

Interactive comment on “Solar Distillation of Impure Water from Four Different Water Sources under South-Western Nigeria Climate” by Saheed A. Adio et al.

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S10: Rephrase this line (havoc is not the appropriate terminology). For instance: The major problems caused by scarcity of drinking water

Response: Rephrased as highlighted in line 10-12

S20: TDS-measurement is in this case probably measured with electrical conductivity. The meter is measuring the EC and a linear relation is assumed between EC and TDS. So on the display there is a TDS-reading. This linear relation is not very accurate. The proper way to measure TDS is to measure all the ions in the water matrix in mg/l and

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add them up to obtain the total amount of dissolved ions. So I would suggest only to talk about EC in this paper.

Response: A digital meter that measures both the TDS and the EC was used. The modes were only interchanged to capture the required parameter at each specific time. As reported in lines 224-227. The total dissolved solid in the water samples was measured using a digital conductivity meter by Mettler Toledo with ± 0.5 % conductivity accuracy. However, emphasis has been reduced on TDS due to the suggestion made by the reviewer (RC1).

S51: Here electrolysis is mentioned but this is a process to split water in H₂ and O₂. What is meant is electro dialysis. This is a process with two different membranes and two electrodes pulling ions through the membranes resulting in one diluate (less ions) and one concentrate (more ions) stream.

Response: The suggestions have been effected as suggested by the reviewer and highlighted in lines 51-55.

S90: Why is roof water carcinogenic? I can imagine that it contains bacteria and viruses (from the birds on the roof) and it can contain metals like iron and zinc from the roof material but I cannot imagine that it contains carcinogenic compounds. If this is possible please refer to literature to prove this.

Response: This observation has been reported in the literature as cited in line 75-77.

S96: Rephrase "as a result of indiscriminate drinking of water". Drinking water according to the WHO-guidelines will never contain water borne diseases. So probably you mean that people use water that is not treated to drinking water or the quality is not meeting the WHO-guidelines.

Response: This has been effected as highlighted in lines 94-96.

S106: Mention here also the m² of the solar collector because this surface area contributes to the solar heat that is collected during the experiment.

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Response: The reviewer pointed out the need to mention the area of the solar collector that received the heat from the sun. This area is 1 square meter as described and highlighted in lines 158 - 161.

S207: Avoid terminology like "ridiculous"

Response: It has been corrected

S210: Mention the brand of the measuring equipment (but the TDS meter is in fact a conductivity meter)

Response: The brand of the measuring equipment is a digital conductivity meter by Mettler Toledo with $\pm 0.5\%$ conductivity accuracy. The digital meter was used to measure both the TDS and the EC. This is described in lines 224 - 227.

S281: Mention which graph is the active and which graph is the passive setup (probably: a and d are active and b and c are passive setups)

Response: Figures 4 (a and d) gives the distillate yield for the active solar still while Figures 4(b and c) represent the distillate yield for the passive still. This is captured as highlighted in lines 298-300.

S323: Mention that EC and TDS-removal rate is not very relevant in this case because the starting TDS is already below the WHO-guidelines. If seawater or brackish water was investigated this was a more relevant parameter. And for seawater the reduction rate should be something like 99.9% to obtain drinking water.

Response: We appreciate the suggestions of the reviewer and this line has been modified as highlighted in lines 341-346.

S336: The table here (label has no number!!!) shows a unit I cannot understand: Maximum daily production rate (kg/m²hr). So probably the proper unit is kg/(m².day) In the table you should mention for comparison your results for the passive setup and the active setup. And mention if the m² of the solar collector is used in this calculation.

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Because in fact you should refer the production to the total m² surface area you use to collect solar heat.

Response: The tables here have been numbered and the data are presented in SI units. Daily production rate is now written in litres per square meter of solar collector per day. This explanation addressed the observations raised by the reviewer.

Response: S346 The XXXX should be replaced by numbers??? Please do so. Otherwise delete this part.

Please also note the supplement to this comment:

<https://dwes.copernicus.org/preprints/dwes-2020-5/dwes-2020-5-AC3-supplement.pdf>

Interactive comment on Drink. Water Eng. Sci. Discuss., <https://doi.org/10.5194/dwes-2020-5, 2020>.

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