S6-05

Impact of Aeolus wind data assimilation on typhoon track forecasting

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As the first satellite mission to give wind profile information on a global scale, Aeolus was launched in 2018, and its horizontal line of sight (HLOS) wind data has been available from the European Space Agency (ESA) Earth Online Portal since May 2020. The significant positive impact of this data on numerical weather prediction (NWP) has been reported in many researches (e.g., Rennie et al., 2021; George et al., 2021; Marinescu et al 2022). We investigated the impact using JMA's global data assimilation (DA) system and the global spectral model (GSM), and found the forecasting accuracies of not only wind vector but also geopotential height, temperature and specific humidity were significantly improved. We also investigated its impact on typhoon track forecasting in detail. Assimilation experiments were conducted for the period from 1 August to 10 November 2020. 20 typhoons existed during the period. The result showed that the improvement ratios depended on the relative position relationship between Aeolus's coverages and typhoon centers (TCs). Aeolus passing over TCs gave the maximum improvements, while it covering the upstream of TCs also contributed to improvements of the track forecasting. The detail of the results will be shown in the presentation.