Assimilation of Rapid-Scan Atmospheric Motion Vector of Himawari-8 to Improve the Rainfall Forecast of the Northern Kyushu Heavy Rainfall

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Heavy rainfall that caused the landslides and floods over the northern Kyushu was generated on 5 July 2017. One of generation factors of this heavy rainfall was the continuous supply of humid air by the low-level airflow from the East China Sea. Because the horizontal wind affects the humid air supply, it is expected to be the useful assimilation data to improve the rainfall forecast. We used the atmospheric motion vector that was obtained from cloud images of Himawari-8 by tracing the positions of clouds. Because the observation interval of Himawari-8 is as short as 2.5 minutes, the high-frequent and dense horizontal winds (RS-AMV) can be obtained from the high-frequent cloud images.
In this study, the impact of RS-AMV on the heavy rainfall was investigated with Local Ensemble Transform Kalman Filter (LETKF). In this heavy rainfall case, westerly flow was intensified by the assimilation of RS-AMV, and the maximum of the predicted rainfall became closer to the observed one.

Keywords: Data assimilation, Rapid-Scan Atmospheric Motion Vector, Heavy Rainfall