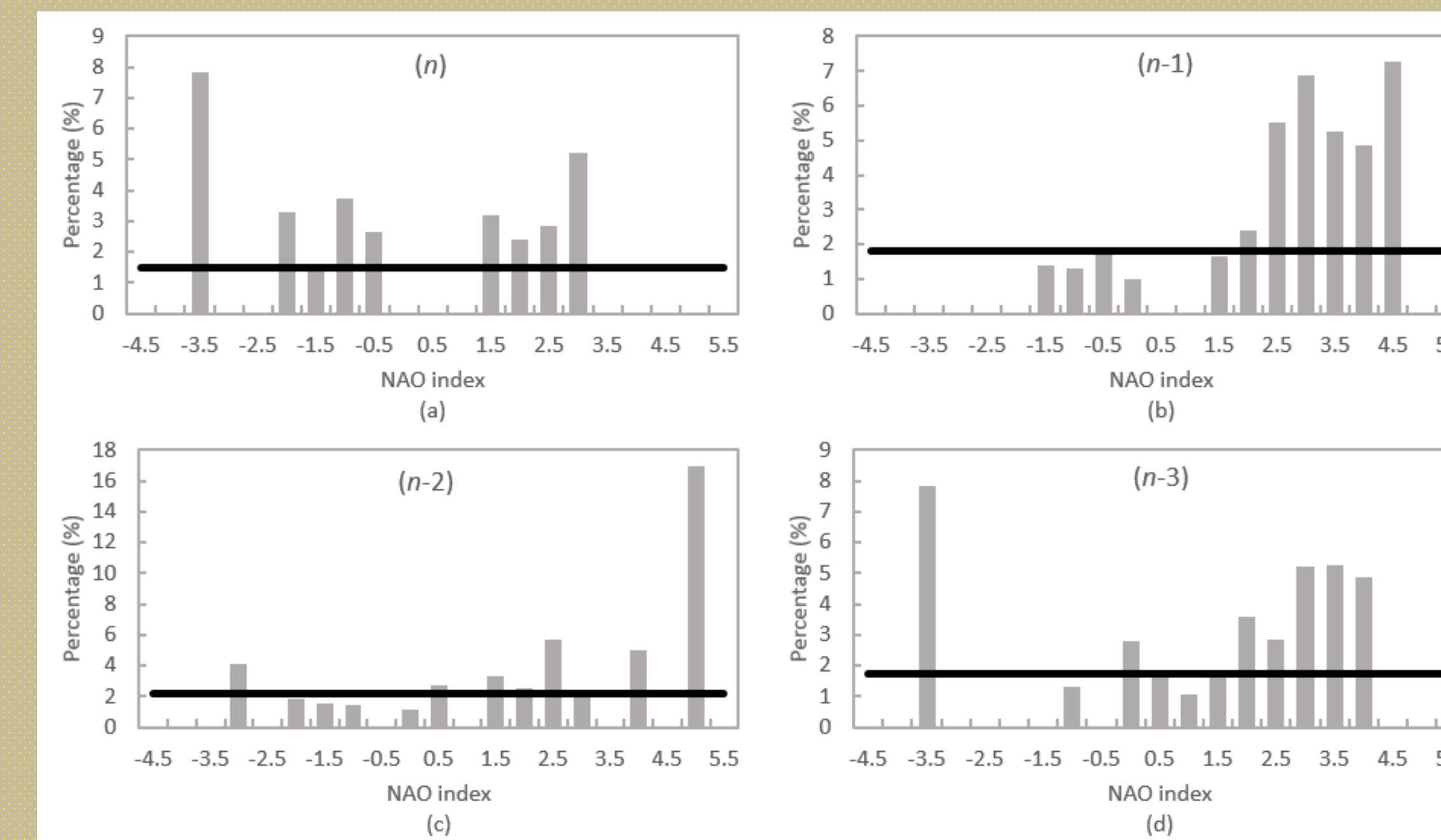
METEOROLOGICAL DATA



Recovering and digitalizing meteorological data, as the recorded ones in Villafranca de los Barros during 1905 and 1906, allow us to analyze the variation of these data with actual data in order to determine patterns or events.

“*Pro-pluvia*” rogations were celebrated during dry conditions to ask God for rain. In our case, 37 “*pro-pluvia*” rogations were retrieved for the period 1824-1931 from different locations in Extremadura (Bravo-Paredes et al. (2020)). The most relevant results are found in the relationship between *pro-pluvia* rogations in month *n* and the positive values of the NAO index for months *n-1* and *n-2*.

