Review of revised version of amt-2020-517

General:

- The English can still be improved, my previous comments on the readability, unfortunately, still hold.
- Please be strict with your use of the word “phenomena/phenomenon”

Abstract:

- Check the grammar

Introduction:

- Again, check grammar, sentence structures and lengths, and jargon.
- Specify that this study is investigates the effectiveness of noise-reduction algorithms available in the Aethlabs Dashboard. This way, users who do not use this dashboard understand why these algorithms were the ones investigated.
- Line 55: “Hagler” not “Hegler”
- The new paragraph (Lines 54-66) is better suited after the paragraph ending in line 105.
- I suggest this flow for the introduction:

BC definition and importance → BC high spatial variability (disadvantage of fixed stations) → portable instruments = mobile monitoring → introduce MA200 → challenges of MA200 and mobile monitoring (noise) → introduce existing noise reduction algorithm (ONA) and disadvantages → introduce Aethlabs dashboard and offered noise reduction algorithms → objective of the study

- I am not completely satisfied with the motivation. You mentioned the evaluation of ONA by Hagler (who actually created it) and Van den Bossche 2015 (who, if I’m not mistaken, did not evaluate ONA, merely applied it to their dataset). Between these references you have in the introduction, there is not enough evidence that the ONA did not perform well for mobile measurement datasets. I suggest the paper of Cheng et al., 2013 (10.4209/aaqr.2012.12.0371) although not for mobile applications. But to simplify things, you may motivate your study by stating that a full assessment on noise reduction algorithms for the new microaethalometers used for mobile monitoring haven’t been fully assessed yet, etc. You may cite several mobile measurement studies who applied ONA on their datasets, but did not fully evaluate the effects of such data treatment. The telling of this story can still be improved.

Methodology:

- I think you don’t need to mention the manufacturer again here. You already did in the introduction.
- Strictly speaking, the microaethalometers are absorption (or better, attenuation) photometers. The MA200 particularly only measures “equivalent black carbon” at 1 wavelength (880nm).
- Lines 125-132 belong in the introduction. In this part, you can just focus on the instruments’ technical information relevant to your study.
- Line 135 has no relevance to the sentences that follow which are focused on quality assurance of the MA200 in the field. This subsection (2.1) can be rearranged:
    - Technical info of instrument and then quality assurance
    - Leave out the noise reduction algorithms part and move it to study design subsection because the analysis of these algorithms is the heart of this work.

    - Introduce here that you will only be using absorption/attenuation at one wavelength of the MA200.
- Section 2.3 can be combined with the quality assurance part of Section 2.1.
- Section 2.4: emphasize that these algorithms are the ones offered in the Aethlabs dashboard
- Line 206, specify with instrument Hagler used.
- Line 201, I think you mean Fig. S2 here.

Results and discussion

- I still do not understand the difference of NV (proportion of negative values) and NR (average noise reduction). In the methods, NR is defined as the # of negative values (after noise reduction) / total sample size. How is it different then from NV after noise reduction (which I believe is calculated the same way). And what is “average noise reduction”, which part of it is averaged? Averaged over all measurements (1-10)? But then, reading line 349, the 72% and 87.4% is now the average reduction of peak samples? This is very confusing. Based on the caption of Table 2, it seems to me that it is only about the negative values, and not the peak samples. Either separate these two criteria or improve the table caption.
- Lines 383-396 are better suited in the methods part when talking about quality assurance.
- Figure S8, I think (b) is 10-s and (c) is 30s.