Geophysical Research Abstracts
Vol. 21, EGU2019-3652, 2019
EGU General Assembly 2019

Hydrothermal activity revealed by low magnetic susceptibility from core sediments in the southern Okinawa Trough

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The southern Okinawa Trough (OT) has been widely considered an important area with hydrothermal activity. Several active hydrothermal fields have been reported, especially around the Yonaguni Knoll IV. In this study, we collected marine sediment cores around the Yonaguni Knoll IV by using the R/V Ocean Research 1. Two types of the core sites, with or without gas disturbance, were selected based on the single-beam bathymetry (Chirp) by using onboard echo sounder system. For the sites away from gas disturbance, which are considered showing the background situation of the southern OT, variations of magnetic susceptibility (MS) recorded in these cores are relatively stable with values larger than 20. As for the sites with gas-features detected by the Chirp sonar, low MS anomaly with values decreasing dramatically to smaller than 20 is observed. In general, gas-features in the southern OT are suggested to link to hydrothermal activity, and such low MS signature is thought to be caused by seafloor sulfides associated with the hydrothermal alternation. Therefore, low MS anomaly with values lower than 20 could be suggested as an indicator revealing hydrothermal activity in the southern OT.