



An Investigation to the Interaction between Typhoon-induced Near Inertial Wave and Tide in the South China Sea: a case study

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South China Sea (SCS), a semi-closed marginal sea in the tropics, is affected by Tropical Cyclones (TCs) significantly, as TCs excite great amount of Near Inertial Waves (NIWs) and induce excessive turbulence mixing in the ocean interior. However, unlike many other tropical areas, SCS is also under the influence of strong internal tides and internal solitary waves. In this study, the interactions between the internal tides and NIWs are investigated by analyzing a set of numerical experiments with the Regional Ocean Modeling System (ROMS). The ocean model is forced by a synthetic surface wind field of Typhoon Megi (October 2012) by blending NCEP wind with a pseudo surface wind based on the Best Track data. The typhoon-induced oceanic anomalies are then examined. The model is able to reproduce the oceanic response reasonably well and some interesting differences were found by comparing the results of experiments with/without tides. The diffusivity coefficient indicates the interactions between the NIWs and internal tides. In other word, energy in the inertial frequency band is transferred to other frequencies. There is also an anomalous heat transport at the thermocline, causing a change in the upper ocean heat content.