

## ***Interactive comment on “VEIN v0.2.2: an R package for bottom-up Vehicular Emissions Inventories” by Sergio Ibarra-Espinosa et al.***

**A. Colette (Editor)**

augustin.colette@ineris.fr

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Review of VEIN v0.2.2: an R package for bottom-up Vehicular Emissions Inventories submitted to GMD by Sergio Ibarra-Espinosa, Rita Ynoue, Shane O’Sullivan, Edzer Pebesma, María de Fátima Andrade, and Mauricio Osses.

The paper presents in detail a new model to assess air pollutant and greenhouse gases emissions due to road transportation. The model offers interesting capacities to make use of local information about traffic counts in conjunction to well established methodologies to model emission fluxes. The methodology is well explained and the model itself is available as an open source R package, therefore offering interesting perspectives for users and further development.

C1

### General comment

The model builds upon well established methodologies, in particular those of the COPERT model. More details about the added value of VEIN (for instance in terms of mapping and use of local bottom up information) should be provided in the introduction to allow the reader to better understand the complementarity compared to COPERT or other traffic models. Since VEIN relies heavily on COPERT data and methodologies, a more explicit acknowledgment is needed indicating if such input data are available for public use and/or if the support from COPERT developers was granted.

### Specific comment

Why is traffic count data only available for the morning rush hours (P4L1) if they are obtained from automated stations (P4L10) ?

P6L6 if monthly average temperature is already taken into account as recommended in the COPERT methodology, how will it be improved in the future versions of VEIN ?

Sections 2.4 and 4.5 : more details should be added on the chemical speciation of emissions.

P14L22 : why is the green line so different from the other two in terms of variability ? is it obtained from actual data instead of a statistical fit ?

P21L15 : a ratio 20.5 between estimates with VEIN and EDGAR calls for further justification. Is it for the whole MASP area or focusing only on major motorways ? A comparison of annual total emissions should be provided.

### Technical Comments

- P1L7 : define  $\hat{\lambda}$  factors  $\hat{\lambda}$
- P1L16 : add greenhouse gases
- P2L28 : define HC, how do they differ from VOC mentioned later in the manuscript

C2

?

- P4L28 : which is the computer programme being referred to ?
- P8L17 : the colors can not be seen in Fig 1.
- P13L3 : "defined" instead of "defend"
- P21L3 : replace "another" by "other"
- P23 L14, L15 : years are missing from the references
- P23L23 : the purpose of the last sentence is unclear.

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Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2017-193>, 2017.