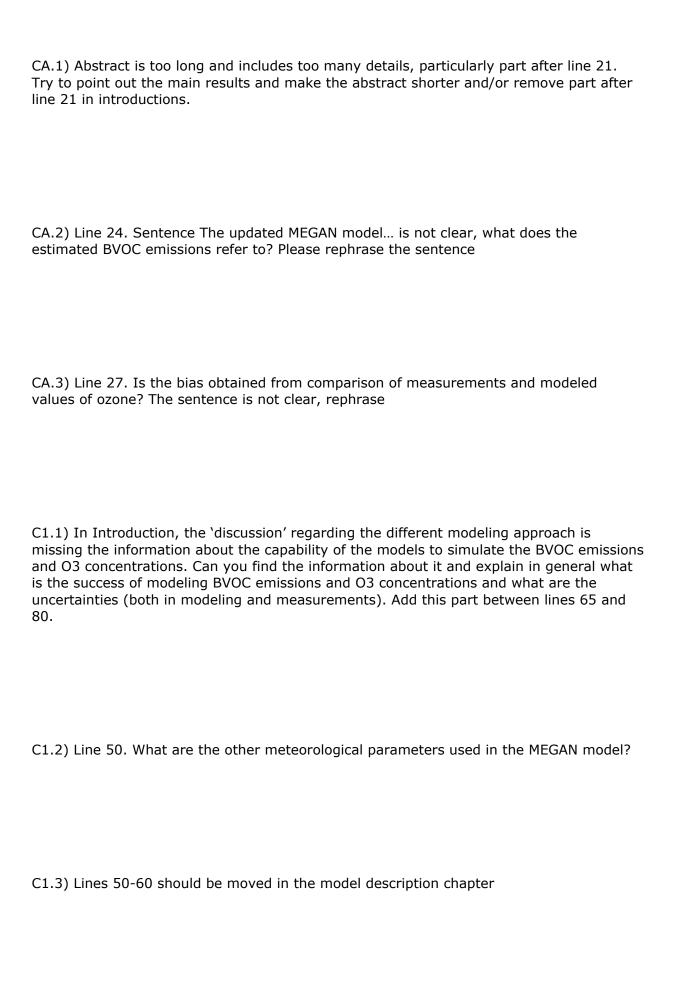
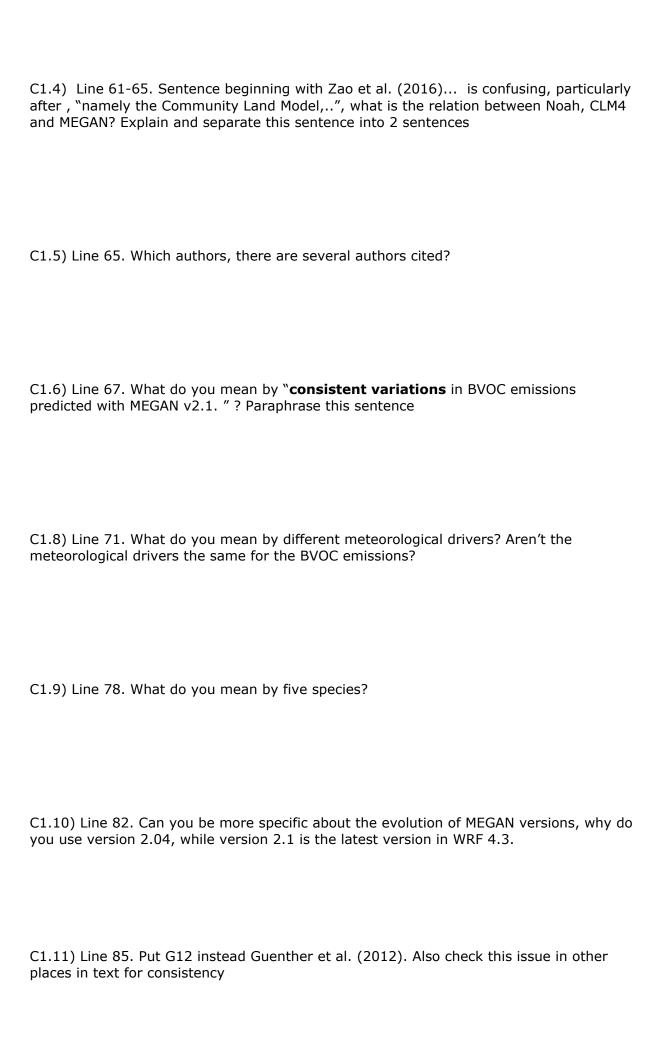
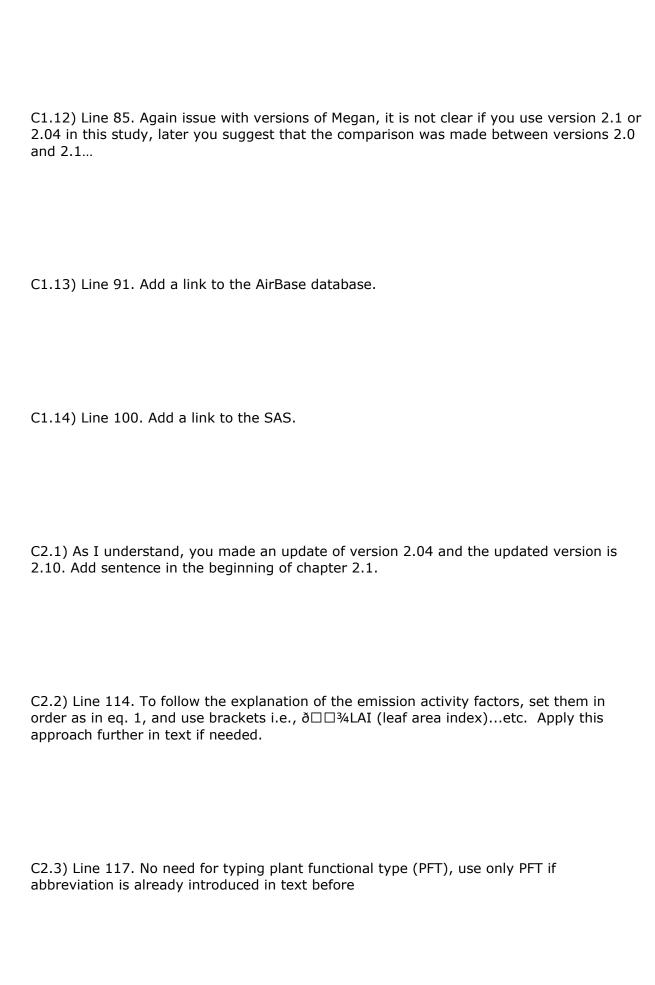


