

Interactive comment on “Implementation of the biogenic emission model MEGAN(v2.1) into the ECHAM6-HAMMOZ chemistry climate model. Basic results and sensitivity tests” by Alexandra-Jane Henrot et al.

Anonymous Referee #3

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General comments:

The GMDD paper by A.-J. Henrot and coworkers present a modeling work on biogenic emissions of volatile organic compounds, presenting the implementation of the MEGAN v2.1 model in the ECHAM6-HAMMOZ chemistry climate model. Several tests, changing the forcing or set up considered for the simulations, are carried out to quantify the variability and sensitivity of calculated emission estimates.

The paper is well written and the work clearly presented, shedding lights on important aspects of BVOC emission modeling. Following the other reviewers feedbacks, I have

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a few additional comments and corrections, mostly minor, that I would like to be considered before publication in GMD, which I warmly support.

Specific comments:

In the abstract it is written that “Isoprene emissions show the highest sensitivity to soil moisture impact”, which to me is slightly confusing as soil moisture is taken into account only for isoprene, and not for other compounds. The sentence should be modified for instance to “The highest sensitivity of isoprene emissions is calculated when considering soil moisture impact..”

The leaf area index is a key driving variable in BVOC emissions, and I think a few more details should be given regarding this topic. Especially, how is the consistency between vegetation type and LAI given when switching from the 11 PFT classification to the 14 extended PFT one? Is the same LAI considered for all new categories?

Page 7, line 27: Please give more information regarding the biomass density calculation and relation with vegetation classification used, either here or preferably in the model description section.

Technical corrections:

Page 1, abstract, line 13: remove “of the” in “most of the compounds”

Page 2, line 5: remove “as well” in “BVOC emissions as well influence”

Page 2, line 22-25: the reference list is given twice, remove one

Page 6, line 6: remove “the” in “for the trees,”

Page 6, line 7: avoid “double parenthesis” for instance in “(1990-2009)” already given between parenthesis

Please check the format for references citations throughout the manuscript. For instance remove the citation year parenthesis page 6, line 6 in “based on Levis et al.

(2004)” as this sentence is already between parenthesis. Same page 10, line 17 for (... in Sinderalova et al. (2014)). Page 10, line 22-23 change “Guenther et al. (2012) to “(Guenther et al., 2012).

Page 7, line 6: change “Monoterpenes global annual emission” to “Monoterpene global annual emission”

Page 7, line 18: remove “of the” in “most of the compounds”

Page 9, line 9: change “It’s impact on isoprene emission” to “Its impact on isoprene emission”

Page 9, line 14: change “It’s activation increases” to “Its activation increases”

Page 12, line 16: remove “of the” in “most of the compounds”

Page 16, line 15: change “of it’s impact on other compounds” to “its impact on other compounds.

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