

Analysis of future tropospheric ozone in East Asia using Atmospheric Chemistry and Climate Model Intercomparison Project (ACCMIP) data

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Tropospheric ozone, a product of photochemistry, is a major issue in East Asia, because it has a detrimental effect on human health and crop yields. The mean surface ozone concentration in East Asia is larger than the global mean. Historical (hereafter Hist) and future experiments (RCP2.6, RCP4.5, RCP6.0, and RCP8.5) were compared to understand how surface ozone may respond to global warming. We used Atmospheric Chemistry and Climate Model Intercomparison Project (ACCMIP) data and analyzed ozone distribution in East Asia. Compared to the 2000s, future changes in the tropospheric ozone concentration showed a decrease in the RCP2.6, RCP4.5, RCP6.0 scenarios, however, RCP 8.5 showed an increase. The focus of this study was on the Hist 2000s and RCP8.5 2100s, as these were shown to accurately predict the increase in tropospheric ozone concentrations in East Asia. The multi-model mean showed high concentrations of surface ozone in western China and the Korean Peninsula and Japan, but also high inter-model deviation, except in western China. As inter-model deviation was high, there is a need for further studies on the emission of ozone precursors, as well as for procuring more observational data.

Key words: ACCMIP, East Asia, RCPs, tropospheric ozone

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