Assessment of Aeolus DWL data and impact of assimilation in the JMA’s global data assimilation system

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The horizontal line of sight (HLOS) wind data from Aeolus Doppler Wind Lidar (DWL) is available from the European Space Agency (ESA) Earth Online Portal. The data quality after the mirror bias correction was investigated using data from July to September 2020. According to the first guess departure (observation minus background) statistics in Japan Meteorological Agency’s (JMA’s) global data assimilation (DA) system, the biases were very small for both Rayleigh and Mie HLOS wind data after quality controlled. Significant positive impacts of Aeolus HLOS wind data assimilation in the global DA system on the analysis accuracy and forecasting scores were found in experiments with Rayleigh wind data under clear-sky condition and Mie wind data under cloudy condition. Improvement of tropical cyclone track forecasting was also found for the typhoons in the Northwest Pacific Ocean and for the hurricanes in the Atlantic Ocean. The details of results of data assessment and assimilation experiments will be shown in the presentation.