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[Abstract Title]

Changes of dust activity in spring over East Asia under a global warming scenario

[Abstract]

Based on dust simulations from seven models of CMIP5, the spatial and temporal changes in dust activity over East Asia under RCP8.5 was examined for the period of 2016-2035(P1) and 2046-2065(P2). The results show that the MME of CMIP5 models has the ability to capture the spatial distribution of climatological dust emission and dust optical depth (DOD) over East Asian dust during 1986-2005(P0). The MME reproduces long-term increasing trend in dust emission and DOD over dust sources in East Asia during P0. Compared to P0, the MME projects a decrease of dust emissions over dust source areas, including the Tarim Basin, southern Mongolia, North China, and northeastern China during P1 and P2. In the meantime, DOD decreases from the regions above to southeastern China to eastern China and Korean Peninsula in P1 and P2. The decrease in dust emission is caused by an increase in precipitation and vegetation cover and a decrease in surface wind speed in both study periods. Because of the reduction in dust emission over source areas and southerly wind anomalies of a weaken East Asian trough in the middle troposphere, the DOD decrease over source area and downwind regions during P1 and P2.



[Keywords]

Dust activity, East Asia, Future projection