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Pronounced climate warming during early Middle Pleistocene interglacials: investigating the mid-Brunhes event in the British terrestrial sequence

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The mid-Brunhes event is a climatic transition that occurs between MIS 13 and 11 (ca 450,000 yrs B.P.) and is primarily characterised by an increase in the amount of warming received by interglacial episodes over the last 450,000 yrs relative to that experienced during interglacials of the early Middle Pleistocene (780,000 – 450,000 yrs B.P.). This event is observable within a range of long climate records (e.g. SPECMAP, EPICA etc) but its effect on terrestrial systems is poorly understood. The impact of this event in northwest Europe is tested through the British terrestrial sequence by the comparison of multi-proxy climate reconstructions for interglacials of the early Middle Pleistocene with climate reconstructions from the late Middle and Late Pleistocene (<500,000 B.P.). This comparison reveals that interglacial climates during the early Middle Pleistocene in Britain were, in fact, as warm as, and in some cases warmer than, those that occurred during the late Middle and Late Pleistocene. This suggestion is supported by sea surface temperature records in the North Atlantic which show that temperatures during the early Middle Pleistocene interglacials were at least as warm as the Holocene. There is therefore no evidence, in climate records of northwest Europe and the North Atlantic, for a mid-Brunhes event. This suggests that the mid-Brunhes event is not a global climatic transition but only impacts certain regions of the world, however, further work is needed to understand the extent of this significant transition and the reason for this regional variation.