Investigation of internal waves in the South China Sea by combining MITgcm and spaceborne SAR observations

Gang Li, Huimin Li, Yijun He

South China Sea (SCS) is one of the regions with frequent internal waves across the global ocean, making it the ideal bed for testing numerical models as well as the satellite measurements. In this study, we take advantage of the high-resolution hydrostatic MITgcm to constitute a dedicated model for the internal waves in SCS. The model outputs including three-dimensional current/temperature/salinity and surface height are at spatial resolution of 250 m every 3 hours. A practical algorithm to identify occurrence of internal waves events is proposed based on the gradient of surface height. Validations with the spaceborne synthetic aperture radar (SAR) measurements acquired during 2010-2019 as well as the optical MODIS observations show high consistency. This adds strong confidence to the performance of our configured MITgcm in future application of predicting and/or diagnosing the internal waves in SCS.