S7-05

Validation of AHI on Himawari-8/-9 in L1 Products and Preliminary Study using PCA for Himawari-10

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JMA switched over operation from the Himawari-8 geostationary meteorological satellite to Himawari-9 on December 13, 2022. Himawari-9 has the same specifications as Himawari-8, and both are equipped with the Advanced Himawari Imager (AHI). The image navigation errors and radiometric calibration biases of Himawari-9/AHI have been as small as those of Himawari-8/AHI. Evaluation based on Himawari-9/AHI observation indicates that image navigation error and registration performance are approximately 0.4 km (for reference mapping) and 40 m (between bands) respectively at the sub-satellite point. Radiometric calibration biases for Himawari-9 VNIR bands are 1-5%, and those for IR bands are less than 0.3 K.

Himawari-10, a successor to Himawari-8/-9, is scheduled to carry a VIS/IR imager as well as a hyperspectral IR sounder and a space environmental suite. As part of our preliminary studies for Himawari-10 IR sounder, we have validated that radiances reconstructed from principal components using simulation data and CrIS observation data significantly reduce the noise compared to the original radiances. Therefore, principal components would be useful for some applications such as numerical weather prediction.

This presentation will give the image navigation and the radiometric calibration quality of Himawari-9/AHI. The preliminary study using Principal Component Analysis (PCA) for Himawari-10 will also be presented.