



To what extent does the choice of an emissions inventory matter when doing chemical data assimilation in a global CTM?

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Emission inventories are needed in chemistry-transport models to prescribe the sources of trace gases in the atmosphere. Each inventory has its own approaches and specialties, its own variabilities in space and time, and therefore a different influence on the results of model runs. As an illustration, we consider here the influence of two different biomass burning emissions datasets on simulations with MOCAGE, the global chemistry and transport model of Météo-France: we have considered the biomass burning part of the emission inventory EDGAR version 4.1 on the one hand, and GFED version 3.1 on the other hand.

We performed assimilation of CO data from the MOPITT instrument on the TERRA platform (both versions 3 and 4 of the data) in two configurations of MOCAGE differing only by the biomass burning emissions. The assimilation technique used is 3D-FGAT, which is implemented using the PALM software of CERFACS; the assimilation system itself is well-validated and has been used for several studies in the past. This study takes only CO into account, a quite well-understood tracer for biomass burning. To validate the results of the assimilation runs with independent data we compare with measurement taken within the MOZAIC project. The overall aim of our study is to assess the impact the assimilation of MOPITT data has on model results, and if this critically depends (or not) upon the choice of a given biomass burning inventory.

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