

Simulation of Dust and Anthropogenic Aerosol Transport Mechanism over East Asia

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Abstract

The mixing of East Asian natural dust with anthropogenic pollutants can be transported towards longer distances including the western Pacific region. Such pollutants mixing could cause an impact on the downwind marine and atmospheric environment. In the study, we used the chemical transport model CMAQ to simulate the transboundary of Asian mineral dust and anthropogenic aerosol over the downwind region from 21-31 January 2023. In general, the simulation reproduced well the trajectory of long-range dust transport, particularly over the surface and high-altitude regions. We found that along the way trajectory, both mineral dust and black carbon show the long aerosol belt across the East China Sea before reaching the Taiwan region. Moreover, results show that the low-level trough plays an important role in the high-altitude transport route of both mineral dust and black carbon. Overall, this study highlights the mixing states of the dust and anthropogenic aerosol at the downwind region and the distinct/similar synoptic pattern of both aerosol types.

Early Career Scientist

NO, I am not an early career scientist.

IGAC Activities

CCMi: Chemistry Climate Model Initiative, MAP-AQ: Monitoring, Analysis and Prediction of Air Quality

IGAC Regional Working Groups

China Working Group