



Long-range transboundary transport of air pollutants into Korea during the EMeRGe-Asia campaign

Jhoon Kim (1), Hana Lee (1), Seoyoung Lee (1), Myungje Choi (2), Hyungkwang Lim (1), Yeseul Cho (1), Heesung Chong (1), Tom F. Eck (3), Brent N Holben (3), and Ja-Ho Koo (1)

(1) Yonsei University, Global Environment Laboratory, Dept of Atmospheric Sciences, Seoul, Republic Of Korea, (2) Laboratory studies and atmospheric observations group, NASA Jet Propulsion Laboratory, CA, USA, (3) NASA Goddard Space Flight Center, Greenbelt, MD, USA

During the EMeRGe-Asia campaign (from 12 March to 8 April, 2018), we detected several cases for the long-range transboundary transport of airborne aerosols from the west to the Korean peninsula. To investigate the characteristic of this transport, representative 4 cases were selected for this study at first: 12-13 March, 24-25 March, 28-29 March, and 7-8 April. In these cases, we could find the high aerosol optical depth (AOD) in all west coastal regions in Korea based on the Aerosol Robotic Network (AERONET) measurement. The satellite Geostationary Ocean Color Imager (GOCI) and Advanced Himawari Imager (AHI) well indicated that this high AOD is attributed to the transport of thick aerosol plumes from eastern China. For the 24-25 March case, highly enhanced AOD was found over the Yellow Sea with low-level cloud, meaning the potential increase of atmospheric turbidity due to the hygroscopic growth of particle. Volume size distribution provided from the AERONET observations revealed the size increase of fine mode particle in this case. For 7-8 April, there was a large transport of Asian dust and PM10 level in Korea reached $\sim 400 \mu\text{g}/\text{m}^3$ at maximum. For all these cases, we tried to estimate the flux rate of transported aerosol masses using the regional wind field information. Comparison with surface particulate matter (PM) observations showed the moderate consistency with AOD in general, but a discrepancy in terms of a diurnal variation. Further analysis will be required for better understanding of this issue.