This paper presents measurement of ambient carbonaceous submicron particulate matter in a roadside site in urban Hong Kong. Multilinear regression analysis was performed with the observed HOA and EC concentrations and real traffic data to interpret the contribution of different vehicles to the carbonaceous aerosols. The results would be helpful to the local authority on traffic emission controls and be of interest to the community. The writing and construction of the paper need to be further improved before considering for acceptance, and the extremely long paragraph and sentences could confuse the reader and make the meaning ambiguous. Some parts in the introduction, methodology, and discussions also require more clarification and refinement.

**General comments:**

There are always long paragraphs and long sentences without appropriate breaks, and the lack of organization confuse the reader and diminish the intent of the discussions. For example, Line 81 to 112, single long paragraph for Section 3.1, line 279 to 317, and also some extremely long sentences in many places in the text.

Introduction. Since the present study made substantial analysis and discussion of the primary emission of HOA from different vehicles, the author needs to provide some review of the finding and current understanding of HOA from traffic emission in the introduction section, to better present what is new and significant in the present study.

Methodology. More details on the multilinear regression would be necessary, including inputs and outputs of the regression, any assumptions were made in the analysis, and the uncertainties raised by different factors, three-point box smoothing, constrained intercept, etc. For the sake of clarity, this information should be included to show the validity of the regression and analysis after that.

Results. Line 161-170, Line 182-186, and Line 189-193. The general descriptions of HOA during the campaign, relation with other species (e.g., NOx), the EC/HOA ratios, and the Sunday reductions of HOA and EC, all have been previously presented in the published paper by the same author (Lee et al., 2015). Thus it is suggested to condense the already published results and try to focus on what is new from the analysis in the present study.

Figure 1c, the author has already reported similar results from the same campaign in his previously published papers, i.e., Figure 4c in Lee et al., 2015, except that the current one uses EC in PM1 with an empirical ratio of 0.8 from PM2.5. It is also surprised that the same dataset for HOA gave different results between Lee et al., 2015 and the present study, see below comparison figures. The author needs to clarify this, otherwise, there are reasons to doubt the validity of the data and analysis in the present study.
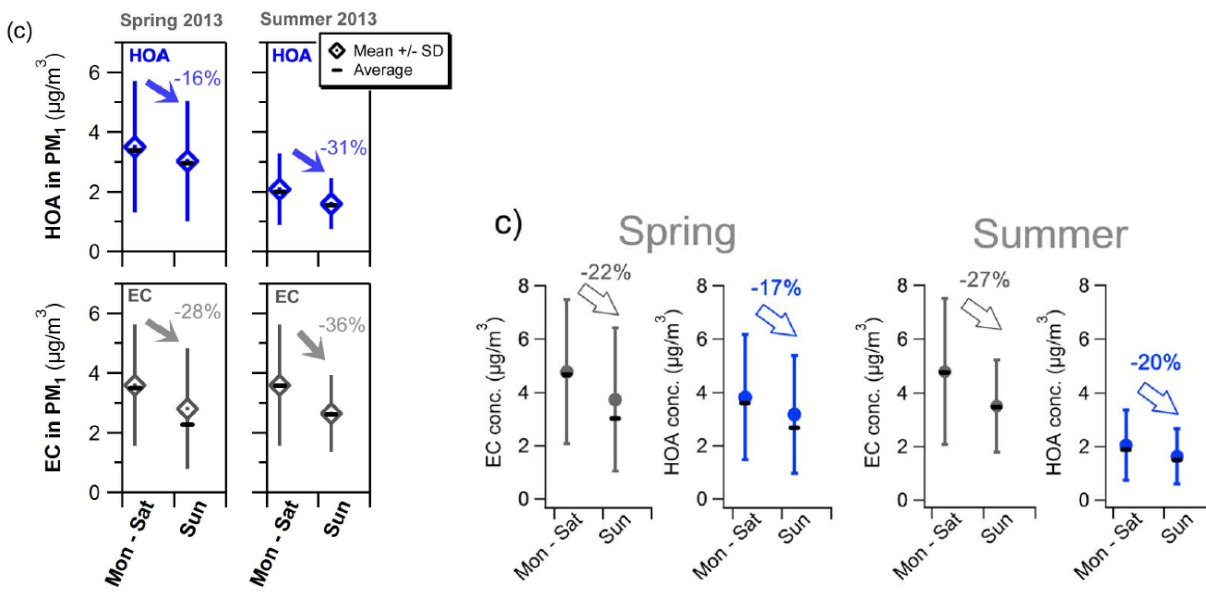
Same problem for Figure 1a, the diurnal variations of EC and HOA in the summer campaign had also been published in the previous paper, i.e., Lee et al., 2015, as a supplement figure, Figure S5. Also, the Figure1Sb in this manuscript is also similar to Figure 4d in Lee et al., 2015.

