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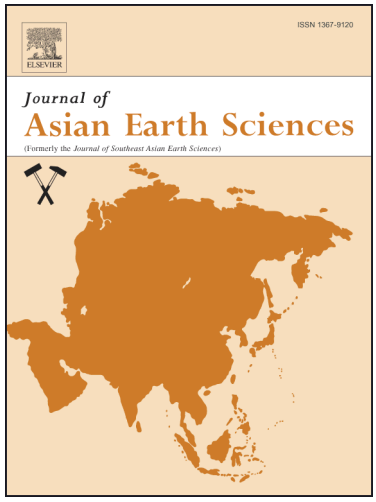

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Circulation and oxygenation of the glacial South China Sea

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Abstract: Degree of oxygenation in intermediate water modulates the downward transferring efficiency of primary productivity (PP) from surface water to deep water for carbon sequestration, consequently, the storage of nutrients versus the delivery and sedimentary burial fluxes of organic matter and associated biomarkers. To better decipher the PP history of the South China Sea (SCS), appreciation about the glacial-interglacial variation of the Luzon Strait (LS) throughflow, which determines the mean residence time and oxygenation of water mass in the SCS interior, is required. Based on a well-established physical model, we conducted a 3-D modeling exercise to quantify the effects of sea level drop and monsoon wind intensity on glacial circulation pattern, thus, to evaluate effects of productivity and circulation-induced oxygenation on the burial of organic matter. Under modern climatology wind conditions, a 135 m sea-level drop results in a greater basin closeness and a ~24% of