

MIS003-P03

Room:Convention Hall

Time:May 26 10:30-13:00

Analysis of CH₄ and CO₂ concentrations simulated by NIES TM over Siberia

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We simulated methane (CH₄) and carbon dioxide (CO₂) concentration using NIES (the National Institute for Environmental Studies) three-dimensional off-line Transport Model (TM). Used initial distribution, fluxes, sinks and chemical reactions are described in the Protocol for TransCom CH₄ intercomparison (Patra et al., 2010) and in the Protocol for CONTRAIL transport model intercomparison (TMI) (Niwa et al., 2008). Current version of the model (denoted as NIES-08i) is implemented on a hybrid isentropic vertical coordinate systems containing 33 levels up to a pressure level of 2 hPa and supplied with a climatological heating rate to calculate the stratospheric diabatic transport. Isentropic vertical coordinate helps to prevent extra mixing between troposphere and low stratosphere, resulting in the mean age of the air in agreement with observation and better vertical distribution simulation. Although the model phenology is driven by reanalysis data (JMA-JCDAS 6-hourly meteorology and 3-hourly planetary boundary layer height from the ECMWF Interim reanalysis (Belikov et. al., 2010)) it is reproducing seasonal cycle phase and amplitude. Tracers growth rates and tropospheric/stratospheric losses are well simulated by the model. The detailed model results analysis and intercomparisons using GLOBALVIEW-CH₄ and Siberian aircraft observation data will be shown in the meeting.

Keywords: atmospheric tracer transport modeling, carbon dioxide, methane