IDEA-like GOES-R air quality data distribution system

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NOAA maintains and supports the Infusing Satellite Data into Environmental Applications (IDEA) product at http://www.star.nesdis.noaa.gov/smcd/spb/aq/. Designed to disseminate NOAA GOES Aerosol and Smoke Product (GASP) data, NASA MODIS data, and EPA ground-based PM2.5 measurements, IDEA has become a core product in the toolkits used by State and local air quality analysts and forecasters. In order to provide air quality community continuous service and make seamless transition of IDEA product using GOES-R data when GOES-R is launched, we developed an IDEA-like GOES-R air quality data distribution system using GOES-R proxy data from the Air Quality Proving Ground (AQPG) team. As GOES-R ABI proxy data is made available from AQPG, we revise IDEA algorithms to accommodate the high temporal and spatial resolution GOES-R data. We work closely with AQPG team to improve this product based on the feedbacks from the user group. In the past year, we have finished the first version of the system and demonstrated to the air quality users in the summer 2011 AQPG experiment and in the 2012 AQPG workshop. The IDEA system will also be a useful platform for near-real-time delivery of VIIRS aerosol products.

Two aerosol retrieval algorithms over land are under development for GOES-R ABI data: one of them uses a method similar to MODIS dark pixel algorithm; the other one uses a MAIAC (Multi-Angle Implementation of Atmospheric Correction) method. MAIAC algorithm can complement dark pixel algorithm on bright surfaces since the latter only works on dark pixels. In this project, we applied MAIAC algorithm on the geostationary data set, including current GOES data, SEVIRI (Spinning Enhanced Visible and Infrared Imager) data, and the simulated GOES-R proxy data, to evaluate the performance of the algorithm in the geostationary satellite geometry. In the past year, we have developed a modified MAIAC algorithm that uses both GOES-West and GOES-East data. MAIAC algorithm was also modified to be applied on the SEVIRI data and the initial tests over AERONET sites were performed.