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Studying Deep Water Hydrology for Redox Conditions in the Philippine Sea Margins

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Global ocean circulation plays a pivotal role in shaping the world's climate. Significant changes in the large-scale ocean circulation have transpired since the last glacial period. Despite extensive data on the Atlantic Ocean's oxygenation, the Pacific Ocean's intermediate and deep waters lack comprehensive research, particularly in the deep and intermediate seas of the Philippine Sea region. It is imperative to reconstruct the long-term paleo-redox conditions of the bottom water in this area. To address this research issue, core MD18-3532 was retrieved from an intra-slope basin of the Ryukyu accretionary prism, the Yaeyama Ridge, presently less influenced by the Pacific bottom water. According to the age model, the sediment core covers the last 26 kyr BP and is primarily composed of dark grey clay, devoid of turbiditic sediment sequences. Notably, distinct features such as multiple black dots, black silty lines, and prominent black color lines were identified during the last glacial period. These features are attributed to the formation of Pyrite (FeS_2) under bottom water dysoxic conditions.

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