

## ***Interactive comment on “CHIMERE-2016: From urban to hemispheric chemistry-transport modeling” by Sylvain Mailler et al.***

### **Anonymous Referee #2**

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General Comments. The manuscript introduces the new version of the CHIMERE chemical transport model. The text is rather long and requires an English proofreading. Also, providing examples and evaluations with observational data of several new model features will make the paper further compelling. Besides the questions listed below, I recommend to be added to text: 1) A table of variables presented in text, 2) A table describing all physical input variables that are needed from a meteorological model (as WRF or IFS/ECMWF) to drive a simulation with this version of CHIMERE.

Questions/Comments Pag 2, abstract, lines 4-10 It seems that there is a mix-up between the words ‘scales’ and ‘domain sizes’. The authors should refer to scale as the smallest eddy resolved by the model and not mix with the size of the computational grid used to simulated certain phenomena. In this sense, stating that CHIMERE-2016 can be applied at any scale seems to be unsuitable. I invite the authors to rephrase

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those sentences.

Pag 2, Introduction State clearly the class of atmospheric-chemistry models which CHIMERE-2016 fits. Is it a coupled online atmospheric-meteorological model? If yes, does it include feedbacks between atmospheric composition and the model dynamics? How does it compare with other state-of-the-art models like WRF-Chem and COSMO-ART?

Pag 3, line 5 State clearly the means of ‘CHIMERE core’. Did you say ‘dynamic core’?  
Page 3, line 20. The expression master/slaves are more common in this context.

Page 4, lines 1 – 3. In the new version, clarify if the model output is split into several files (each slave writes its model solution in a particular file) or if each slave writes its own sub-domain but in a single file, which comprises the entire domain.

Page 7, Line 20 Include a brief description of the numerical properties of the advection scheme applied in this chimere version to transport scalars.

Page 8, section 3.1 The new version aims to simulate tracer transport on continental/hemispheric scales with the model top at 200hPa. How the organized vertical transport of pollutants associated with convective and moist plumes are handled in this configuration?

Page 16, section 5. Describe the numerical solver of the chemical mechanism applied in this model version.

Page 28, line 12 The emission configuration does not agree with the general observed ‘umbrella’ shape of the volcanic plume. Page 29, Section 7.4 The simulation outputs discussion lack comparison with observational data. It would be very instructive for the readers to perceive the fidelity of the model transport and AOD simulations.

Page 32, Conclusions. Line 16: Is it true that this version ‘has the ability to include all types of emissions’ ?

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