

Rockmagnetic stratigraphy of the Northwest Pacific Deep-Sea Sediment: Identification of the behavior of the Kuroshio Extension

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In the transition zone between the subtropical and subarctic zone, the warm and nutrient-poor Kuroshio Current is colliding with the cold, nutrient-rich Oyashio Current, which are derived from off the coast of Japan. Deep-sea sediment formed under this transition zone provides opportunity to study the fluctuation history of the both currents. Here we demonstrate that the lithologic changing is controlled by glacial and interglacial cycles, evidenced by the magnetic property changes. The magnetic properties show cyclic changes, which suggest different sediment sources. The ages of cores were determined by the tephra chronology and paleointensity of geomagnetic field obtained from the sediment. The core reaches almost 250 Ka. The Pringle fall Excursion is obviously documented, evidenced by the relative paleointensity pattern and negative inclination. The aged sediments revealed that magnetic and lithologic properties change take place exactly with correspondence to glacial and interglacial cycles. The sediment in the interglacial is characterized by the higher ferromagnetic contribution, and however sediment in glacial period characterized by the antiferromagnetic mineral. The sediment accumulated during interglacial period involves much lithic fragment of volcanic material. Because the Kuroshio pass through shallow strait of Izu-Ogasawara Ridge, lateral transportation of volcanoclastics to abyssal plain in the north west Pacific basin is the most possible mechanism to bringing the such higher magnetic minerals. On the other side, sediment in the glacial period characterized by the goethite and hematite, suggesting the dissolution of ferromagnetic mineral in the diatomaceous ooze.