Review of “Identification of platform exhaust on the RV Investigator” by Ruhi S. Humphries

General comments:

This manuscript proposed new way for the elimination of self-ship plume using the measured gas and aerosol data. The authors tried to eliminate the relatively high concentration CCN observed in the cruise by the combination of BC, CO, CO2 and CN data. The method is very interesting. However, the premise for target data information in this study is not sufficient. There was less evidence to understand this method advantage from traditional method. Authors described details of this method advantage using several cases by comparison of traditional method. Furthermore, the authors applied the method to only one case by R/V Investigater. This method could be only applied to R/V Investigater.

There are still many discussions to establish this method. I would not recommend publication on AMT in the current form. Significant revisions are needed.

Specific comments:

1. Most important point is why the authors mentioned that CCN data captured much number (>1000cm−3) in the relative wind direction within +/- 90 deg from the bow in the Figure1 are recognized to self-ship plume. The comment in Figure1 of “uncontaminated data are usually less than 1000cm−3” is also unclear. First, authors have to indicate that these data are self-ship plume, specifically. Furthermore, why authors have to describe the reasons that these data were captured. It seems that authors just try to reduce high CCN value within +/- 90 deg from the bow.
2. In abstract, there is not included the point. Need the quantitative suggestion for the comparison between traditional way and this method. It is should be mention the advantage points from the traditional point.
3. For the structure of manuscript, there is unclear information(figures) in the introduction. Their details are important point. However, their explanations were described letter section. Figure1 might be motivation for this study. However, many observation data are included in this figure. Although, this manuscript shows the data analysis method, it makes confusion to read manuscript due to less information for Figure1 (air mass origin, ambient condition, period, location, data sampling time (delta t)). Also, Figure2 is not need in the introduction.
4. To discuss the influence the ship plume, authors should describe (or show) the positional relation for inlets, funnel and obstruction in those for the R/V.
5. For analysis of data, what kind of data (time step) and residence time in the tube. Also, need the more basic information for the data quality (calibration gas information etc.) in this study.
6. This manuscript mentioned new method to the eliminate the self-ship plume by the combination

of BC, CO, CO2 and CN data. Why authors did not use other tracers for ship-plume such as O3 and NO2 ? O3 and NO2 change are also important index for the ship plume. Also, ratios of CO/CO2, CO/BC, CO2/BC are important information.

7. Criteria of BC is very sensitive due to low background level. However, evidence for the setting value of 0.07ug/m3 is unclear. Need specifically reason.
8. It is afraid that the determined way of criteria of CO, CO2, and CN could not capture the small level event or very large event (not ship plume) in narrow band also will be eliminated. How do you think?
9. For window filter setting, this setting is very important. Each observed data would have different time step (1sec or 1min or others?). There is not information for timestep for each measured data in this manuscript. If BC, CO, CO2 and CN have different time steps, the window filter indicate have weighted criteria. Authors have to evaluate this thing (sensitivity check).
10. In Figure3, the BC criteria is 0.07 ug/m3? It looks 0.15 ug/m3 (FigureA7 also)
11. In Figure3, it seems high peaks are disappeared from original one. How do you consider these peaks are not from self-ship plume? For example, only CN have high peak (CO, CO2, BC were not high), these cases are real self-ship plume?
12. There was not comparison of this method with traditional method. Authors have to show quantitative comparison or improved results. At least, the comparison with the traditional method result has to add the Figure3.
13. In P12 L15, suddenly it starts comparison of wind filter with this method using 42days data. There is also less information for the observed air mass. Although authors mentioned that 20 hours data was recovered (this time might be “net”), these data information are also important. Authors should indicate removed and recovered data property (what is the advantage for this method from traditional one. For example, how percentage recovered data in >±90deg, and removed data in < ±90deg. etc. to compare with traditional one). To indicate this method advantage, authors should compare the traditional method results with this method results in the time-profile figure (like a Figure3). Also, authors should describe the supportive evidence why the data removed or recovered from the data of traditional method using several cases.
14. Finally, the figures are not effective show. Please consider more effective show to understand easily. Authors show the many points in the figure. It indicated the data was reduced (or increase) by the filtering. However, there was not information how many points were change by the criteria in the manuscript.