



## Quasi-four-month variation of sea surface height along the continental slope in northern South China Sea

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Based on satellite altimeter data and an ocean model simulation, a quasi-four-month variation of sea surface height (SSH) was studied along the continental slope in the northern South China Sea (NSCS). The analysis results from Empirical Orthogonal Functions and Hovmöller diagrams revealed that the quasi-four-month variation of SSH occurred as a 600-km waveform that propagated southwestward at about 0.1 m/s. Throughout the water column from the sea surface to 1000 m, currents also varied with the same frequency. The period of about four months was determined by the baroclinic Rossby waves.

The quasi-four-month variation of temperature was also found at 1000 m, but not at the sea surface where temperature is deeply influenced by monsoon winds. In winter, warm and cold tongue-like phenomena of sea surface temperature (SST) were formed by geostrophic currents through advections. The SST advections were active in winter because of the strong SST front induced by northeast winds. The geostrophic currents played an important role in lateral mixing as manifested in the SST tongue phenomena along the continental slope in the NSCS during winter.