Prediction of Diurnal Variability of SST Using the Numerical Weather Prediction- Ocean Mixed Layer Coupled Model and Comparison with Satellite Data

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An ocean mixed layer (OML) model was coupled to a numerical weather prediction (NWP) model with an aim to predict the diurnal variation of SST and to improve the NWP model performance. The WRF model was used for the NWP model, and the Noh mixed layer model (Noh & Kim 1999, Noh et al. 2002) was used for the OML model. The model domain covers East Asia (100-150E, 11-61N). The mixed layer model was modified so as to realize the strong near surface stratification under calm weather, which is important for the diurnal variation of SST. The predicted diurnal variation of SST was compared with satellite data (MTSAT-1R) and a regression model (Kawai & Kawamura 2005), and a good agreement was found. Based on the comparison, the parameterization to relate the bulk SST and the skin SST was attempted. Furthermore, the response of the mixed layer to the surface atmospheric forcing such as surface heating and wind stress was investigated from the perspective of SST variation. Ultimately the coupled model is expected to provide realistic SST data base by combining with satellite data through data assimilation.

Reference

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