

Evolution of fresh water zone in shallow part of marine sediments inferred from geological evidence of water-rock interaction

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I have tried to research a long-term transition of an infiltration zone of fresh water in shallow part from an evidence of water-rock interaction related to a flushing of saline water of marine sediments by fresh water infiltrating from the earth surface. In this study, a bulk chemistry of the rock and a chemistry of ground water (pore water) of bore holes in the sediments were analyzed. As the results, the follows were suggested.

1) A reaching of Na has occurred in the shallow part. 2) A main mechanism of the reaching is a cation exchange reaction between a Na^+ of clay mineral (ex. smectite) and a cation (H^+) of ground water. 3) The fresh water zone has expanded toward to the depths or has been repeating expansion and reduction within a range in the present fresh water zone. 4) In the fresh water zone, there are a part which has spread quickly (or early) and a part which has not.