

Designação do Projeto	Influência dos padrões atmosféricos do Atlântico Norte no clima do Oeste da Ibéria: desde o Tardiglaciário até ao Presente- HOLMODRIVE
Código do Projeto	PTDC/CTA-GEO/29029/2017
Objetivo Principal	
Região de Intervenção	Lisboa
Entidade Beneficiária	FCiências.ID – Associação para a Investigação e Desenvolvimento de Ciências
Data de Aprovação	23-03-2018
Data de Início	01-12-2019
Data de Conclusão	30-11-2021
Custo Total Elegível	239.611,12
Apoio Financeiro da União Europeia	FEDER - «FEDER»
Apoio Financeiro Público Nacional/ Regional	OE - «OE»

Objetivos

The HOLMODRIVE project aims are: i) to analyze the recurrence of extreme rainfall events in Western Iberia during the Lateglacial and Holocene, ii) to disentangle the influence of ARs and climate modes on extreme rainfall events in recent and past climates.

The successful accomplishment of these objectives will provide answers to the following target questions (TQ):

TQ1 ?Have the characteristics of extreme precipitation events influencing Western Iberia changed over the last century?

TQ2 ? What are the main physical mechanisms contributing to these changes? Can they be related to changes in atmospheric processes, such as ARs? What are the relationships between these changes and prominent climate modes of north Atlantic climate variability such as the NAO, EA, SCAND and AMO?

TQ3 ? How have the characteristics of extreme events changed over the Holocene? Taking into account the decadal non-stationary relationship between the climate modes, which was the atmospheric configuration that promoted extreme precipitation events? How do these changes compare with those seen in the instrumental record in terms of frequency and intensity?

Atividades



«Atividades»

Reconstruction of extreme events in the instrumental period

Retrieval of the Peixão Lake (Serra da Estrela, Portugal) sedimentary record

Establishment of lake geochronology

Multiproxy high-resolution characterization of lake sediments

Reconstruction of past sea-land conditions based on marine records analyses

Reconstruction of long-term decadal extreme events

Regional paleoclimate reconstruction

Deciphering the atmospheric and oceanic mechanisms influencing on extreme events

Dissemination of the project findings

Resultados Esperados / Atingidos

HOLMODRIVE will provide high

resolution data from a mountain lake (Lake Peixão, Serra da Estrela, Portugal) and Western Iberia marine records (U1385, D13882, MD03-2697 and KS10) to climate modellers on past influence of these mechanisms on the North Atlantic climate, particularly on the nature and intensity of extreme climatic events, since the Lateglacial, to improve our understanding in the future response of extreme events to the warming climate scenarios forecasted for the next decades [IPCC2014]. The novel aspect of HOLMODRIVE with respect to previous projects developed in the IP will be to further explore the role of the various large-scale patterns shaping the climate of Iberia, and additionally to evaluate the influence of the Holocene ARs on extreme rainfall events over Western Iberia, one of the areas where the influence of this phenomenon is most pronounced [RaTrLietal15]. The multiproxy characterisation of sedimentary records will allow the reconstruction of the Holocene climate variability and the related extreme rainfall events in the Western IP similarly to what other lakes have allowed in other Iberian regions [CoVaVietal16]. The comparison between continental and marine records will play an important role to accommodate the temporal evolution of past atmospheric and oceanic climate patterns.

The HOLMODRIVE project seeks to improve our understanding of long-term natural variability in extreme storm events impacting the IP and their relationships with ARs and large-scale modes of North Atlantic and European climate variability such as NAO, EA, SCAND as well as slow varying patterns such as AMO. The project will combine several independent and complementary palaeohydrological approaches focusing on meteorological instrumental data, flash floods damaging episodes from documentary sources, proxy-based natural archives and models simulations. Our proposed work will do so by accomplishing the following working packages (WP) and the related tasks (see annex 1): WP1) Generating a historical record since the beginning of the 20th century of storm events from regional instrumental data and comparing these against records of ARs and modes of climate variability to demonstrate the relationship between them (Task 1); WP2) Recovering the complete sedimentary record from a Portuguese mountain lake (Task 2); WP3) Laboratory analyses of the sediments (Task 3, 4 and 5); WP4) Using a new set of robust regional ground-truthed records and the already available regional records combined with paleoclimate simulations to generate quantitative records of past climate (Task 6 and 7); WP5) Characterizing the evolution of the atmospheric and oceanic mechanisms influence on extreme events impacting the Western IP (Task 8); WP6) Communicating the results of the project, publishing and applicability of the findings (Task 9).

