Magnetic mineral distributions from the red soil on land to offshore sediments: a case study of northeastern Okinawa Island.

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The red soil called Kunigami Margi is distributed in the northeastern part of Okinawa Island northeastern part. Coral reefs in Okinawa Island are damaged by red soil which is transported rivers in the short steep slope. In order to investigate the red soils distribution in the nearshore marine sediments, rock magnetic analysis was conducted in this study. The samples were taken from the natural beach to continental slope in the northeastern part of Okinawa Island. The red soil and nerashore sediments have significantly low S-ratio values, while the value shows high in the offshore sediment samples. The value low-temperature magnetometry shows the Morin transition at around 250 K in the red soil samples. This suggests that the magnetic carrier of the red soils is hematite. The offshore samples have a slight decrease in IRM at about 100 K. This decrease is interpreted to be the Veywey transition of magnetite, and its suppression is indicative of oxidation (maghematization) of magnetite. These thermomagnetic results suggest that hematite is distributed from the land, and the principal magnetic minerals are maghemized from nearshore to offshore sediments.