

1 Response: We thank the editor for the decision to publish subject to minor revisions. These revisions have
2 helped improve our manuscript. Below we provide responses to the editor notes and suggestions in blue
3 font. All changes to the manuscript can be identified in the version submitted using Track Changes.

4 Editor Decision: Publish subject to minor revisions (review by editor) (12 Feb 2021)

5 Comments to the Author:

6 Dear authors,

7 Thanks for the very good responses to the referee comments.

8 Please make the suggested additional edits provided by the referees.

9 We have already edited the manuscript as suggested by the referees and the details are found in the
10 individual responses to them.

11 Please also

12 1) Provide the figures on white background

13

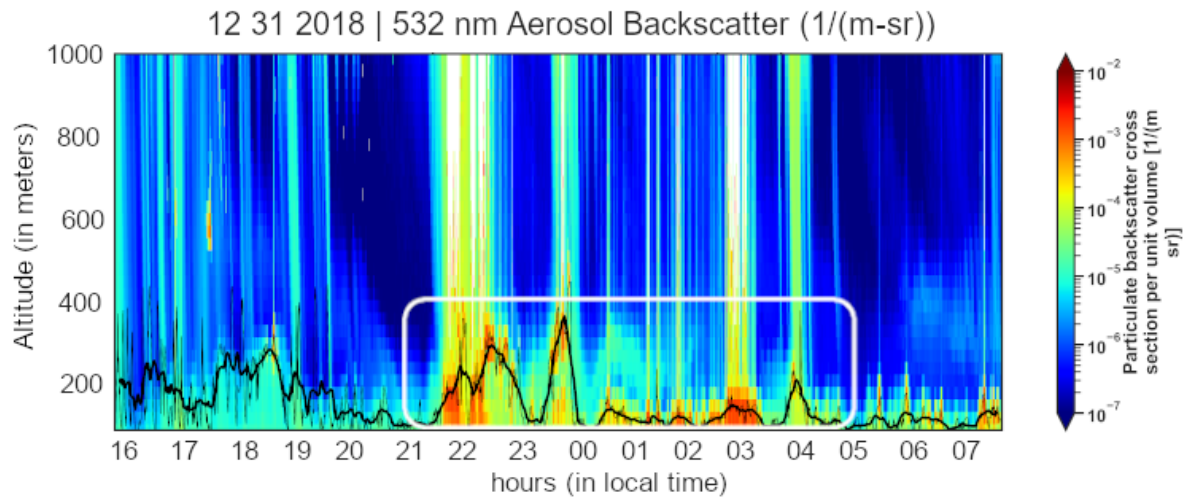
14 All figures are on white background.

