1.161 Ground-based and satellite remote sensing in Korea for the EMeRGe-Asia mission.

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Abstract:

During the EMeRGe-Asia campaign (from 12 March to 8 April, 2018), various ground-based and satellite remote sensing observations have been conducted for monitoring the spatiotemporal pattern of aerosols and trace gases in Korea. Several cases showing high aerosol amounts are detected: 12-13 March, 24-25 March, 28-29 March, and 7-8 April. Ground-based Aerosol Robotic Network (AERONET) indicates the regional difference of aerosol optical depth (AOD): generally high in all west coastal regions in Korea, but particularly higher AOD in Anmyon. The satellite Geostationary Ocean Color Imager (GOCI) and Advanced Himawari Imager (AHI) also illustrate the distinct movement of aerosol plumes from China to Korea for these cases. Interestingly, the high AOD plume is transported into the Korea with the low-level cloud for the 24-25 March case, implying the potential increase of atmospheric turbidity due to the particle growth. A case showing strong Asian dust transport was detected for 7-8 April, having the different vertical shape

of particle transport. Thus, comparison analysis using these multiple cases will suggest how the regional meteorology can differently influence to the advection of East Asian aerosol plumes. Ground-based Pandora spectrometers at Seoul and Busan measure the column density of O_3 and NO_2 to see the trace gas concentration related to the air pollution. Sudden high O_3 and NO_2 columns are found during 23 March, simultaneously at both Seoul and Busan. Considering the distance between two sites, there may be a large intrusion of upper atmospheric (free troposphere or stratosphere) air masses above the Korean peninsula. All these findings are useful to understand the role of regional meteorology to the air quality and composition.