

## A summary of the Chiba Section, Japan: a proposed Global Boundary Stratotype Section and Point (GSSP) for the base of the Middle Pleistocene Subseries

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We propose the extensively studied Chiba section of the Chiba composite section as the Global Boundary Stratotype Section and Point (GSSP) to define the base of the Middle Pleistocene Subseries and Chibanian Stage. The Chiba composite section is a continuous and expanded marine sedimentary succession situated near the Pacific coast of the central Japanese archipelago. It contains well-preserved pollen, marine micro- and macrofossils, a tightly-defined Matuyama–Brunhes (M–B) paleomagnetic reversal event, and numerous tephra beds, allowing the establishment of a robust and precise chronostratigraphic framework across the Lower–Middle Pleistocene boundary. Its deep-marine, open-ocean continental slope setting, coupled with sedimentation rates with no evidence of abrupt deposition, has resulted in the capture of both terrestrial and marine environmental changes in and around Marine Isotope Stage 19 (MIS 19). We have performed high-resolution oxygen isotope analysis, as well as detailed sedimentological, geochemical, and biostratigraphic studies of the Chiba composite section, confirming the completeness of the stratigraphic interval spanning the Lower–Middle Pleistocene boundary. The M–B reversal serves as the agreed primary guide for the Lower–Middle Pleistocene boundary, and the Chiba composite section represents one of the most detailed marine sedimentary records yet obtained for this reversal, yielding an astronomical age of 771.7 ka with a duration of ca. 2.8 kyr. This section therefore offers an exceptional opportunity to calibrate the geological time scale as well as understand the dynamics of the geomagnetic dynamo. The widespread Byk-E tephra lies close to the reversal, allowing precise regional lithostratigraphic correlation. The Chiba composite section is easy to access by public transport or car from international airports. The section will be permanently preserved and maintained by the local government as a natural monument. These aspects make the Chiba composite section eminently suitable to host the GSSP for the Lower–Middle Pleistocene boundary.

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