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# Using sedimentary leaf waxes and specific isotope signal to infer past climate in Western Iberia

Ricardo N. Santos\*<sup>1</sup>, Teresa Rodrigues<sup>2,3</sup>, Enno Schefuß<sup>4</sup>, Filipa Naughton<sup>2,3</sup>, Dulce Oliveira<sup>2,3</sup>, Alexandre Ramos<sup>1</sup>, Armand Hernández<sup>1</sup>

\*ricardo.s.16@hotmail.com

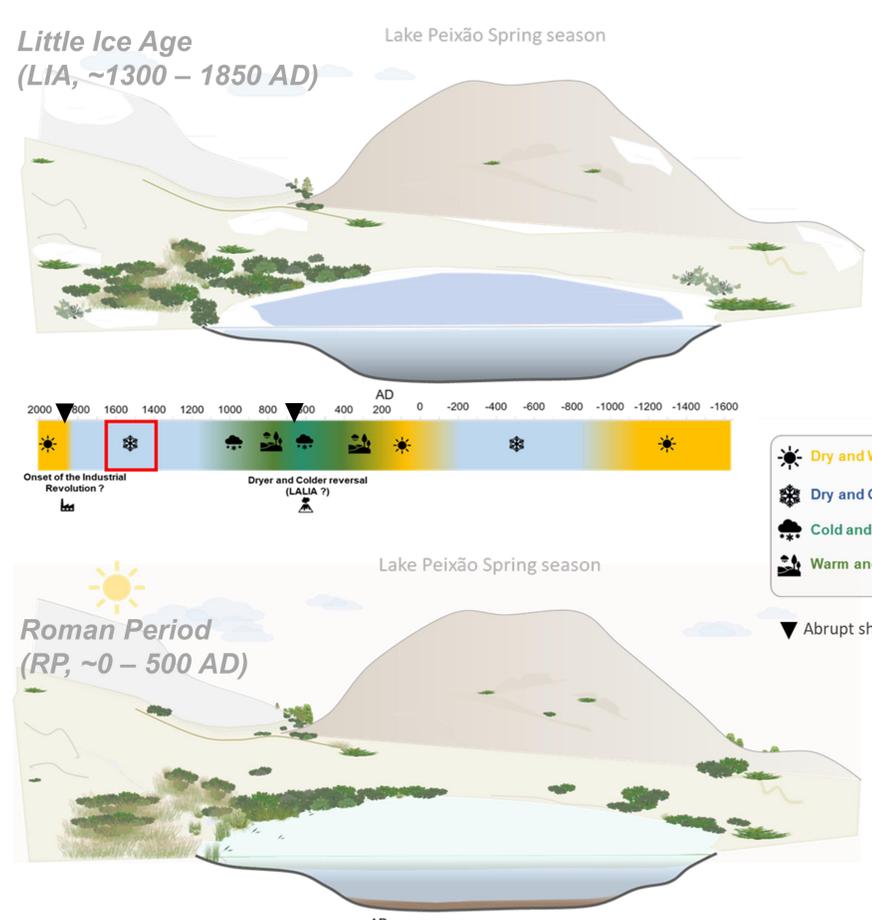
1 Instituto Dom Luiz (IDL), Faculty of Sciences, University of Lisbon, Lisbon, Portugal  
 2 Portuguese Institute of Sea and Atmosphere (IPMA), Lisbon, Portugal  
 3 Center of Marine Sciences (CCMAR), Algarve University, Faro, Portugal  
 4 MARUM-Center for Marine Environmental Sciences, University of Bremen, Bremen, Germany

## Modern *n*-alkane characterization



Here we present the preliminary results of our paleoclimate study which utilize a sediment core retrieved from a lake in **Serra da Estrela**, covering the last ~3600 years. The *n*-alkanes signal (leaf waxes biomarkers), along with other climate and environmental proxies, were used to infer the following reconstruction and climate drivers.

