IODP Exp.329 南太平洋で掘削された遠洋性堆積物コアの古地磁気および環境磁気学的
研究
Onboard paleomagnetic results of pelagic sediment cores from the South Pacific Ocean, IODP Expedition 329.

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IODP Expedition 329 surveyed and cored the sediment at 6 sites throughout South Pacific Gyre (SPG) and at 1 site its sou
thern margin. The central SPG has been describes as Earth’s largest oceanic desert (Claustre and Maritorena, 2003). The domin
ant lithology of this expedition is zeolitic metalliferous clay at the deeper water sites on older basement (58 to 120 <= Ma) within
the gyre (Sites U1365, U1366, U1369 and U1370). Manganese nodules occur at the seafloor and intermittently within the upper
sediment column at these sites. The cored sediment at the shallowest site (U1368) is calcareous nanno fossil-bearing clay. The
sediment at Site U1367 is transitional between these 2 lithologies. Site U1371 lies out side the low-chlorophyll region, and its
cored sediment is dominantly siliceous ooze with abundant diatom debris.

Paleomagnetists of Expedition 329 measured natural remanent magnetization (NRM) of all archive-half sections from Sites
U1365 to U1371 using the three-axis cryogenic magnetometer at 2.5-cm intervals before demagnetization. The archive-half sec
tions were demagnetized by alternating fields (AF) of 10 mT and 20 mT. The primary magnetization of pelagic clay generally
degrades at a few meters depth below the sediment water interface. The boundary between the primary and stable magnetic
records often occurs in the later part of Gauss chron and coincides closely with the late Pliocene onset of northern hemisphere
glaciation (Opdyke and Foster, 1970; Kent and Lowrie, 1970; Prince et al., 1980). Magnetic directions of this expedition are not
interpretable throughout most of the pelagic clay (Sites U1365, U1366, U1367, U1368 and, U1370) possibly due to magnetic
overprint during coring (high positive inclination), viscous remanent magnetization (VRM), or diagenetic changes in the sedi
ment. In addition, appearance of manganese nodules often hampers indigenous magnetic direction in shallow sediment sections.
However, fortunately the pelagic clay sediments of Sites U1369 and the top of U1365 (0-6 m) were less these influences.

The lithology at U1367 changed from metalliferous clay (Unit I) at the top to nanofossil ooze (Unit II) at the bottom. The metallifer
ous clay unit extends from 0-5.5 mbsf in U1367. Consistently, NRM intensities and magnetic susceptibility in Unit I were in the order of 10^2-1 to 10^2-2 A/m (more than 100?10^-5 vol. SI) and decreased to about 10^2-3 to 10^2-2 A/m (10 to
50?10^-5 vol. SI) in Unit II (nanofossil ooze).

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