



## **H4 abrupt event and late Neanderthal Presence in Iberia**

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The Heinrich event 4 (H4) is well documented in the North Atlantic Ocean and the adjacent continents as a cooling event 39,000 years before present. To quantify the impact of this event in terms of climate and vegetation over the Iberian Peninsula, we perform numerical experiments using a high-resolution general circulation model forced by sea surface temperatures before and during H4. In good agreement with pollen sequences from marine cores, our model simulates an expansion of aridity over the peninsula during H4, a desertification of the south, and a replacement of arboreal by herbaceous plants in the north. Our simulations demonstrate that the H4 marine event imprinted drastic changes over Iberia which have not favoured the invasion of this area by early modern humans, therefore giving a plausible explanation of the delayed extinction of Neanderthals in Iberia inferred from archaeological sites.