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定方位掘削コアによる千葉セクションの高解像度磁気層序
High-resolution magnetostratigraphy across the Matuyama-Brunhes polarity transition from the Chiba Section

兵頭 政幸[1*] ; 高崎 健太[2] ; 松下 隼人[2] ; 北場 育子[1] ; 加藤 茂弘[3] ; 北村 晃寿[4] ; 岡田 誠[5]
HYODO, Masayuki[1*] ; TAKASAKI, Kenta[2] ; MATSUSHITA, Hayato[2] ; KITABA, Ikuko[1] ; KATOH, Shigehiro[3] ; KITAMURA, Akihisa[4] ; OKADA, Makoto[5]

[1] 神戸大学自然科学系先端融合研究環内海域環境教育研究センター, [2] 神戸大学大学院理学研究科地球惑星科学専攻, [3] 兵庫県立人と自然の博物館自然・環境評価研究部, [4] 静岡大学理学部地球科学教室, [5] 茨城大学理学部理学科
[1]Research Center for Inland Seas, Kobe University, [2]Department of Earth and Planetary Sciences, Kobe University, [3]Division of Natural History, Hyogo Museum of Nature and Human Activities, [4]Institute of Geosciences, Faculty of Science, Shizuoka University, [5]Department of Earth Sciences, Faculty of Science, Ibaraki University

An oriented 54-m core was collected from the Kokumoto Formation of the Kazusa Group, near the Chiba Section, a candidate for the GSSP of the Early-Middle Pleistocene boundary. The core spans in stratigraphy from a thick sand layer below a mud clast layer up to just below the Ku-2B tuff. A detailed Matuyama-Brunhes (MB) geomagnetic reversal record was obtained, using u-channel samples of 1 m long cut out from 1-m core section. Magnetization components were separated by stepwise alternating field demagnetization (AFD). Low field magnetic susceptibility and anhysteretic remanent magnetization show the core consists of magnetically homogeneous sediments. Magnetizations of discrete samples of 2.2cm x 2.2cm x 2.2cm were also measured, being subjected to progressive thermal demagnetizations (THD) and AFD. The declinations of characteristic remanent magnetization (ChRM) well agree across the boundary of 1m-sections, indicating that orientation of each 1m-core section was successful. Magnetic hysteresis measurements show magnetic grains are of PSD size. THD shows that hematite is included besides magnetite, a main magnetic carrier. Thermomagnetic measurements and THD suggest that the sediments include greigite, ferrimagnetic iron sulfide, which may cause a false reversal due to self-reversal of magnetic minerals. The paleomagnetic results show that the upper boundary of the MB transition lies above the Byakubi volcanic ash layer, which is much higher than the previous result. Our data show normal polarity continues from a depth of about 1m below the Byakubi, but several polarity swings exist above it. From about 70cm above the Byakubi to the top of the core, normal polarity continues. Relative paleointensity data show the lower end of the MB transition lies below the base of the core. The relative paleointensity keeps low values in the lower part below the Byakubi, and gradually increases upward above it, reaching a maximum value at about 39 m above the Byakubi. This linear increase feature is similar to the post-MB reversal intensity pattern observed in the paleointensity stack Sint-2000 (Valet et al., 2005). The low paleointensity kept throughout the basal part suggests the beginning of the MB transition lies much below the base of the core.

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