



Impacts of El Niño events on aerosol concentrations in East Asia

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We examine the effects of meteorological variability on aerosol concentrations in East Asia during El Niño periods using 3-D global chemical transport model (GEOS-Chem) for the past three decades. The model was driven by assimilated meteorological data from Modern-Era Retrospective analysis for Research and Applications (MERRA). First, we evaluate the model by comparing the observed and modeled aerosol concentrations from the Acid Deposition Monitoring Network in East Asia, the China Atmosphere Watch Network, and the Chinese Ministry of Environmental Protection. The results indicate that the model well reproduces the spatial characteristics of the observed surface aerosol concentrations in East Asia. We select 10 El Niño events based on Oceanic Niño Index during the past three decades and classify the types of these 10 El Niño events as 4 eastern Pacific (EP) El Niño and 6 central Pacific (CP) El Niño. We find that the EP- and CP-El Niño has different impacts on the surface aerosol concentrations in East Asia, which means that the East Asian air quality is affected differently by the types of El Niño events.