

Author comments in reply to the anonymous referee on “A tropospheric chemistry reanalysis for the years 2005–2012 based on an assimilation of OMI, MLS, TES and MOPITT satellite data” by K. Miyazaki et al.

We want to thank the referee for the helpful comments. We have revised the manuscript according to the comments. Below are the referee comments in italics with our replies in normal font.

- Figure 16 needs units. Despite the missing units, I think I understand now what is being plotted, which is not the emissions trend of the posterior. Hence, I think my initial concerns about trends in NO_x and CO emissions were misplaced, and I look forward to the subsequent paper describing this in further detail.

Corrected.

- I still have a small issue with this sentence: "Both the emission factors and the tropospheric concentrations of NO_x are constrained only in the early afternoon by OMI, whereas no observational constraint on tropospheric NO_x is available in the morning (i.e., during the SCIAMACHY and GOME-2 over-pass time)." and the authors' assertion in their response that "direct (local) constraints are considered to be much more important." Most recent top-down studies recognize that the indirect, nonlocal effects are important and thus take into account transport and chemistry in some way, either through iterative approaches, spatial smearing kernels, or using DDM / adjoint models. So I would suggest changing "only" to "primarily" and "no" to "no direct".

Corrected.