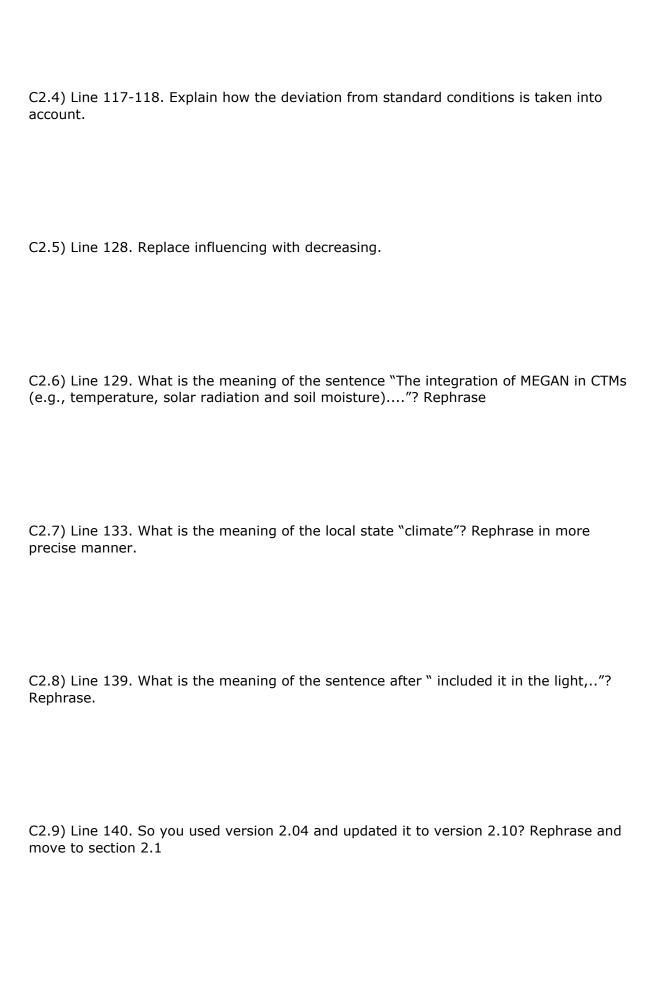
Geosci. Model Dev. Discuss., referee comment RC2 https://doi.org/10.5194/gmd-2022-15-RC2, 2022 © Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.

