P44 Numerical simulation of aerosol transport process over Northeast Asia

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It is well recognized that Northeast Asia has become a major contributor to global organic aerosols, anthropogenic volatile organic compounds (VOCs), and particle matters (PM2.5 and PM10) emissions (Saikawa et al., 2009 and Piccot et al., 1992). From these perspectives, not only emissions but also long-range transport processes of air pollutants play an important role in determining air quality over populated area from the sources regions over East Asia [Holzer et al., 2005]. In Korea, which is located on the east of Chinese industrial area, frequent occurrences of haze events have consistently been observed during the past two decades. It is, as a result, reported that efforts to improve air quality in one country through domestic emission controls could not necessarily effective policy mainly due to the transboundary process of air pollutants through the long-range transport process. We employed Weather Research and Forecasting Model with Chemistry (WRF/Chem) model and INTEX-B emission inventory in order to assess impact of long range transport on aerosol concentrations over Northeast Asia especially over downwind areas of China for the haze events. We also analyzed radiative optical properties such as aerosol optical depth, single scatter albedo and asymmetric factor simulated based on Mie theory from WRF/Chem, and discussed the results of MODIS satellite data. The result showed that the spatial distributions of radiation variables derived from WRF/Chem simulation are qualitatively in agreement with satellite observation results on haze events over East Asia. Other characteristics of chemical and physical variables in association with long range transport process are discussed here.