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Holocene sea surface temperature and salinity variation in the northern South China Sea as modulated by the Kuroshio Current intrusion

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Sea surface temperature (SST) and salinity (SSS) are the most fundamental parameters of ocean dynamics. High-resolution SST and SSS records were reconstructed using the Mg/Ca ratio and $\delta^{18}O$ values of planktonic foraminifera *Globigerinoides ruber*, in the 05E306 core from the northern South China Sea (SCS) where influence by the Kuroshio Current (KC) was first noted during the last ~7 ka. The results are summarized in three main points: (1) The $\delta^{18}O_{ruber}$ values and Mg/Ca ratio, Mg/Ca-based SST and SSS ($\delta^{18}O_{sw}$) in 05E306 core between 5.7 and 6.3 ka reflect obviously high temperature and salinity. In combination with the highest percentages of *Pulleniatina obliquiloculata* (37.39%) around 6 ka, this indicates that the KC strengthened during this period in the study area. (2) In the northern SCS, the Pulleniatina Minimum Event (PME) occurred between 4.6 and 2.7 ka; Mg/Ca-based SST decreased by 0.4–1.1°C and was associated with decreasing salinity $\delta^{18}O_{sw}$). This suggests a weakened KC caused by the PME. (3) The KC fluctuated significantly during the Holocene as reflected by the Mg/Ca-based SST, with high SST periods corresponding to KC strengthening, and vice versa. SSS changes in the northern SCS were affected mainly affected by ocean surface circulation patterns besides the KC.

Biography

Shuhuan Du has completed her PhD from South China Normal University and postdoctoral studies from South China Sea Institute of Oceanology, Chinese Academy of Sciences.

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