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Interactive comment on "Technical note: Emission mapping of key sectors in Ho Chi Minh city, Vietnam using satellite derived urban land-use data" *by* Trang Thi Quynh Nguyen et al.

Beatriz Aristizabal (Referee)

bharistizabalz@unal.edu.co

Overall quality, general comments

The paper integrates a number of tools to allocate EIs, I consider this is an important part and can be different from the other methodologies reported until now. However, the methodology does not show clearly how the tools are integrated to generate better results. The abstract, introduction, and results analysis focus on the EI. These parts do not show consistently the two principal parts of the paper the EI for the Ho Chi Minh City, but also the novel methodology that the authors implemented. I consider the authors should be careful with some statements and expressions that are not recom-

mended in technical papers. Please see the specific observations below.

Individual scientific questions/issues ("specific comments")

-The title of the paper and the abstract relate a novel method to allocate EI. Since this is an important part of the paper, the abstract should mention how is the novel method developed (give an idea of the main parts). The abstract is focused on the local EI for the HCMC, it would be important to mention the two main points of the paper the local EI but also the novel method. - In the introduction, the authors should explain deeper and in context with other methodologies (that already exist) the novel approach presented in this work, which is the main difference. For example, other methodologies focus only on the disaggregation of transport emissions. It is not enough to mention that they developed a novel approach. The introduction might have more about this aspect. Also, the introduction is very focused on the EI from the city, but don't show the relevance of this study in comparison with other studies that propose allocation or disaggregation methodologies. The authors should focus most on that, the title mention "using satellite..." but there is no information about the importance of these in the context of allocating EI that can help other cities to use this methodology. -The authors mention (around 35) "Many atmospheric chemistry modelling researches in Asia have applied these EIs as input data but they are incoherent and not longer updated". Why are that EI incoherent? the authors should be more specific. Also, I saw in Table 1, there is an updated inventory from 2019. In general, inventories depend on many factors, and determine which one is correct is not easy, how the authors establish which inventory is correct? - Please, include a figure that describes better the methodology for the spatial allocation (disaggregation), because that is the novel part. The authors can improve Figure 1 and 2, or include a new figure focus on the allocation part. Figures 1 and 2, only showed a box mention spatial allocation and the resolution. The methodology for spatial allocation is not available. I also consider Figure 1 and 2 should be improved. -Methodology. I consider some equations are without references, please check these. For example, Ec 1 and 2, they are taking from specific methods

to calculate EIs that are well known. -The authors mention (around 170) "Fuel consumption in 2013, 2014, 2015 were provided by GHG emission inventory compiled by JICA, 2017 (Tab. 4) The fuel consumptions in other years were inferred using population provided by HCMC Statistical Yearbook (Tab.8)". Which correlation/statistic do the authors use for the years 2009, 2010, etc? How the information is "inferred"? The authors again mention "So, electricity consumptions in other years were inferred using the same parameters used in Fuel consumption part". I consider the authors should establish clear the correlation (which parameter? this is not mentioned) because when EIs are calculated this information can affect the results. -Section 2.3.5 Spatial allocation, the authors explained how to allocate EI for each source: transport, point sources (residential, industrial, commercial), however, it is not clear how the total EI is integrated. Also, it is not clear which is the step in the integration of urban morphological maps, DSM, DEM in the case of point sources. Additionally, the authors stated "The composite Landsat (Landsat 7 for 4 years: 2009 to 2012 and Landsat 8 for other four years: 2013 to 2016) was classified in a supervised manner using Mahalanobis distance into 7 classes (including class built-up)", which are the 7 classes used? Since this is the novel methodology, I consider this should be presented in a more organized way. -In the last part of the section Summary and discussions (around line 515), the authors said "We relied on only one building height data (extracted from AW3D30) in 2011 to prepare land use maps for 8 years. The assumption of constant building height neglects vertical growth and land-use transitions, causing inevitable uncertainty in the spatial allocation of emission. Also, this approach assumes that all constituents of the field data of building height and land use could improve the reliability of annual urban morphology maps". That details should be in the methodology about the approximation to use land maps, etc. Additionally, how do the authors "assume" that? - For the sections Results, conclusions, I would recommend an analysis that clearly establishes how the new methodology makes a difference from the previous EIs available for the city. For example, if the transport is the main source as the author mentioned and the methodology implemented in the present work is similar for the spatial disaggrega-

tion of transport, how the allocation of point sources using satellite for urban land-use morphological maps improved the resolution and the information (comparing with the previous study of "H.Q.Bang, 2010, the first emission maps were developed for HCMC using road network as allocation factor for Transportation sector, population density as allocation factor for Industrial and Residential sectors").

Technical corrections

-Please review the upper case letters in all the document. I recommend use only when it is strictly necessary. For example, the words Green house gases (in the abstract); transportation, manufacturing, and residential are written in different ways sometimes the author used upper case others no. Please check these typing errors in all the document. Also the space between words, for example, Scope 1 or Scope1 (to standardize). -Check informal English, line 40 "till". - Avoid expressions such as "obviously", I consider this is a qualitative judgment, the authors should show quantitative ideas and support why the approaches are not suitable with precise information (see around line 45) -Some paragraph has unclear phrases or incomplete sentences. For example, around lines 70 and 75. -Please check consistency between plural and singular. For example The daily VKT of each vehicle type in HCMC, 2013 were extracted from study of N.T.K. Oanh, 2015 and was assumed to be constant over years.