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The intensity of interglacial warmth in northwest Europe over the last 800,000 yrs: An absence of the MBE in Europe?

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The mid-Brunhes Event (MBE) is a climatic transition occurring between MIS 13 and 11 that separates two global climatic modes: (a) early Middle Pleistocene interglacials (780-450 ka) that are characterised by only moderate warmth and (b) Middle and Late Pleistocene interglacials (occurring after 450 ka) that are characterised by greater warmth consistent with, or warmer than, the Holocene. This event is observable within a variety of long climate records, such as SPECMAP and EPICA, but its effect on terrestrial systems is poorly understood. The impact of this event is examined in the British terrestrial sequence by comparing; 1) the occurrence of a range of thermophilous plant and animal species, and 2) the isotopic composition of freshwater mollusc assemblages, for interglacials of the early Middle Pleistocene with those from the late Middle and Late Pleistocene. This comparison reveals that interglacial climates during the early Middle Pleistocene in Britain were as warm as, and in some cases warmer than, those that occurred during the late Middle and Late Pleistocene. This interpretation is supported by sea surface temperature records in the North Atlantic, which show that temperatures during early Middle Pleistocene interglacials were at least as warm as those experienced during the Holocene. There is, therefore, no evidence in climate records of Britain and the North Atlantic for a mid-Brunhes event. This suggests that the MBE is not a global climatic transition but is restricted to specific regions, in particular the higher latitudes of the southern Hemisphere. The paper concludes by discussing the geographical impact of the MBE and some of the potential drivers of this event.