

Rock magnetic changes during early diagenesis in Japan Sea surface sediments off Hokkaido

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We conducted a rock magnetic study on sediment cores in Japan Sea off Hokkaido. We measured various magnetic properties including magnetic susceptibility, ARM, IRM, and low-temperature IRMs. Susceptibility, ARM, IRM, ARM/SIRM, and S ratio decrease sharply at certain depths of the cores, implying decreases in concentration of magnetic minerals and proportion of low-coercivity minerals, and increase in average magnetic grain size. Verwey transition appears more clearly in the subsurface than at the top of the core, but it becomes obscure below the depth mentioned above. These results can be explained by reduction diagenesis of magnetic minerals accompanied by oxic to anoxic change with depth in sediment column: reduction of maghemite to magnetite and successive dissolution.