Goldschmidt 2023 Abstract
https://doi.org/10.7185/gold2023.17317

Sea-level control on paleoenvironmental changes and sediment provenances in 18252-3 core from the southwestern slope of southern South China Sea since 40 ka

NICHOLAS CHIA WEI NG[1], CHAO LI[2], ZHIFEI DUAN[2], GUODONG JIA[2] AND SHOUYE YANG[3]

[1]State Key Laboratory of Marine Geology,
[2]State Key Laboratory of Marine Geology, Tongji University, Shanghai, China
[3]State Key Laboratory of Marine Geology, Tongji University
Presenting Author: nicholasng1110@yahoo.com

This study investigates sediment provenance and transport dynamics in the 18252-3 core from the continental slope of the southern South China Sea (sSCS) off the southeastern coast of Vietnam, dated back to 40 ka from the Late Glacial to the Holocene. While previous studies have primarily focused on the Mekong River as the primary sediment contributor to the sSCS, contributions from other sources, such as the large rivers from the northern China Sea, may complicate the sediment provenance in the region. To address this, this study utilizes geochemical tracers, including Sr-Nd-U isotopic compositions, to determine the sediment sources in the 18252-3 core and their changes over time. Our results show that sediment provenance during the last glacial period closely resembles that of the Mekong River, while during the Holocene, the isotopic signatures shift to resemble those from the Red River and possibly the Pearl Rivers. Additionally, sediment transport time derived from the comminution age approach in our samples is about one-third longer during the Holocene than during the glacial period, suggesting that sediments may be derived from a farther source, such as the Red River in the northern SCS, rather than the nearby Mekong River. The major shift of sediment provenance during the early Holocene marks the change of oceanic circulation, mainly caused by the intrusion of SCS Western Boundary Current due to the strengthening of Kuroshio Current, which could have transported materials from the north SCS to the study site. Overall, this study has provided a new finding on sediment evolution history in sSCS since the last 40 kyrs and significant implications for understanding the complex interplay between sea level, ocean circulation, and sedimentary dynamics in the continental margin.