PRO-PLUVIA ROGATIONS



EXTREMADURA



REFERENCES

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- ❖ Bravo-Paredes, N. et al. (2019) “Analysis of actinometric measurements under different sky conditions in Cáceres (Spain) for the period 1913-1920” *Tellus B* **71**, 1663597.
- ❖ Fernández-Fernández, M.I. et al. (2014) “The climate of Zafra from 1750 to 1840: History and description of weather observations” *Climatic Change* **126**, 107.

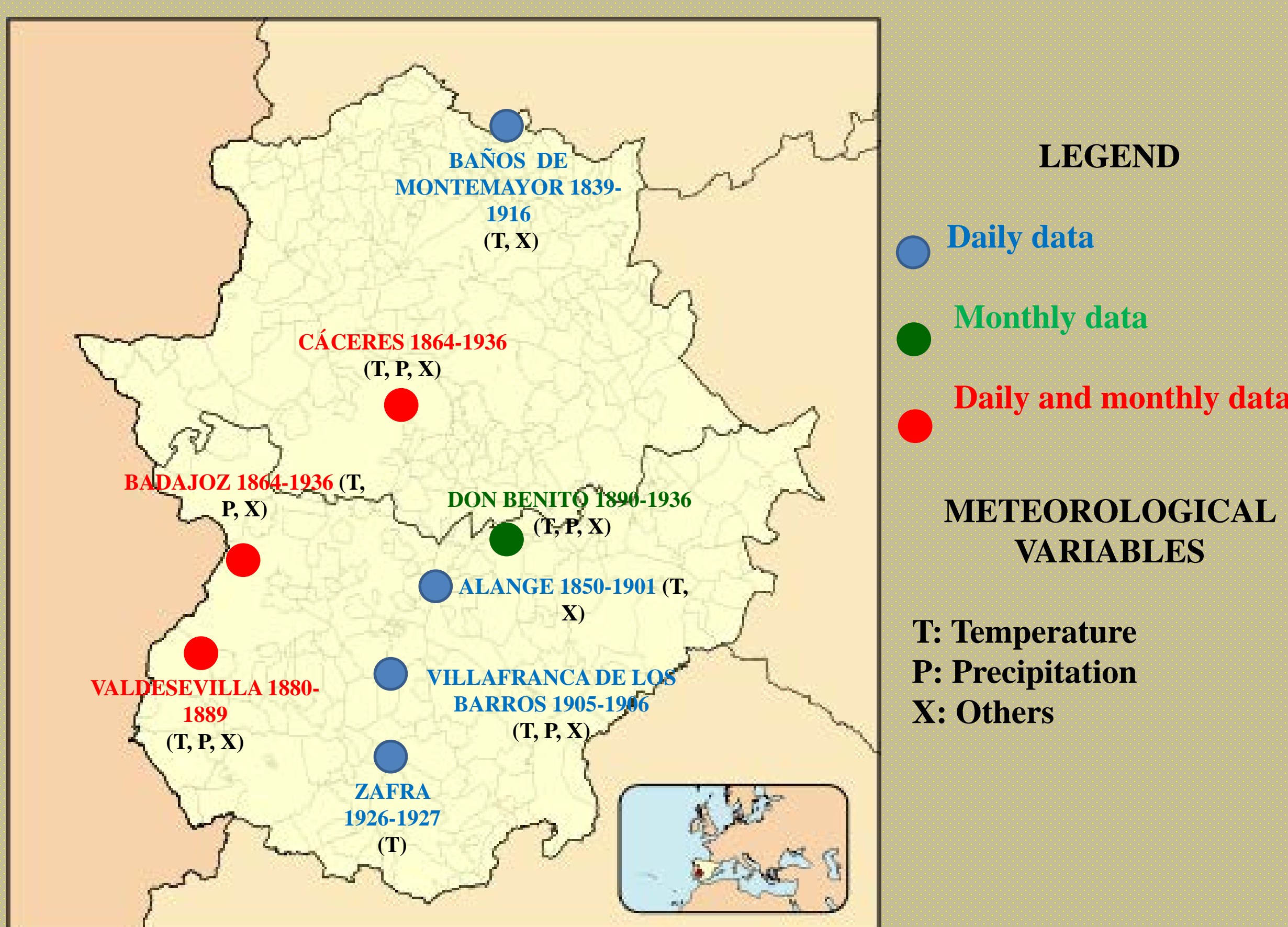
ACKNOWLEDGEMENTS

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JUNTA DE EXTREMADURA



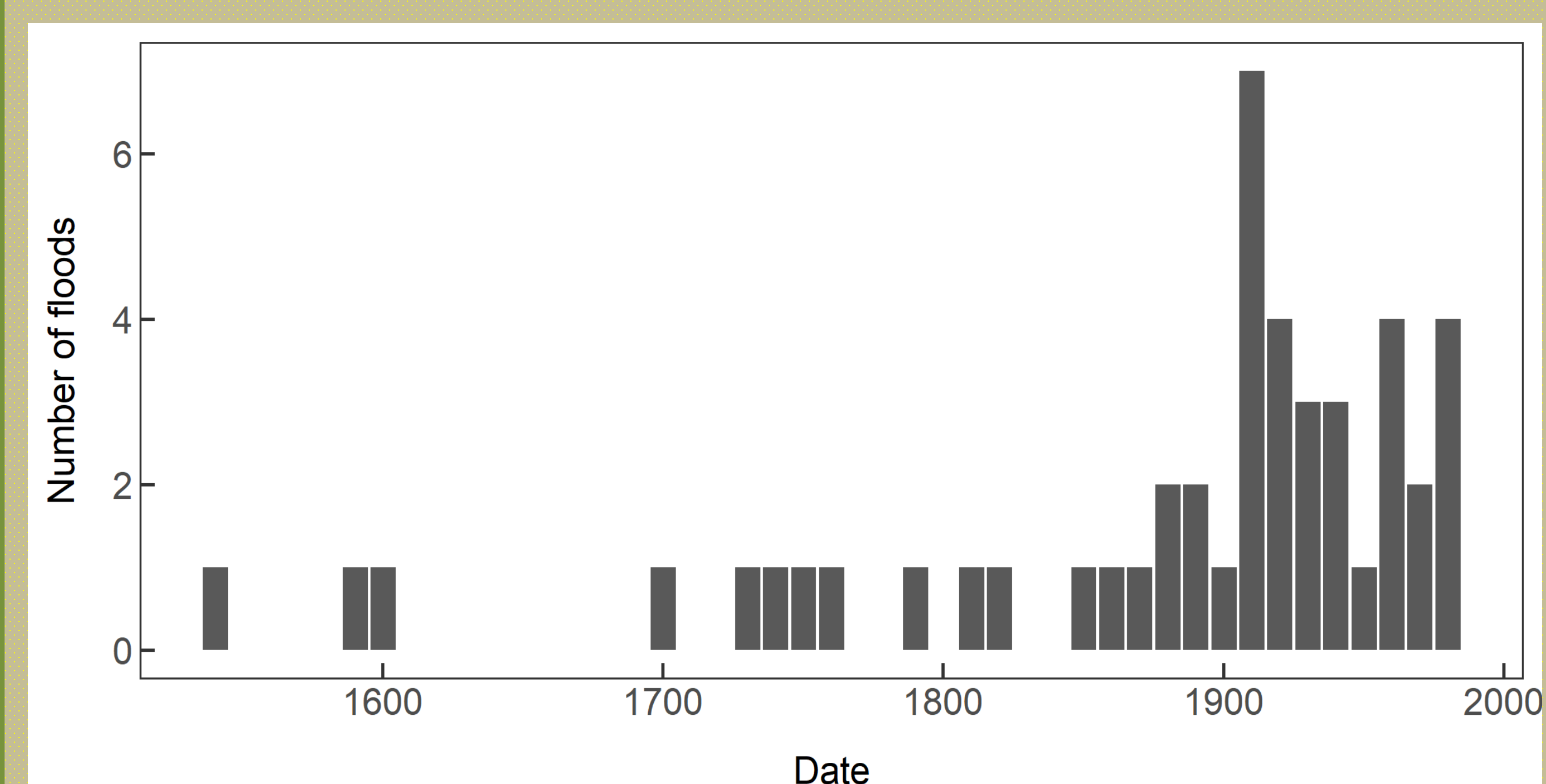
METEOROLOGICAL DATA



- The recovery of historical meteorological data from different sources (e.g. manuscripts, books, newspapers) and the subsequent digitization to obtain readable-machine version has been a main task in our research.
- Meteorological data from eight different locations in Extremadura have been recovered and digitized.
- The oldest data were read in 1824 (Fernández-Fernández et al., 2014).
- Actinometric measurements in Cáceres for the period 1913-1920 (Bravo-Paredes et al., 2019) is an important meteorological series.

It is important to know the magnitude and the impact of the catastrophic floods occurred in Extremadura. In total, 37 catastrophic floods occurred in Badajoz were recovered from different documentary sources for the period 1545-1989.

CATASTROPHIC FLOODS



CONCLUSIONS

- ❖ All these research efforts will allow for a better understanding of the past climate in the region of Extremadura, where such studies have been very scarce.
- ❖ Historical meteorological data have been recovered and digitized to obtain readable-machine version.
- ❖ Rogation ceremonies in Extremadura region can be considered a good proxy for the NAO index.
- ❖ 37 catastrophic floods were recovered for the period 1545-1989.

