

Atmos. Meas. Tech. Discuss., referee comment RC1  
<https://doi.org/10.5194/amt-2021-285-RC1>, 2021  
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## Comment on amt-2021-285

Anonymous Referee #1

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Referee comment on "An instrument for direct measurement of emissions: cooling tower example" by Christopher D. Wallis et al., Atmos. Meas. Tech. Discuss.,  
<https://doi.org/10.5194/amt-2021-285-RC1>, 2021

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[General comments]

Comment: This manuscript describes the development of an instrument package for characterizing cooling tower spray drift emissions of both wet droplets and dried aerosols. The instrument package measures the velocity, size distribution and concentration of the wet droplet emissions, as well as the mass concentration and elemental composition of the dried PM<sub>2.5</sub> and PM<sub>10</sub> emissions. Such a package provides increased measuring accuracy and is also suited for a range of measurements. The manuscript is well structured and easy to follow. However, a few questions should be addressed and the reviewer would appreciate further discussion in the manuscript. The reviewer recommends a minor revision of this manuscript before its publication.

[Specific comments]

Comment: Line 87, please describe the methodology used by Chuang et al., 2008. It's difficult to locate it if being explained elsewhere.

Comment: Section 2.1.2, Line 99 - 110, highlighting the item number for each item, some of which have, others of which do not, such as Anemometer, IMPROVE PM2.5, etc. Consistency assists readers in recognizing.

Comment: Table 1, good information and summary, how are they calculated or are there

any references cited?

Comment: Line 165, perhaps include the word "IMPROVE" in the first sentence stated in the text Line 105.

Comment: Line 163, state the model of this low-power notebook computer that was utilized.

[Technical corrections]

Comment: Line 212 "a parallel set of measurements are made adjacent to the tower" suggest changing "are" to "is"

Comment: Line 213 "IMPROVE PM2.5 and PM10 samplers is operated..." suggest changing "is" to "are"

Comment: Figure 1a, the font of item "13" is smaller than the rest of them. Keep consistency.

Comment: References "IMPROVE, 2020a. IMPROVE, 2020b. IMPROVE, 2017." Pages are not found. The website turned out: "The IMPROVE website has recently been updated and reorganized, and many links from the old site are no longer active."

Lastly, I'm looking forward to reading and/or reviewing the subsequent papers that detail the findings of these measurements at individual power plant cooling towers.

Please also note the supplement to this comment:

<https://amt.copernicus.org/preprints/amt-2021-285/amt-2021-285-RC1-supplement.pdf>