15

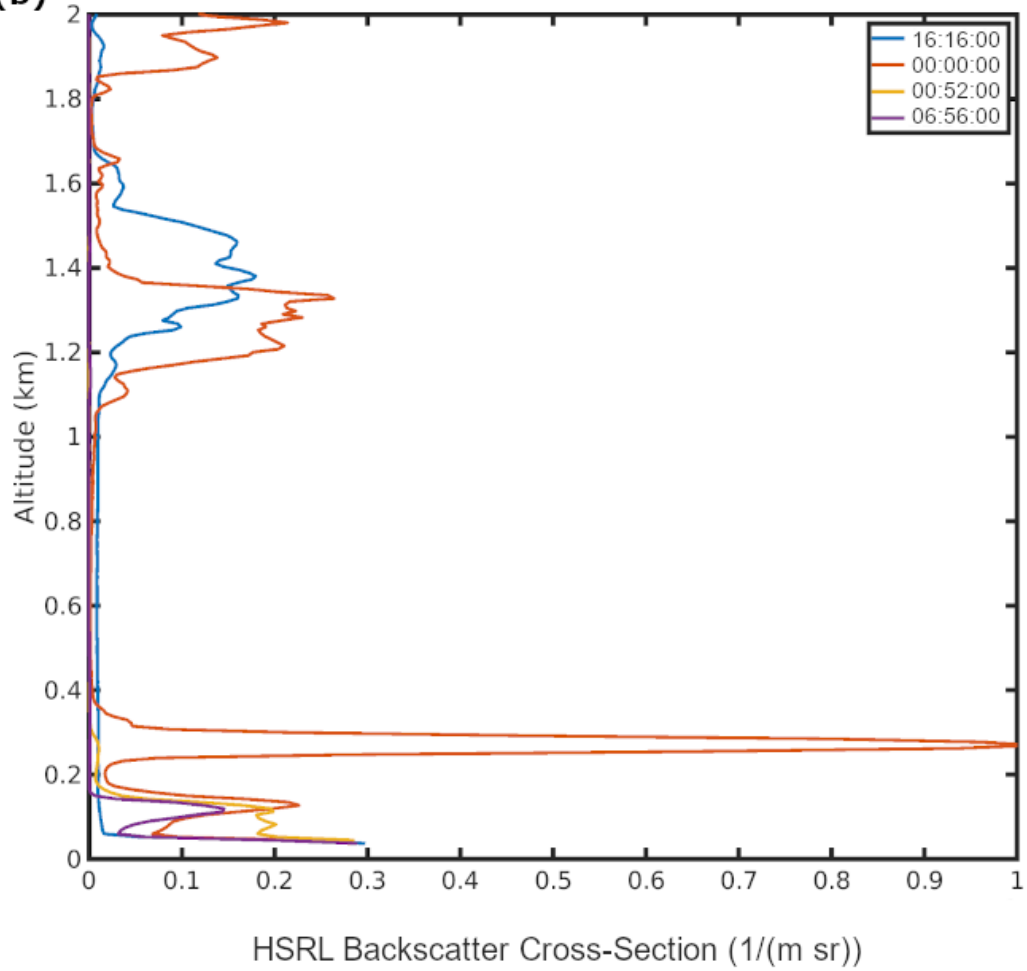
16 2) Use the same font size and fontweight in the texts in the different sub-plots a), b) etc in different
17 figures.

18 The font size and font-weight have been adjusted in the text of the sub-plots of Figure 3.

(a)



(b)



19

20

21

3) Please provide higher resolution figures as several of them suffer from low-resolution .jpg conversion.

22 The resolution of the figure in Figure 3(b) has been improved.

23 yours,

24 -tuukka

25
26 Response: We thank the two reviewers for thoughtful suggestions and constructive criticism that have
27 helped us to continue to improve our manuscript. Below we provide responses to referee re-review notes
28 and suggestions in blue font. All changes to the manuscript can be identified in the version submitted
29 using Track Changes.
30

31 Referee Re-Review: “Measurement report: Firework impacts on air quality in Metro Manila, Philippines
32 during the 1 2019 New Year revelry”

33 Anonymous Referee #1

34 February 8, 2021

35

36 The manuscript has been improved. There are some technical errors. Please check the manuscript
37 carefully.

38 Thank you very much for the encouragement and the notes. We have re-checked the manuscript and have
39 noted down the responses we have for the specific issues mentioned.

40 For example the quality of Figure 3 is poor;

41 The quality of Figure 3, specifically Figure 3(b), has been improved.

42 The legend should be added in Figure 5.

43 A legend has been added in the upper left portion of Figure 5.

44 In line 589 and Fig. 8(b), I can't understand why it is volume fraction?

45 We added the following to the text to remind the reader about how bulk kappa is calculated based on
46 individual kappa's and volume fractions of the compounds:

47 “This is expected because based on the ZSR mixing rule (Stokes and Robinson, 1966) the bulk
48 hygroscopicity (κ) is dependent on the sum of the κ values for individual non-interacting compounds
49 weighted by their respective volume fractions.”

50 We also added the letter “(b)” to the Figure 8 description:

51 “The speciated contributions were calculated by multiplying the (b) volume fraction of each compound
52 class by its intrinsic κ value (Table S4).”

53

54 Referee Re-Review: “Measurement report: Firework impacts on air quality in Metro Manila, Philippines
55 during the 1 2019 New Year revelry”

56 Anonymous Referee #2

57 February 1, 2021

58

59 **Statement:**

60

61 This manuscript has presented new measurements of air quality in Manila, Philippines during the 2019
62 New Year. Many toxins and hazardous air quality measurements were observed to be enhanced during
63 this time. The manuscript and its results showed great promise. There were many observations, and there
64 was certainly not a lack of content. Some of these measurements are novel and have never yet been done
65 in a Southeast Asian city.

