

## Assimilation of cloudy infrared radiances of the geostationary Himawari-8 imager

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We introduce the current status of experiment of assimilating cloud-affected infrared observation from a geostationary satellite, Himawari-8, into JMA global numerical weather prediction model. Infrared observation data from geostationary satellites such as Himawari-8 are contributing to improving analysis and forecast accuracy in numerical weather prediction.

However, cloud-affected observation data are rarely used in the practical assimilation system due to the nonlinearity physical process in clouds, complex and non-Gaussian statistics and so on. Assimilation of cloud-affected observation data is crucial for improving the accuracy of analyses and forecasts in numerical weather prediction(NWP).

The radiance data to be assimilated were created by averaging pixels from the original radiances (ASR, or All Sky Radiance), which was developed at Meteorological Satellite Center (MSC) in 2016. In this study, we assimilated infrared radiances by assuming a single layer cloud ("simple cloud"), in which cloud effect in radiative transfer is calculated simply by using the cloud-top pressure and an effective fraction of cloud.

The results of the experiments so far showed that even with this simple treatment, appropriately selected data offer valuable information not available from cloud-free observations.

Keywords: satellite observation, Himawari-8, data assimilation, numerical weather prediction, cloudy observation