

東アジア域大気汚染物質の発生源感度評価のためのモデル間相互比較 Model inter-comparison for evaluation on source sensitivities of atmospheric pollutants over East Asia

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Atmospheric pollutants were simulated by using two regional CTMs, WRF-Chem and WRF/CMAQ and a global CTM, CHASER over East Asia for the year 2005. Simulated surface O₃ over Japan by WRF/CMAQ was higher than that by CHASER especially in summer, and overestimated observed O₃ at EANET monitoring sites. Contributions from 5 source regions; north China(CHN), central China(CHC), and south China(CHS), Korea(KRE), and Japan(JPN) on 6 areas on these regions were evaluated based on sensitivity simulations with 20% reduction in anthropogenic emissions. These models resulted that the 20% emission reductions on CHC would gain 0.8% decrease of surface O₃ over Central Japan in spring, and that was comparable to the O₃ decrease of 0.8-0.9% over Central Japan by the 20% emission reductions on JPN. As for the summer case by using CHASER, the O₃ decreases of 0.6% and 1.6% over Central Japan by 20% emission reductions over CHC and JPN, respectively. On the other hand, the regional CTMs, WRF-Chem and WRF/CMAQ, resulted 0.9% (CHC emission reduction) and 3.1% (JPN) O₃ decreases and 0.7%(CHC) and 2.4% (JPN) O₃ decreases, respectively, and that were 1.2-1.9 times higher than those by CHASER.

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