## Climate reconstruction in Serra da Estrela



**Climate forcing**

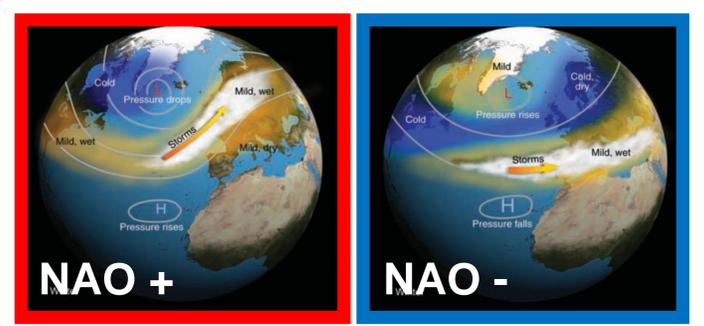
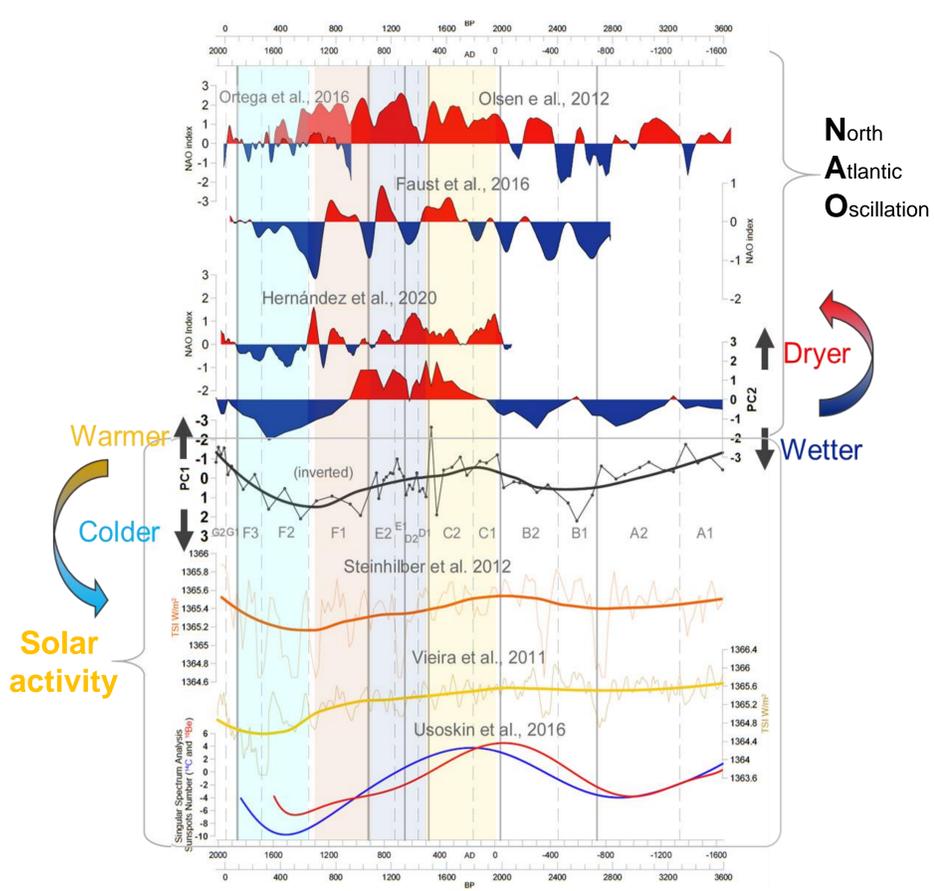


Figure adapted from Petersen, J. F., Sack, D., and Gabler, R. E., 2008 (Physical geography, 9th edition).

## Main conclusions:

- The lake ecosystem has shown a sensitive response to major climate forcers, highlighting Serra da Estrela mountain as a key area for paleoclimate studies.
- Periods of enhanced cold and dry conditions can be seen at ca. 2.8ka and during the LIA, under dominant NAO- and low solar activity.
- Milder climate with wetter conditions dominated during periods such as the RP, coeval with NAO+, and higher solar activity.
- There are two major changes in the regime of abruptness:
  - ~670 AD coeval with prior major volcanic activities, which lead to a short period of colder and dry climate.
  - ~1850 AD contemporary with the onset of the Industrial Revolution and changes in the grazing activity in Serra da Estrela, possibly linked with an increase in eutrophication conditions.



## Acknowledgments:

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