

# **Comparison of total CO columns simulated from regional chemistry-transport modelling with MOPITT-retrieved total CO columns over East Asia**

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Total CO columns retrieved from the MOPITT (Measurement of Pollution in the Troposphere) instrument were compared with those simulated from Model-3/CMAQ model over East Asia, in order to evaluate the accuracy of the CO emission inventory. The model simulations were performed for the entire year of 2006 with a 30km × 30km grid resolution, using the best available emission inventories, i.e. : INTEX-B over China and North Korea, CAPSS (Clean Air Policy Support System) over South Korea, and REAS (Regional Emission inventory in Asia) over Japan. Comparison of the model-simulated total CO columns with satellite observations for four seasonal episodes revealed that the CMAQ modelling tended to produce underestimated total CO columns over the entire region of East Asia. Such model underestimations were the largest in spring and the smallest in summer with the mean normalized gross error (MNGE) up to 42.6% over Central East China (CEC), 51.6% over south China, 43.9% over Korea and 48.7% over Japan. Because biomass burning emissions were not considered in the current CMAQ model simulations, large discrepancies between measured and modelled total CO columns were found over South China in spring where CO concentrations were influenced greatly by seasonal biomass burning events in Southeast Asia and another peak in fall season (October) which may also be related to biomass burning in tropical region. In general, the model well captured temporal and spatial distributions of CO, especially over CEC ( $0.7 < R < 0.9$ ), while it poorly captured over Korea ( $0.2 < R < 0.5$ ).