Abstract Details

AOGS 1st Annual Meeting >	Ocean and Atmospheres	> How does the	South China Sea	respond to
monsoon? >				

Corresponding Author: Dr. Dongxiao Wang (<u>dxwang@scsio.ac.cn</u>) Organization: South China Sea Institute of Oceanology, Chinese Academy of Sciences Category: Ocean and Atmospheres Paper ID: 57-00A-A511 Title: How does the South China Sea respond to monsoon? Abstract: The mechanism of establishment and adjustment of the basin-scale circulation in the South China Sea (SCS) during the monsoon-forced spin-up was investigated using a high resolution circulation model in this paper. The process, in which the upper layer in the SCS evolves from the motionless state to the one when the basin-scale circulation initially established was described, and the participation of various Kelvin and Rossby waves and their traveling time scales in the different stages was revealed. It shows that the coastal trapped Kelvin waves and the westward propagating Rossby waves play important roles in the adjustment of the basin-scale circulation. Furthermore, the characteristic timescale of establishment for the basin-scale circulation in the upper layer of the SCS was obtained. In addition, based on satellite remote sensing data and the shipboard measurements taken in 2000, upwelling phenomena both off Guangdong coast and off Vietnam are analyzed, which is the result of summer monsoon forcing. Guangdong coast case: The results reveal that during the investigation, the surface water mass to the east of 116°E was low temperature, high salinity and high chlorophylla, which indicate the existence of coastal upwelling. Our analysis also manifested that there are close relationship between the upwelling intensity and the sea surface wind field. The variations of alongshore components of sea surface wind field have important influence on the intensity of the coastal upwelling. Sea surface advective velocities derived from sequential infrared images using Maximum Cross-Correlation technique show that monsoondriven Ekman current leads to the development of the coastal upwelling. Vietnam coast case: Higher resolution satellite data are used for a detailed and systematic study of the seasonal evolution and interannual variability of the Vietnam cold eddy. We found that on climatological average, the cold offshore jet develops from the Vietnam coast eastward to the open ocean in the central SCS due to the Ekman forcing. The upwelling does not happen every year. We show that it did not happen in 1998 because the atmospheric and the SCS ocean circulations are quite different. The corresponding field observations are also analyzed to reveal the spatial pattern about upwelling off Vietnam, the eastward offshore jet, as well the associated warm eddy developed south of the jet.

Presentation Mode:

Keywords: monsoon forcing, South China Sea, coastal upwelling

Status: Reviewed.

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