

Corrections/amendments for Zhang et al. "Characteristics and sources of VOCs and the O₃-NO_x-NMVOCs relationships in Zhengzhou, China"

Line numbers refer to the track-changes document **egusphere-2023-2835-ATC1**

10. "...important precursors of ozone (O₃) generation" add "under conditions of sufficient nitrogen oxides"

19-20. The sentence "An observation-based mode was applied ..." is unclear. I suggest "We explore observations of the O₃-precursors relationship and propose observation-oriented O₃ control strategies."

22. Change "in anthropogenic" to "in the anthropogenic"

44. "NMVOCs concentration varies" should be "NMVOC concentrations vary" (change every occurrence).

90. The more usual symbol for percentile is "%ile", so "8H-90%ile"

114-117. "1 meter" is incredibly close. Please say something more specific

166ff. Section 2.5 is still rather obscure. Please provide the general differential equation being solved by the model (e.g., $dX/dt = P - L(X)$, where X is the chemical species, P is all the production terms and L(X) all the loss terms). Since the model is described as being independent of emissions and (incorrectly – see line 190) meteorological parameters, I imagine it is being used to calculate a steady-state solution appropriate for every hour (cf.). Is this correct?

168. Change "employed to estimate the effect of changes of what in O₃ precursors" to something like "employed to estimate the effect of changes in precursors on O₃"

169-170 Change "a good mix" to "a well-mixed atmosphere", if this is what is meant.

190-191. You mean that the concentration of NO was held constant? This seems like a very questionable assumption and would be equivalent to adding a source of NO_x to the model.

194. The model will use time steps much smaller than 1 hour. Do you mean the model is stepped forward for 1 hour of simulation?

203. Do you mean that the O₃ is initialised to zero? That seems unlikely. I think you have an initial value which is allowed to evolve for the duration of the model run. Since O₃ evolves relatively slowly, it may be quite possible to have a good IOA without the model working well.

206. Without a better description of the model set up, you cannot claim that it is reliable.

262. "average" or "mean", not both.

303-306. The diurnal pattern in ozone must be a combination of mixing (especially as the nocturnal boundary layer breaks up) and chemistry, so it is not correct to ascribe high ozone mixing ratios to in-situ production alone. These sentences should be modified.

316. The reference for this sentence is not appropriate. Please cite one or more of the foundational papers on isoprene production from plants from the 1980s.

320-321. Couldn't the bimodal shape also come from reaction with OH, since OH peaks in the middle of the day? Your model should be able to calculate this.

346-350. These sentences are not consistent. You argue that E/X gives information about photochemical age, not source differences.

Fig 4. "ratio" not "ration"

444-445. Please correct: "Among AVOCs, aromatics had the highest RIR value, followed by alkanes and aromatics."

536. Change "The summer O₃ pollution has always been an important environmental issue in Zhengzhou" to something like "Summer O₃ pollution remains an important environmental issue in Zhengzhou."