



An operational ocean forecast system for the South China Sea

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A multi-grid regional ocean circulation model is established on the basis of ROMS to develop the operational forecasting system for the South China Sea. The outer region is covering from 15°S to 44°N and from 99°E to 150°E with horizontal resolution $(1/8)^\circ \times (1/8)^\circ$. The inner one is covering the South China Sea with horizontal resolution $(1/32)^\circ \times (1/32)^\circ$. The model is first spun up through integration for 15 years with annually cyclic sea surface forcing condition to reach a stationary annually cyclic circulation fields. Then the model is further integrated from February 2006 to September 2012 driven by the NCEP reanalysis 6 hourly mean dataset. In the second stage a Projection-OI data assimilation method is applied with assimilating satellite sea surface height anomaly to adjust the sea temperature and a Nudging-based data assimilation technique is used to incorporate satellite data of sea surface temperature. After being assessed by in-situ CTD, ADCP and ARGO data, an operational forecast system is developed and run since October 2012 combining with an atmosphere forecast model (based on WRF) and an ocean wave forecast model (based on MASNUM Wave Model). For each day, the forecast system starts at 24 hours in advance for assimilating process, then runs 72 hours forecast. The surface wave induced vertical mixing is incorporated to KPP mixing scheme during these 96 hours run to improve the upper ocean temperature. The operational forecast system is assessed regularly and improved gradually.