Inter-comparison of wind vectors derived from geostationary satellites with the Aeolus/ALADIN

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Wind information obtained from various means play an important role in data assimilation of numerical weather prediction. Atmospheric Motion Vector (AMV) obtained from the geostationary satellites provide a high spatio-temporal resolution wind information over the whole globe. An accurate quality control is one of the key factor that needs for a better utilization of AMV. Here, we use Aeolus/Atmospheric Laser Doppler Instrument (ALADIN) data to analyze the error characteristics of AMV derived from a newly commissioned geostationary satellite, Geostationary Korea Multi Purpose Satellite-2A (GK2A), stationed over 128.2⁰E. As majority of the GK2A AMV data are obtained over the ocean where the radiosonde data (used for the reference wind measurement for the error analysis of AMV) is sparse, the ALADIN data could play an important contribution. Data obtained from December 2019 to February 2020 (northern hemisphere winter) are collocated with time, space, and altitude criteria of ±15 min, 0.9⁰, and 50hPa. For the quality control data, only AMV data with a Quality Index (QI) of 0.85 or higher are used. In case of the ALADIN data, quality control is performed using the observation type (clear and cloudy) and error estimation value of the ALADIN data. The total number of collocated data for the AMV (using IR channel) and Mie channel ALADIN data is 39971 which gives the root mean square difference (RMSD) of 3.88 m/s. The lower layer (lower than 700 hPa altitude) RMSD shows slightly better comparison, 3.35 m/s vs. 4.17 m/s, while the correlation coefficient is better for the upper and middle layers of 0.98 compared to the 0.94 of the lower layer. In the conference, detailed analysis of the comparison results and additional AMV data, including visible channel and water vapor channel along with the extended time period are going to be presented.