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A paleointensity stack from Northwest Pacific sediments: Discussion on choice of normalizer and reduction diagenesis

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We have conducted a paleomagnetic study of siliceous sediment cores from the Northwest Pacific to establish a regional paleointensity stack during the last 250 kyrs. One of the cores was obtained near DSDP Site 579, which was motivated by the beautiful magnetostratigraphy during the last 4 m.y. reported by Bleil (1985). In this presentation, we focus discussion on the choice of a normalizer and detection and removal of parts of sediments having unsuitable magnetic properties. As a normalizer, ARM has often been used because its coercivity spectrum is considered to be closer to that of NRM than SIRM. In some sediments, however, SIRM was preferred for the reason of smaller coherence between normalized intensity and the normalizer, or smaller dependence on the strength of AF demagnetization fields. A drawback of ARM is that it is sensitive to magnetic interaction among grains. In the Northwest Pacific sediments, the ratio of ARM to SIRM is inversely correlated with SIRM. This suggest that the ratio may not be a magnetic grain-size proxy but represents difference in the strength of magnetic interaction. Thus we adopted SIRM as a normalizer. In the Northwest Pacific, biological productivity is relatively high, and hence sediments are susceptive to reduction diagenesis. This implies that the Northwest Pacific may not be an ideal place to obtain relative paleointensity records. For global coverage of paleointensity data, however, it is required to make efforts for enhancing reliability of records from such areas. In the studied cores, reductive dissolution of magnetites occur in parts of glacial periods. It was revealed that S ratios are particularly sensitive to magnetite dissolution; S ratios sharply drop correspondingly. This is probably because hematites would be more resistive to reductive dissolution than magnetites. In this study, samples

with S ratios lower than 0.96 were rejected as affected by magnetite dissolution.