Anonymous Referee #2
Referee comment on "Comparison and evaluation of updates to WRF-Chem (v3.9) biogenic emissions using MEGAN" by Mauro Morichetti et al., Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2022-15-RC2, 2022
Main comment:
The authors made an effort to update and test the MEGAN biogenic model coupled to the WRF-Chem model. The major problem is that the results are slightly worse than the previous version and the question upon what should be done to improve the model remains unanswered. Also, this poses a question, why to use a new version instead of the older one? In addition, the US case lacks the proper statistical verification and should be done. However the paper provides the information on the new version and can be valuable mid-step towards the further improvement of the model.
Except for this problem, the paper is well written and organized. However I provide a list of minor comments below.
Minor comments:

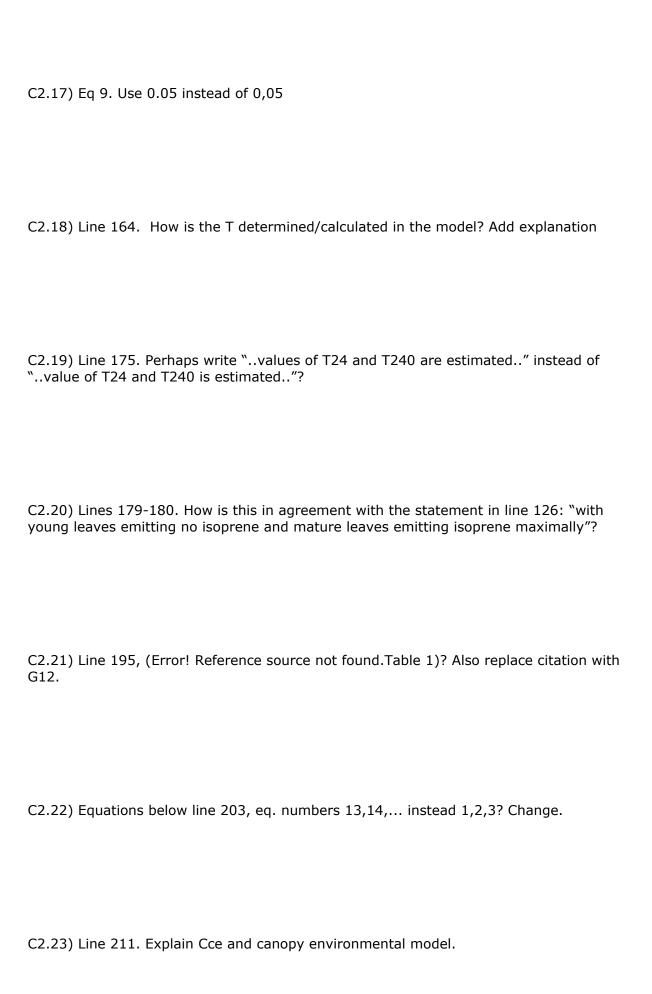








C2.10) Line 146. Delete "are comprised".
C2.11) Line 147. Response emission activity should be mentioned after eq 1., line 115 here use symbol only. Also, refer to the Tab. 1, since the equation with sine can be found there.
C2.12) Line 148. Class compound or compound class? Also check line 169.
C2.13) Eq 2, index "i" stands for each compound class? Specify.
C2.14) Line 150. Correct the part "the Ps the".
C2.15) Line 152. The sentence "This new version" is confusing. Instead of "new version' and "updated version" use the v2.04, or v2.1. Which version uses swdown and which mwdown?
C2.16) Line 158. Are all equations from Guenther et al.(2006), also use G06 instead of citation, also in line 171.



C2.24) line 221, use G12Table 2 is from G12 or from this paper, or both?
C3.1) Figure 3 has some issues; the colorbar has no units, the x value is not explained in the caption and has no units. Also it is unclear how the maps of the isoprene emission factors are obtained in regard to the previously mentioned options (prescribed and eq 1), explain
C3.2) Chapter 3.1.2. What is the period of simulation and spin up time? Why did you not use
nested domains as in the US case?
C3.3) Line 280. How did you infer the conclusion regarding the mixing ratios inside the
PBL versus the free troposphere from Figure 3?
C3.4) Line 291. How did you determine the 2 days is appropriate for the spin up time?
C4.1) Line 310. Why averaging the geopotential field over 6 days? How is this representing the evolution of the synoptic situation?

