

Review recent observational studies of mesoscale eddies in the South China Sea

Dongxiao Wang[†]; Gengxin Chen

[†] South China Sea Institute of Oceanology, China, People's Republic of

Leading author: dxwang@scsio.ac.cn

Mesoscale eddies are active in the South China Sea (SCS), that change dynamic conditions within the ocean and have a significant impact on thermohaline structure. Using a composite time series of satellite altimetry data, the mean properties and evolution characteristics of eddies in the SCS were systematically examined. In addition, the effect of eddies on the thermocline and halocline was analyzed using Argo profile data. Compared with the statistical analysis, individual eddies were investigated to fully understand their features and impact on the marine environment. In the northeastern SCS, the origins and evolutions of two anticyclonic eddies during Winter 2003/2004 were examined. The results showed that one eddy was generated in the interior SCS and the other was shed from the "Kuroshio meander". The vertical structure and evolution of the seasonal Luzon Warm Eddy were discussed in detail using Argo and satellite data. Three anticyclonic eddies were captured when propagating across the 18°N section during the observational period of open cruises in 2007. The spatial and temporal structures of these three eddies are presented using satellite data and drifting buoy data as well as in situ data. In the southern SCS, the main features, interannual variability of the eddy pair off eastern Vietnam and its impact on local thermohaline structure are analyzed using satellite and assimilation data. A model result showed that the vorticity transports from the nonlinear effect of the western boundary currents are crucial for the generation of the eddy pair.