

Additional minor editorial corrections:

Lines 9-10: Suggest the following changes to the abstract: "...yet **the** chemical composition and phase state are poorly understood and **thus poorly constrained** in aerosol models." The use of "its" makes it sound like there is only one alkane SOA and hardly is a bit ambiguous.

Line 18/line 33: In the abstract you define SOA as singular but use it as a plural (e.g., n-alkane SOA adopt). I think that this is fine, and common, but then in the introduction, you define it as plural. Suggest to make it consistent in both the abstract and introduction.

Line 158: Change "is" to "are", "partitioning kinetics **are**"

Line 178: Suggest removing "implicitly" and the end of this sentence. Not clear what it means in this context.

Line 234: Change "is" to "are", "compounds... Torr **are**"

Line 265: Autoxidation and auto-oxidation are used, suggest to make consistent. The first is more common.

Line 278: The link here between "further investigations" and "future model development" is awkward. Maybe "including model development and experimental studies", or "further investigations, future model development and experimental studies".

Line 292, line 340: I agree with reviewer #2 about the use of "remarkable". I suggest notable or something with that level of emphasis.

Line 310: Change "increases" to "increase"

Line 380: Also in agreement with reviewer #2, please review manuscript carefully to differentiate modeled vs. measured results. "We also found" implies measurements. I suggest "we also predicted" to avoid confusion, particularly with the introduction of experimental results in the following sentence.

Line 385: Change "are" to "were"

Line 386: Suggest to change to "These compounds were also major products in our simulations, supporting GECKO-A..."

Line 387: Differences between the model runs? Or differences between Ranney measurements and model? Both?

Line 392: Suggest "Tg **values between** 157-221 K"

Line 436: Suggest removing “are”, “SOA yields increased...”

Line 452: Suggest “n-alkanes”

Line 454: Is there a more precise or technical way to define “lightly oxidized” ?

Line 492: I think the capabilities of the model are overstated here, given that GECKO-A is an equilibrium-based partitioning model only. As noted elsewhere in the manuscript, some potentially important gas- and particle-phase processes are not included. I agree with the ability of the model to predict the experiments in this paper, but I don't think the model is capable of comprehensively simulating the chemical evolution of SOA.