

Magneto-, and climate stratigraphy of abnormal interglacial MIS 19

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Marine oxygen isotope stage (MIS) 19 is an abnormal interglacial, having a thermal maximum about 5 kyr delayed the highest sea-level highstand. In addition, it includes the Matuyama-Brunhes magnetic polarity boundary, a candidate for the early-middle Pleistocene boundary. Thus, precise understanding of the climate, environment, and magneto- stratigraphy for the stage is important. In this study, we revise the age model of the marine layer correlated with MIS 19 in an Osaka Bay core to reevaluate the magneto-, and climate stratigraphy for MIS 19. The previous linear age model was replaced by that of using a sea-level proxy curve of diatom fossil data tuned to marine oxygen isotope stack LR04. The new age model reveals that the sedimentation rate is almost uniform throughout the MIS 19, except a short period in the earliest stage when the rate decreases by half. The model revises ages of the following events. 1) The first highstand, correlated with isotope event 19.3, spans from 784 ka to 778 ka, during which it has a brief sea-level drop at about 783 ka, and the highest sea-level at 780 ka. 2) The postglacial warming in the early MIS 19 was disrupted by the temporary cooling from 783 ka to 778 ka, followed by a rapid warming with the thermal maximum spanning from 776 ka to 774 ka. 3) The second highstand, correlated with isotope event 19.1, occurred at a period from 770 ka to 762 ka. 4) The magnetic polarity reversal has the low paleointensity interval spans from 784 ka to 776 ka, during which a brief paleointensity recovery and multiple polarity swings occur. The beginning of the low paleointensity interval is consistent in age with those observed in many deep-sea cores from different oceans. But for the termination, data from some deep-sea cores show several thousand year younger ages.

Keywords: paleoclimate, interglacial, stage 19, Matuyama-Brunhes polarity boundary, early-middle Pleistocene boundary, climate stratigraphy