

Sensitivity Experiments of Relative Humidity Assimilation on Typhoon Lan (2017)

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Typhoon Lan (2017) caused tremendous flooding while passing through mainland Japan. A day before making landfall, Lan had robust eyewall and eye structures. During this period, valuable in-situ data were obtained through the Observing System Research and Predictability Experiment Pacific Asian Regional Campaign II (T-PARC II). The present study has constructed the three-dimensional relative humidity of Lan by performing statistical analyses between in-situ data obtained by T-PARC II and the IRWVIn produced by the Himawari-based technique. To assimilate this three-dimensional relative humidity, the initial conditions of Lan have been improved by using the dynamical initialization. The results of the sensitivity experiments show that as the magnitude of the innovation scale increases, the simulated precipitation structures seen by the outgoing longwave radiation or radar fields tend to well account for actual characteristics compared to satellite images or radar images. However, the influence of relative humidity correction appears to have little impact on track and intensity forecasts.