

# Variability of the South China Sea surface circulation from 11 years of satellite altimeter data

Wendong Fang, Junjian Guo, Ping Shi et al  
wdfang@scsio.ac.cn

Based on 11-year satellite altimeter sea surface height (SSH) anomalies data, the Empirical Orthogonal Function (EOF) was used to present the dominant spatial and temporal modes of the upper layer circulation in the South China Sea (SCS). The first three EOF modes show the obvious seasonal variation. EOF1 mode is generally characterized by a closed basin-scale circulation, the peak value and valley value appear in November and April, respectively; The EOF2 mode describes the double-cell circulation structure, the two cells were located off west of Luzon Island and southeast of Vietnam respectively. EOF3 describes the mesoscale eddy structure in the western SCS, and it develops into a strong cyclonic eddy rapidly from July to September. Using these three main EOF modes, the upper layer circulation structure and time variability are discussed. The interannual variability of upper layer circulation of the SCS is influenced by EI Nino event prominently, especially strong EI Nino event obviously changed the circulation structure of the SCS in 97/98 years; The SCS sea level had been raising since 1990s, but it began to occur the decreasing trend from 2001.