Session: C24 Poster: T188A

Comparison of remote sensing data and in situ observation for winds during the development of the South China Sea monsoon

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Seasonal wind patterns drive the South China Sea Monsoon. We compared wind measurements from the SeaWinds scatterometer on the National Aeronautics and Space Administration (NASA) QSCAT satellite with wind data measured in situ by an anemometer mounted on the Yongxing Island for the period from April, 2008 to November, 2009. The comparison confirms that the QSCAT estimates of wind speed and direction are generally accurate except for high wind speeds (> 13.8 m/s) and the direction assessment for low wind speeds (< 1.5m/s). These results agree with previous investigations but our analysis clarifies some issues. There are some sources of error for the satellite estimates. The in situ observation data in South China Sea (SCS) shows that May 6- June 1 is the onset date of the monsoon in the north SCS. Remarkable changes of wind direction and speed, barometric pressure, humidity, outgoing longwave radiation (OLR) and air temperature were observed during the period of the monsoon. It is a continuous process from the intensification of southwesterly winds in Bay of Bengal to the onset of SCS monsoon. The eastward shift of the subtropical high and the southward movement of the continental cold front preceded the onset of SCS monsoon.