Estimation of Dust Flux over Korea during Asian Dust Events

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Weather Research Forecasting (WRF), Sparse Matri Operator Kernel Emissions (SMOKE), and Community Multiscale Air Quality (CMAQ) models were used to calculate the dust flux during the weak/strong Asian dust events in Korea. In particular, 5 experimental formulas were applied to calculate dust emissions from the source areas. Also, the Clean Air Policy Support Program (CAPSS) and the ACE-Asia inventory were used to estimate emissions of air pollutants in Korea as well as the boundary and background concentration in the Eastern Asia within the CMAQ model, respectively. As a result, the hourly normalized mean bias for PM 10 was accepted within range of -10% to -50% in CMAQ. Furthermore, Asian dust fluxes using 5 empirical formulas of emissions such as US EPA, Park and Inn, Wang, The Goddard Chemistry Aerosol Radiation and Transport (GOCART) and Dust Entrainment and Deposition (DEAD) were calculated and compared.