

## Two distinctive trends on a Day plot from marine sediments

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Two distinctive trends on a Day plot, displaying grain size variations using magnetic hysteresis data, were found for marine sediments. One trend fits a experimentally observed one for a mixture of single- and multi-domain or a pseudo-single-domain magnetite. Another trend, lying in the upper-right hand of the magnetite trend, comes from maghemite, that is an oxidized phase of magnetite. Magnetite and maghemite for each trend were confirmed with low-temperature demagnetization and thermomagnetic analysis. While magnetite occurs in reductive zones of sediments, maghemite is found in oxidative zones. Magnetite-maghemite transformation in marine sediments is induced by Fe reduction in a sediment column, and the Day plot is a quite sensitive tool to detect the transformation.