Geoscientific
Model Development
Discussions

Interactive comment on "HERMESv3, a stand-alone multiscale atmospheric emission modelling framework – Part 1: global and regional module" *by* Marc Guevara et al.

Anonymous Referee #2

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Review: gmd-2018-324 Title: HERMESv3, a stand-alone multiscale atmospheric emission modelling framework - Part 1: global and regional module Author(s): Marc Guevara et al.

The paper describes an open source system to process various emission datasets is a flexible manner allowing for changes in projections, scales and making combinations of different inventories. Moreover it provides options for applying different temporal or emission height profiles to generate model-ready emissions input. One of the nice things is that it will allow modelers to relatively easy do sensitivity tests by the ability to scale and/or quickly combine various sets. I do think there is some risk in this,

in the sense that people who use it may think that everything is compatible and you can "shop" until you find what you need but in the end this is more a concern than a comment on the paper. The paper is well written and clear. In my opinion it is a good contribution for GMD and I only have minor comments which should be taken into account before accepting the paper.

Abstract: please remove "highly" in l 10. It is customizable but highly is an undefined property. What you may find low, someone else may find high and vice versa. This occurs at various places.

In the introduction P2 L 18 it is stated that "A potential remedy for the latter is to combine different inventories and apply adjustment factors in order to improve the representativeness of the emission data...." This should be a bit better explained and possibly also discussed further in the paper. What does improving the representativeness mean? It is important to acknowledge that we should not work towards (and the system is not intended for) having only one totally harmonized inventory. Like models, inventories work from different assumptions with different data and solutions. Having independent datasets is crucial from a science perspective.

P2 l25 I suggest to replace "quality" with resolution – the quality may be good for a global product but not for a regional product.

P3 l4 "highly" – see previous comment

P6 l 6-7 does the user provide data? Or the data provider? I assume there can be users who do not provide data?

P8 l1-3 – This possible explanation should be removed. As it is not further documented it remains speculation and does not belong in this paper. Furthermore, for making comparisons between a certain emission category from different inventories one should not use maps but the emission data by sector.

P 12 l 6 – reference to Table 2 is missing at the start of the sentence.

P12 l 14-15 – please check if sentence is correct it sort of says that NO is mapped to NO2 but maybe I misunderstand.

P15 l 12 "and temperature" is not correct maybe you mean "driven by temperature". The sentence now implies that temperature is a pollutant sector. Also pollutant sector should be source sector.

P15 l22 remove "–"

P15 l 25 work not works

P15 l 30 widely USED in

Figures: At least when printed the maps are not very clear and while they only serve as an illustration it seems the legend is not well chosen. It would be better to show more gradients.

Finally in the conclusions it should be considered to make disclaimer or statement that the system PROCESSES emissions data, it does not make them better. Users should always remain aware that combining parts from different inventories can also lead to substantial errors because the definition what is included or excluded in certain sectors and/or inventories can differ substantially. A notorious example is e.g. agricultural waste burning which is sometimes included under agriculture sometimes excluded (and than given under waste, or not at all as it is assumed it comes from the Fire emission inventories). So combining apples and oranges without going to the original descriptions of what is included should be avoided. In the end this is the responsibility of the user but a word of warning is warranted.

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