SEM34-07 会場:102A 時間:5 月 24 日 11:45-12:00

新生代の南太平洋赤色粘土の環境磁気学的研究
Environmental Rock-Magnetism of Cenozoic Red Clay in the South Pacific Gyre

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Red clay occupies about 40 % of the global ocean floor. Paleoceanographic and paleomagnetic studies of red clay were limited so far because red clay does not yield microfossils that can be used for precise age estimation and sedimentation rates were extremely low. However, red clay could be useful for elucidating long-range environmental changes. Recently, red clay has attracted interest because of the discovery that red clay rich in $\sum$REY (rare-earth elements and yttrium) distributes widely in the Pacific Ocean. We conducted an environmental rock-magnetic study using the Integrated Ocean Drilling Program (IODP) Site U1365 cores (75.5 m long above ~125 Ma basement) taken at the western edge of the South Pacific Gyre (SPG) in order to investigate long-range climatic and paleoceanographic changes during the Cenozoic. This is the first environmental rock-magnetic study in the SPG ever.

Magnetostratigraphy could be established above ~6 meters below the seafloor (mbsf) (~5 Ma). Below ~6 mbsf, the ages of the Site U1365 cores were transferred from published ages of nearby Deep Sea Drilling Project (DSDP) Site 596, which is based mainly on a constant Cobalt flux model, by inter-core correlation using magnetic susceptibility and $\sum$REY variation patterns. On first-order reversal curve diagrams, a non-interacting single-domain magnetic component, which is a characteristic of biogenic magnetite, was recognized throughout the sediment column. The ratio of anhysteretic remanent magnetization (ARM) susceptibility to saturation isothermal remanent magnetization (IRM) (k_{ARM} /SIRM), a proxy of the biogenic to terrigenous magnetic components, is high, in particular below ~8.0 mbsf (~35 Ma). In the results of IRM component analyses, the middle-coercivity (M) component likely carried by maghemite increased since ~35 Ma, whereas S ratios and k_{ARM}/SIRM values decreased. The increase of the M component accelerated after 5 Ma. These observations suggest increases of the input of terrigenous magnetic minerals, which is inferred to be transported as eolian dust. The Eocene/Oligocene boundary (~34 Ma) is known as the time of a major global cooling, and the increase of eolian dust supply in the South Pacific may have occurred since then. Northward shift of Australia to an arid region in middle latitudes should have also contributed to the increase of eolian dust supply. The second increase of eolian dust flux at ~5 Ma may have been caused by a further growth of the Antarctic glaciation at ~6 Ma.

キーワード: 赤色粘土, 環境磁気学, 南太平洋環流, 生物起源マグネタイト, 風成塵, 新生代
Keywords: red clay, environmental magnetism, South Pacific Gyre, biogenic magnetite, eolian dust, Cenozoic