

Reply to Referee #2

We are very grateful to the Referee for the very useful and constructive suggestions. All suggestions are implemented into the final version.

One outstanding substantial change still needed is the contribution scenario labeled “BEO” is often described as “biogenics only” (e.g. see section 3.2) in the manuscript. However, in a few places this category is more accurately described as biogenic plus lateral boundary inflow contribution. Since the lateral boundary inflow contribution could be most of the contribution from this category the authors should change the label and throughout the manuscript note that what is currently being called BEO is actually biogenic+lateral boundary inflow and not just biogenic. This needs to be consistent throughout the paper because how that contribution category is described has important air quality planning implications.

The biogenic emissions only (BEO) is corrected to Biogenic emission and Lateral Boundary inflow (BILB) in text at Line 39, Line 43, Lines 315-316, Line 318, Line 327, Line 331, Line 351, Line 370, Line 378, Line 381, Line 502, Line 565, and Line 571; in Figures 4, 5 and 6; and in Figures S4, S5, and S6.

In the conclusions section the authors note that biogenic contribution are “significant” in spite of the region’s aridity. Since this category also includes lateral boundary inflow the conclusion should be modified to note that. One call for future research may be to distinguish biogenic and lateral boundary inflow contribution to this area. Also, evaluating biogenic emissions in this area could be future work since we have no sense about whether the biogenic emission model used here is over or under-predicting isoprene in Phoenix or regionally.

Thank you for the suggestions. The following sentence is added in the text (Lines 572-573 in Page 27).

“Our future research will distinguish biogenic and lateral boundary inflow contribution to this area through model simulations and observations.”

I suggest deleting the last paragraph of the conclusions section. This manuscript is focused on technical work and does not need to venture into opinions about emission control programs

Deleted.