GOES-R ABI Multi-Spectral Imagery for Visibility Hazard Assessment via Himawari AHI

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Abstract

This project develops multi-spectral lofted dust, snow cover, and blended imagery products tailored to the GOES-R Advanced Baseline Imager (ABI), using the Advanced Himawari Imager (AHI) as a material test bed. These value-added applications translate complex/ambiguous scenes into visually intuitive graphical depictions that enhance the target parameter while preserving the meteorological context and full spatial resolution of the sensor. They bear direct relevance to the challenges of visibility hazard forecasting and both complement and augment high-priority baseline products. The applications realize the promise of 10+ years of research and development on the polar-orbiting satellite constellation (including the MODerate-resolution Imaging Spectroradiometer [MODIS] sensors on Terra and Aqua, and the Visible/Infrared Imaging Radiometer Suite [VIIRS] on the Suomi National Polar-orbiting Partnership satellite). Demonstrated to National Weather Service (NWS) forecasters in AWIPS via the GOES-R Satellite Proving Ground (PG; Goodman et al., 2012), these applications exemplify the power of multi-spectral imagery for scene characterization, albeit at the sampling limitations of the polar-orbiting platform. For the first time, they will be available to the geostationary platform via the AHI (on Himawari-8 at the end of CY2014, and Himawari-9 in CY2016). The new algorithms will require some modification to account for differences in the response functions of AHI/ABI vs. the heritage polar-orbiting sensors. Anticipated availability of GOES-R ABI in year 2 of this project (2QFY2016) will enable software transition and direct comparisons between the AHI and ABI.