Section 3.3.2 and Conclusion. The discussion on the control strategies did not show too many links with the results obtained in the present study, some of the statements seem too speculated without direct results or evidence to support, e.g., Line 332-335. I would suggest the author perform further analysis with other related species and data, and emphasize the indications from the results, and highlight what is new regarding findings in the present work in comparison to previous studies conducted in other places in the world.

**Specific comments:**

Line 34-39. The author stated that the previous investigations typically rely on source inventories with models, then how about the previous field measurements at the roadside environment? It is better to perform more comprehensive review regarding similar field measurements.

Line 40. It is not clear how different the approach in the present study compared to previous studies in the literature. The author should review the literature methods first and then can come up with the statement that the approach here is different and better.

Line 40-47. I would suggest the author re-locate the position of this paragraph to the place more fits the content, for example, the end of the Introduction section, where the description seems have some connection to this paragraph.

Line 63 to 67. Was the data measured in the present study also affected by the non-local pollution sources? Then how to differentiate the effects of local emission from non-local influence? Any

assumptions were made, and any uncertainties would be raised? The author should clarify this in the results and discussion section.

Line 61-67 and Line 75-80. The author listed many results from previous studies, however, the simple enumeration without refinement makes the descriptions confused. Another example can be found in Line 84-86, it is not clear about the purpose to mention the contribution to ozone formation, since nothing was discussed in this manuscript regarding the ozone issues.

Line 93-94, How about the share of OC in diesel emissions, since the emission factors of OC is about 8 times higher than that for non-diesel vehicles?

Line 97-99. Many studies reviewed in this section were conducted around or after 2010, e.g., Ning et al., 2011; Ho et al., 2013; Huang et al., 2014; Cheng et al., 2010; Yuan et al., 2013; Sun et al., 2016; Lee et al., 2015, etc. The author needs to clarify more on why '*they are unlikely to reflect the contemporary... over the last 15 years'* and the advantages of the present study to make progress on this issue.

Line 185-186. Did the concurrent measurement of hydrocarbon in the gas-phase show any pieces of evidence to support the hypothesis of more partitioning of HOA in gas-phase in summer?

Line 206-208. The purpose and links of these two sentences with the following discussion are not clear. The number of counted vehicles during the three-day counting exercise should be more useful here.

Section 3.3.1. The discussion of the selection of two-factor or three-factor models here seems clogged and could be largely condensed and refined. Also, as mentioned in methodology comments, more details on the validity and uncertainties of the analysis should be clarified.

Line 255-257. It is better to discuss the figure in the main text, i.e., Figure 3, and use the supporting figure as a supplementary discussion, otherwise, it makes the reader confused about the relationship and difference between Figure S5 and Figure 3.

Line 267-270, The multilinear regression is a statistical analysis that may not necessarily represent good physical meanings, it is necessary to compare the regression resolved emission factors with previous laboratory or field measured emission factors in Hong Kong or other regions, to validate the regression results.

Line 270-272, it is hard to understand what the author wants to interpret by only reading the text.

Please give a sense of the uncertainty of the obtained values, providing error bars in Figure 3b and 3e, and the uncertainties should be at the least qualitatively noted in the main text.

Line 290-291. It is not clear how the high fraction of EC in gasoline engine was related to the explanations here. More clarification is required to support the author's statement.

Line 295-300. Most of the previous studies reported higher particles for diesel vehicles compared to gasoline, is there any possibility that the different result in the present study was artifacts resulting from the statistics analysis lacking real physical meaning? Any other studies of direct emission measurement to support the similar low particles from diesel vehicles with DPF as the gasoline vehicles?

Line 313-317. What do these numbers mean and how can be linked to the results presented above? More discussions are needed here.

**Technical corrections:**

Line 68-71, grammar issues in the long sentences. Please rewrite it.

Line 76, Where was the open roadside located, the same site as the present study?

Line 81, which contributions did you refer to?

Line 99-103, reference needs to be provided

Line 175. 'was is' should be 'was'.

Line 209, the Figure S2a citing here is not the correct figure.

Line 286, uncompleted sentence.