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Connections between Asian air pollution and monsoon strength in the climate system

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We present our study on connections between the Asian air pollution and monsoon strength. East Asia and South Asia have been experiencing the fast worsening of air quality in recent years, a problem commonly attributed to the increase of pollutant emissions associated with the rapid economic development. Meanwhile, previous studies have shown that the decadal-scale weakening of the Asian summer monsoon also contributed to the increase of PM2.5 (particulate matter with diameter less than 2.5 micrometer), a major pollutant that determines the air quality. Using a global chemical transport model, we investigate the emission and meteorological effects on aerosol levels, including the aerosol optical depth and the surface PM2.5 concentrations in East and South Asia in the past 30 years, contrast them between the strong and weak monsoon years, and find their relationship to the climate index/variables, including ENSO and sea surface temperature.