

Chronostratigraphy of sediment cores from Bearing Sea and subarctic Pacific

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This study shows chronostratigraphy of sediment cores taken during the KH99-3 Leg 3 cruise from the eastern side of Bering Sea and a crest of the Emperor Seamount chain in subarctic Pacific using paleointensity and stable oxygen isotope measurements. The cores were collected from the following five sites; Umnak Plateau (Umk3A), Gateway region (Gat3A), Bower Ridge (Bow8A, 9A, 12A), Abyssal Basin (AB), and a crest on the Emperor Seamount chain (ES). Lithology of the cores mainly consists of diatoms and clay minerals. ES and Bow8A cores are relatively clay rich include carbonate. Gat3A core is clay rich but partly has diatom rich zones. Other cores are basically diatom rich (Fig.2). Bow12A core contains slumped layers at upper parts of the column of which magnetic susceptibility and dry bulk density are quite low.

Methods:

All measurements were used 2 x 2 cm U-Channels and conducted 2G760R pass through type SQUIDs at AIST (National Institute of Advanced Industrial Science and Technology) and JAMSTEC (Japan Marine Science and Technology Center). All specimens were done stepwise AFD (alternating field demagnetization) up to 60 mT of the NRM (natural remanent magnetization) and also after ARM (anhysteretic remanent magnetization) acquired at 0.1 mT direct field with 80 mT AF, and IRMs (isothermal remanent magnetization) at 800 mT.

Stable oxygen and carbon isotopes of planktonic foraminifers (left coiling *N. Pachyderma*) were measured using the MAT250 mass spectrometer at Shizuoka University and MAT252 at JAMSTEC Mutsu Laboratory. Foraminiferal tests used for measurements were picked from specimens sliced with 2 cm thickness.

Results:

Most of the cores exhibit stable intensities normalized by partial ARMs except Bow8A on which partial NRM/IRM ratios are tied well together. Thus, partial IRMs was chosen as a normalizer for the Bow8A core as well as ARMs for the remains. The normalized NRMs were used as relative paleointensities to compare with standard VADM (virtual axial dipole moment) records of which the short one (Tric et al., 1992) was for less than 80 ka and Sint800 (Guyodo and Valet, 1999) for longer periods. Marine isotope stratigraphy was established on the Bow8A and ES cores by using visual correlation with the SPECMAP stacked record (Martinson et al., 1987). Both ages exhibit consistent each other

As the results, sedimentation rates of the cores were determined as follows. Sedimentation rates in eastern Bering Sea (Bow9A, Bow12A, Gat3A, Umk3A) are quite high (10-20 cm/ky), particularly in MIS2. On the other hand, Bow8A shows very low rate (3cm/ky) in spite of the shallowest water depth (882m). Since the rate and lithology of Bow8A are quite similar with ES in the subarctic Pacific, at least the Bow8A site seems to have been different environment from the Bering Sea more like one in the north Pacific.

References

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