66 The biggest concern I had with the initial submission of the manuscript was that it felt rather
67 disorganized. In particular, different sections were not linked together, there weren't very well-described
68 relationships between the sections, and there didn't seem to be clear or coherent connections between
69 them. In the results section, there were a number of comparisons to other cities around the world that felt
70 somewhat unclear and perhaps out of place. Moreover, manuscript tried to answer too many scientific
71 questions, rather than focusing on the scope of the measurements, as described in the mission of
72 *Atmospheric Chemistry and Physics: Measurement Reports*.

73 The authors responded with an Author Comment along with submitting a new version, which I believe
74 has addressed all my concerns. There is now much better flow and consistency between sections. The
75 results are presented much more clearly. The authors have also simplified their research questions down
76 to two main questions they want to address, which are now stated clearly in the introduction. Consistent
77 with these two research questions, the conclusion has been simplified to directly answer them.

78 I suggested time series figures for the metals, but the authors have clarified that measurements were made
79 only at a few points in time, and thus they have presented the best available data.

80 In the revised submission, I noticed five minor technical/typographical issues, noted in the comments
81 below. With pleasure, I would recommend to the Editor that this manuscript be published in *Atmospheric
82 Chemistry and Physics: Measurement Reports*, once these specific issues are addressed.

83
84 **Specific comments:**

85
86 Line 164: There is a reference to "PSA, 2015", but this does not appear to be in the references.

87 [The following reference was added.](#)

88 ["PSA: NCR Statistics: http://rssoncr.psa.gov.ph/, access: February 13, 2021, 2015."](http://rssoncr.psa.gov.ph/)

89 Line 166: There is a question mark immediately followed by a semicolon. Just one or the other should be
90 used (either would work).

91 [Only the semicolon was retained.](#)

92 Line 236: Standard convention is "UTC" not "UT"

93 [This was changed to "UTC".](#)

94 Lines 243-245: The statement, "Although there is some firework activity that is expected in the evening
95 of December 24 (before the firework event), this is minimal compared to that which is the focus of this
96 study" should have a reference.

97 [We added references about the firework culture in the Philippines and also previous New Year data from
98 the government institution.](#)

99 ["Dela Piedra, M. C.: A Filipino Tradition: The Role of Fireworks and Firecrackers in the Philippine
100 Culture, TALA, 1, 141-153, 2018.](#)

101 Roca, J. B., de Los Reyes, V. C., Racelis, S., Deveraturda, I., Sualdito, M. N., Tayag, E., and O'Reilly,
102 M.: Fireworks-related injury surveillance in the Philippines: trends in 2010–2014, Western Pacific
103 surveillance and response journal: WPSAR, 6, 1, 2015.

104 Santos Flora, L., Pabroa, C. B., Morco, R. P., and Racho, J. M. D.: Elemental characterization of
105 inhalable particulate emissions on New Year's day in Metro Manila, Philippines Nuclear Journal, 15, 35-
106 43, 2010.”

107 Lines 488-495, which describe the uses of metals in fireworks including which metal gives each color, is
108 introductory material and should be moved to the section starting at line 76. Same with the two sentences
109 about magnesium (lines 497-500). Actually, it seems most of these statements are redundant. For
110 example, “Sr gives the red color” is said in both places, and therefore the second time can be removed.

111 The description of the metals from Thallium (and so on) were removed from the results and transferred to
112 the introduction as suggested. The text inserted in the introduction is below. The redundant statements
113 were also removed.

114 “Thallium makes a green flame. Potassium and Ag (as AgCNO or silver fulminate) are propellants, Al is
115 fuel, and Pb provides steady burn and is also used as an igniter for firework explosions. Chromium is a
116 catalyst for propellants, Mg is a fuel, and Mg²⁺ is a neutralizer or oxygen donor (U.S. Department of
117 Transportation, 2013). Manganese is either a fuel or oxidizer, and Zn is used for sparks (Licudine et al.,
118 2012; Martín-Alberca and García-Ruiz, 2014; Shimizu, 1988; Wang et al., 2007; Ennis and Shanley,
119 1991).”