

Drink. Water Eng. Sci. Discuss., referee comment RC1
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Comment on dwes-2021-12

Anonymous Referee #1

Referee comment on "Qualitative and quantitative monitoring of drinking water through the use of a smart electronic tongue" by Alvaro A. Arrieta et al., Drink. Water Eng. Sci. Discuss., <https://doi.org/10.5194/dwes-2021-12-RC1>, 2022

Qualitative and quasi-quantitative monitoring of drinking water through the use of a smart electronic tongue

The paper is about the testing of a "electronic tongue" for 8 water quality parameters in a drinking water distribution system. The topic is of importance, since online measurements are expensive and laboratory measurements time consuming. The present study is relatively novel and provides interesting results. However, some more discussion on the results should be provided and the followed calibration and validation methodology should be better explained. Further, the study would have benefited from more variation in the water quality of the samples (now all samples come from the same water supply network).

General comments:

- Language should be checked by a native speaking person, also in relation to order of words, and punctuation (commas, etc.)
- Use past tenses for own work
- Redundant and irrelevant (and speculative) information should be avoided
- Discussion should be provided on the results also in relation to other literature (how does this work compare to other studies).
- Avoid subjective wordings as "very", "excellent", "undoubtful", "In general", etc.
- Explain better the variation in water quality in the network. Is the system fed by different sources e.g.? Can precipitation or dissolution be expected?

Specific comments:

- Line 36-37, should be "Monitoring the quality of drinking water is an issue of global concern and therefore the new analytical approaches are relevant".
- Line 38, "For this a" = "The"
- Line 39, delete "used"
- Line 41, "aqueduct" = "water supply"
- Line 44-46, rephrase sentence (not clear what is meant)
- Line 47, "constitutes"? what is meant?
- Line 47, indicate the parameters here.
- Line 50-51, rephrase sentence (not clear what is meant)
- Line 58, "have led to search new technological alternatives cheaper,.. " not clear what is meant, rephrase..
- Line 58, give also references (where does this statement come from..)
- Line 64-69, delete Figure 1 and references to Figure 1 (not own work)
- Line 70-72, rephrase sentence (not clear what is meant)
- Line 74-76, rephrase sentence (not clear what is meant)
- Line 80, "household" = "distribution"
- Line 83, should be "The reported electronic tongue devices are..."
- Line 84, should be "of a miniaturized.."
- Line 85, explain "PSoC"
- Line 88-90, delete sentence
- Line 93, should be "in the drinking water supply network.."
- Line 94, "communes" = "communities"
- Line 94, numbering of communities does not make sense to readers, when localization is not given
- Line 96, what is the reference and unit of the altitude?
- Line 98, "aqueduct" = "water supply"
- Line 105, "Health of Sucre"?
- Line 106, should be "analyzed parameters"
- Line 111, "S."
- Line 112, introduce "PPy" here and then always use de abbreviation
- Line 112-113, rephrase "sensor array a portable multipotentiostat controlled.." (not clear what is meant)
- Line 140, should be "obtained signals"
- Line 152, should be "a different group of samples"
- Line 153-154, should be "and the same sampling protocol, measurement with the smart electronic tongue and treatment of data were applied".
- Line 154, also explain the purpose of this exercise here
- Line 157-158, should be "eight physicochemical parameters related to drinking water quality

(alkalinity, calcium, residual chlorine, chlorides, total hardness, phosphates, magnesium and sulphates) were evaluated".

- Line 157, not true that they are the "most important" parameters..
- Line 160, should be "created prediction models"
- Line 165, explain how calibration/validation is performed..
- Line 170, "made" = "done"
- Line 172-173, delete "which.... Purpose"
- Line 173-174, rephrase sentence
- Line 174, should be "provided"

- Line 175, "which constitutes the fingerprint"? (not clear what is meant)
- Line 176, should be "showed"
- Line 175-186, not clear how anodic/cathodic, oxidation and redox processes can we concluded from the figure 3. Explain (with reference to literature).
- Line 187-188, rephrase sentence (not clear what is meant)
- Line 188-189, should be "In Figure 4 the behavior of S1 sensor (PPy/SO4) against some water samples taken at different sampling points (M1, M2, M3, M4 and M5) is shown as an example".
- Line 189-190, delete sentence
- Line 191, not clear from the figure
- Line 201-202, delete sentence
- Line 204, should be "obtained signals"
- Line 204, discuss with other literature
- Line 210, what is meant by "values"?
- Line 211-213, delete sentence from "this procedure" onwards..
- Line 217-218, delete sentences
- Line 220, should be "analyzed samples"
- Line 224, explain what is meant by "separation" (separated from what?)
- Line 228, "made" = "done"
- Line 228, explain better (with literature) why change in water composition is expected. When it is the same source then salt content, hardness, alkalinity hardly change.. (maybe only chlorine concentration)
- Line 230, aeration processes are not to be expected in a distribution network and maintenance and cleaning could have been noticed during sampling..
- Line 231-233, delete sentence from "which" onwards
- Line 243-248, Figure 6 does not add to the story so delete (including references to the figure)
- Line 253-254, delete sentence
- Line 256, what is meant by "quase-quantitative". It is quantitative or not..
- Line 257-260, delete sentences
- Line 267, explain how calibrated and validated
- Line 267-269 delete "(the results... presented"
- Line 270-275, explain the "outliers" in hardness, alkalinity, calcium etc.. Did this water come from a different source?
- Line 278-279, delete sentence
- Line 291-297, delete sentences (too speculative)
- Line 299, start conclusion with small introduction about purpose of the study
- Line 302, should be "analyzed sample"
- Line 309, should be "provided"
- Line 314-315, delete sentence