

Atmos. Meas. Tech. Discuss., referee comment RC1  
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## **Comment on amt-2020-490**

Anonymous Referee #1

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Referee comment on "Comparative characterization of the performance of bio-aerosol nebulizers in connection with atmospheric simulation chambers" by Silvia G. Danelli et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2020-490-RC1>, 2021

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### **General comment**

The paper focuses on an analysis of performances of nebulizers to produce airborne bacteria in laboratory experiments. The topic is interesting and it has useful application in bio-aerosol laboratory studies. The paper is well readable and suitable for the Journal. However, there are some aspects not very convincing or at least not very clear (see my specific comments). Therefore, I would suggest to consider the paper for publication after a major revision step.

### **Specific comments**

One aspect that is not very clear to me is that the paper is focused on the analysis of performance of nebulizers evaluated in terms of viable bacteria. I can understand the setup with the impinge that seems the one used to really evaluate the efficiencies. However, it should be explained what is the role of chamber experiments in the context of efficiencies of nebulizers. Have these experiments been used somewhat to calculate efficiencies? A discussion on this aspect is needed.

Figure 3 shows efficiencies larger than one, even if by definition should be limited to one. It does not seem to be a problem of uncertainty in the counting because several points are larger than one even including the error bars. What is the explanation? An interpretation of this values should be provided in the manuscript.

Figures 6, 7, and 8 show that when more viable bacteria are injected in the chamber, more viable bacteria are collected after deposition on petri dishes in similar conditions. This seems quite straightforward; I believe that a discussion explaining how the slopes are related to the efficiencies of nebulizers should be included. The differences in the slopes are due to the efficiencies of nebulizers or the injected bacteria in the x-axis have been corrected for the different efficiencies? Are they compatible with the efficiency found with the impinge setup?

The title should probably include the word performances, like bio-aerosol nebulizers performances" or something similar.

Line 9. Better atmospheric sciences.

Lines 65-66. This sentence is not clear. It should be added that counting errors are assumed to be equal to the square root of counting in agreement with a Poisson statistics. Or something similar.