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**Abstract: Impacts of AHI Radiance Assimilation on
Quantitative Precipitation Forecasts over Eastern
China**

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The launch of the Japanese Advanced Himawari Imager (AHI) on October 7, 2014 represents a new era of geostationary imagers since it provides more channels and higher spatial resolutions of visible and infrared channels than the current geostationary meteorological satellite (GMS) imagers.

Compared with any previous GMS imagers, AHI have two more visible, two more near-infrared and seven more infrared channels. In this study, AHI infrared radiance observations are assimilated into the Advanced Research Weather Research and Forecast (ARW) model through the National Centers for Environmental Prediction Gridpoint Statistical Interpolation (GSI) analysis system. In GSI, the cloudy and precipitation-affected radiances are removed through an infrared only cloud detection algorithm that can be used in both day and night. It is shown that the AHI data assimilation significantly improves the quantitative precipitation forecasts (QPFs) for a typical summer case with persistent precipitation over eastern China. A further diagnosis of the analysis and forecast results indicates that the assimilation of AHI data generated a wetter atmosphere in the middle and low troposphere over the ocean off the southeast coast of China. Under the influence of a subtropical high, atmospheric water vapor river is realistically simulated and flows into the downstream of an eastward-propagating, middle-latitude trough, resulting in improved forecasts of the persistent precipitation event in the region.

