



Analysis and forecast using dropsonde data from inner-core region of tropical cyclones during the aircraft missions of T-PARCII

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The inner cores of tropical cyclone (TC) Lan and Trami were observed on 21-22 October 2017 and 25-28 September 2018 by newly developed GPS dropsondes during the aircraft missions of the Tropical Cyclones-Pacific Asian Research Campaign for the Improvement of Intensity Estimations/Forecasts (T-PARCII). So far, the eyewalls were penetrated nine times with a Gulfstream II jet and 90 GPS dropsondes were dropped from 13.8 km. From 2018, we started to transmit the BUFR data on GTS through Japan Meteorological Agency (JMA). To evaluate the impact of dropsondes on forecast skill, the forecasts were conducted using a Japan Meteorological Agency non-hydrostatic model (JMA-NHM) with a JMANHM-based mesoscale four-dimensional data assimilation (DA) system with a grid-spacing of 5 km for TC Lan. Then, we evaluated the forecast skill against the best track data published by the Regional Specialized Meteorological Center (RSMC) Tokyo. Track and heavy rainfall forecast skills improved with the assimilation of the dropsonde data, while the intensity forecasts were generally degraded. The degeneration of the intensity forecast skill is, however, possibly due to uncertainties in the best track data as Dvorak technique should involve the error of the order of 10 hPa. Other relevant researches including the assimilation with a JMA global data assimilation system and sensitivity analysis will be also presented.