



Future development of surface ozone over East Asia under RCPs scenarios

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We examined future development of tropospheric ozone over East Asia based on the Representative Concentration Pathways (RCPs) scenarios. For this, future projections of tropospheric ozone under RCPs scenarios done by a global chemistry climate model (CCM) were further down scaled by a regional chemistry transport model (CTM) in order to focus on the East Asian region. The projected future surface ozone in 2050 decreases from the present (2005) state over the most of East Asian region under RCPs 2.6 and 4.5 scenarios. Both of the scenarios assume an emission reduction of ozone precursors (NO_x and NMHCs) in East Asia, which is the main reason for the decrease in surface ozone in the region. On the other hand, a general increase of surface ozone is calculated under RCPs 8.5 scenario. This scenario also assumes an emission reduction of ozone precursors in the wide areas in East Asia, but the reduction is not through enough to achieve a reduction in surface ozone in the whole East Asian region as in the case of the other RCPs scenarios. The increase in surface ozone over East Asian region under RCPs 8.5 scenario is largely influenced by the future change in climate. Reduction in cloud cover and the resulted increase in solar radiation in the future climate in East Asia under RCPs 8.5 scenario is one of the candidates for the causes of ozone increase under this scenario. Frequency distribution (FD) of one-hourly surface ozone in mega cities in East Asia greatly changes in each RCPs scenario. Highly elevated ozone concentration is rarely occurred under each RCPs scenario, and the mode of FD does not change so much in RCPs 2.6 and 4.5 but it increases about 10 to 15 ppbv in RCP 8.5 scenario. We will also show the difference in the future projection of surface ozone between global CCM and regional CTM.