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Development of Numerical Weather Prediction and Ocean Mixed Layer Model and the Prediction of Diurnal Variability of SST

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A numerical weather prediction (NWP)-ocean mixed layer (OML) coupled model is developed with an aim to predict the diurnal variation of SST and to improve the NWP model performance. The WRF model is used for the NWP model, and the Noh mixed layer model (Noh & Kim 1999, Noh et al. 2002) for the OML model. The model domain covers East Asia (100-150ºE, 11-61ºN). The mixed layer model is modified so as to realize the strong near surface stratification under calm weather (e.g., Soloviev & Rogers 1997). With an aim to examine the performance of the coupled model, the diurnal variation of SST is compared between those from the coupled-model, the regression model (Kawai & Kawamura 2005), and the satellite data (MTSAT-1R), in which a good agreement is found. Based on the comparison, the parameterization to relate the bulk SST with the skin SST is attempted. Furthermore, the mixed layer dynamics responding to the surface atmospheric forcing is investigated from the perspective of SST variation.