

Future prediction of tropospheric ozone change using CMAQ/RAMS and Regional Emission inventory in Asia (REAS)

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Frontier Research Center for Global Change has been developing an Asian anthropogenic emission inventory in the past [1980-2000] and future [2010, 2020] named as Regional Emission inventory in Asia (REAS). Especially for the future emissions, three emission scenarios [reference case (REF), policy succeed case (PSC), and policy failure case (PFC)] were employed. This study examined future changes of tropospheric O₃ concentration caused by anthropogenic emission changes through regional chemical transport model simulations for East Asia using the emissions for the year 2000 and the years 2010 and 2020. As for the growths of yearly O₃ concentration during 2000-2020, the O₃ concentration in east and south China increased by 4-8ppbv under the 2020REF. The 2020PFC scenario made the O₃ concentration at the Yangzi Delta area and its south region increase by 10-12ppbv. As following the 2020PSC, a little O₃ decrease was observed over the north parts of China. Additionally, it was found that the O₃ growth could keep less than 2ppbv in the north of 30N.