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The Mid-Brunhes Event: a second stage for the Middle Pleistocene Subseries?

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The Middle Pleistocene Subseries and Chibanian Stage were officially defined in 2020 through ratification of the Global Boundary Stratotype Section and Point (GSSP) at Chiba, Japan (Suganuma et al., in press). Their shared base at 774.1 ka represents the approximate midpoint of the Early–Middle Pleistocene transition, a 1.4–0.4 ka interval marked by a progressive increase in the amplitude of climate oscillations and shift towards a quasi-100 ky frequency. They currently both extend to the base of the Upper Pleistocene Subseries dated provisionally at ~129 ka (Head et al., in press). Global stages have not traditionally been employed for the Quaternary owing to the long use of global subseries and regional stages. Global stages are nonetheless required for formal subdivision of the International Chronostratigraphic Chart, and their acceptance in subdividing both the Holocene and Pleistocene Series has become increasingly evident. The Middle Pleistocene Subseries and Chibanian Stage are currently identical in extent. With this in mind, we consider the possibility of subdividing the Middle Pleistocene by introducing a second stage, which would shorten the duration of the Chibanian and increase its utility. There has been increasing recognition of the ‘Mid-Brunhes Event’ (Jansen et al., 1986) more recently termed the ‘mid- Brunhes Transition’ (Yin, 2013; Barth et al., 2018), an abrupt step-change to increased amplitude of the quasi-100 kyr cycles and warmer interglacials from MIS 11 onwards. The base of this new stage would reasonably be placed around the MIS 12–MIS 11 transition (Termination V, ~420 ka), a level clearly recognised in the marine record. This level appears to approximate the bases of the Holsteinian, Hoxnian, Likhvinian, and Zavadivian regional stages across northwestern and central Europe, the Russian Plain, and the Ukrainian Loess Plain; and can be traced across the Chinese Loess Plateau (Cohen and Gibbard, 2020). The possibility of a second stage will initially be explored by publication of a position paper. If this attracts sufficient support, a Working Group of the International Subcommission on Quaternary Stratigraphy will be established to analyse the case more formally.

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