Sea level change, greigite diagenesis and remagnetization of continental shelf sediments off New Jersey (ODP Leg 174A)

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Rockmagnetic studies were performed on the continental shelf sediments from Sites 1071 and 1072 of ODP Leg 174A recording a presumed Brunhes/Matuyama boundary. The polarity boundary is closely correlated with the sequence boundary pp3(s), which was considered to be formed as an erosional unconformity during regression that was modified by erosion due to shoreface retreat during subsequent transgression. The rockmagnetic analyses revealed that magnetite and greigite coexist in the sediments studied. The sediments below pp3(s) were considered to be deposited during Matuyama reversed chron at both sites and acquired magnetization by maagnetite and greigite. For Holes 1071C and 1072A below pp3(s), the dissolution of greigite and the formation of secondary magnetic phase might have occurred.

Rockmagnetic studies were performed on the continental shelf sediments from Sites 1071 and 1072 of ODP Leg 174A recording a polarity change from reverse to normal which was tentatively considered as Brunhes/Matuyama boundary on board. The polarity boundary is closely correlated with the sequence boundary pp3(s), which was considered to be formed as an erosional unconformity during regression that was modified by erosion due to shoreface retreat during subsequent transgression. The rockmagnetic analyses revealed that magnetite and greigite coexist in the sediments studied. Site 1072 show a dramatic change in rock magnetic parameters at the polarity boundary, where lithology does not show significant change. Hole 1071B show the change in the polarity of magnetization at the lithological boundary. Hole 1071C show an indication of normal polarity remagnetization at 0-50cm below pp3(s). Calcareous nannofossils of subzone CN14a (0.46-0.9 Ma) found just below the studied intervals suggest that the sediments below pp3(s) were deposited during Matuyama reversed chron at both sites. The sediments below pp3(s) acquired magnetization of reversed polarity first as post depositional remanent magnetization by magnetite and second as chemical remanent magnetization by authigenic growth of greigite. For Hole 1071C between 60.9 and 61.4 mbsf, the dissolution of greigite and the formation of secondary magnetic phase might have occurred.The coarser sediments at Site 1072 would have enabled percolation of oxic fresh water to dissolve greigite and to form magnetite more effectively and caused low intensity remagnetization down to 62.4 mbsf, which is 4.9 m below the sequence boundary pp3(s).