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TITLE: A hindcast study using aerosol optical depth retrieved from a geostationary satellite sensor (GOCI) over Northeast Asia during DRAGON NE-Asia campaign

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ABSTRACT BODY: Compared with the retrievals of aerosol optical depth (AOD) from polar orbiting satellites, the AOD retrievals from geostationary (GEO) satellites have a high temporal and spatial resolution. Because of this advantage of the geostationary satellite sensors, a better initial condition can be prepared for a better aerosol forecast or hindcast using the data from GEO sensors. We carried out a hindcast study over Northeast Asia, testing the effects of the improved initial conditions prepared from the AOD data from a geostationary satellite sensor. The AOD retrievals from the Geostationary Ocean Color Imager (GOCI) onboard the Communication, Ocean, and Meteorological Satellite (COMS) were used in this study, and the retrieved AOD data were assimilated with the AOD values calculated by the Community Multiscale Air Quality (CMAQ) Model. We assimilated the two data sets via an optimal interpolation (OI) technique, and the OI parameters of observation and modeling errors were calculated to minimize the variance of the differences between assimilated and AERONET AODs. The AERONET AODs were selected within the period of Distributed Regional Aerosol Gridded Observation Networks DRAGON North-East in Asia (DRAGON NE-ASIA) campaign, and were also used for comparison with the results of hindcast studies. The 6-hour hindcast results in several selected days using the GOCI-retrieved AOD data showed improved AOD distributions, compared with the AOD data from DRAGON-Northeast Asia AERONET sites. Also, using the GOCI and TERRA MODIS AOD retrievals, spatial coverage of satellite retrieval can be increased. 12-hour hindcast was also carried out using the combined GOCI-MODIS data sets.

KEYWORDS: 0305 ATMOSPHERIC COMPOSITION AND STRUCTURE Aerosols and particles.

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