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Comment on amt-2020-490

Michel Attoui (Referee)

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-RC2, 2021

Very interesting paper because the generation methods are always needed for the experimental works in aerosol science.

I have only few remarks to help the readers.

Line 63 NaCl 0,9 % is it by volume or by weight?

CFU ml^{-1} should give how many CFU in air in the best conditions?

Page 3 line 80 Collison nebulizer can be supplied in non-recirculation mode with a syringe pump. Line 90 inch is imperial unit. Why not cm?

Page 5 line 140 too many different units are used cfm; standard CFM; lpm; °C; K . I would suggest to keep lpm (1cfm = 28.4 lpm) and °C rather than Kelvin.

Page 6 line 175 blam slag produce how many particles /cc ?

Line 209 *cambre* should be chamber.

Page 4 line 113 remove the dot after 2.1

Page 4 line 126. The temperature accuracy unit is not given. Is it 0.2% or 0.2 °C?

Page 5 and others. The pressure is given in mbars. This unit is not legal unit. The pressure must be given in Pascal. The authors can add between parenthesis mbar if they want.

Page 5 line 149. 'The pressure in the ChAMBRe arise from 10-5 mb to atmospheric pressure with air (I guess)' . A precision should be given about this air? Is it atmospheric air (called lab air) or air from a cylinder? If lab air is used then the authors should precise the RH. Indeed it seems that they are not using any drying system.

Page 5 line 153. The pressure given is *little bit* incorrect 990 and 1020 bars are too high as pressure. I guess that the unit is mbars (again).

Page 7 line 203. What it means PM10? The size distribution is monitored with an optical particle counter. That will be very nice to give more details on the measured distributions since the OPC gives them. Are they reproducible? What is the sigma g of the distributions? What is the density value used to calculate this relatively high mass concentration (200 mg/m^3) from the number concentrations given by the OPC? 200mg/m3 seems monumental form me.

The sampling experiments in the ChAMBRe are conducted by gravitational settling. The gravitational settling of a particle of 1 µm is 3.5 10-5 m/s in still air. I think that your method penalizes the generator. I would prefer a single stage bio impactor if I had to carry these experiments.

The short conclusion of the paper is not giving the results of each generator clearly. It will be better to give the concentration 5CFU/m3 for each generator to help the reader. It will be good to recall the concentrations at the outputs of each generator always to help the reader.

I would suggest to add one paper at least on bio aerosols and atmosphere (for example Joung 2017 : *Bioaerosol generation by raindrops on soil*: Nature communications 8 : 14668)