

Interactive comment on “A practical approach to lake water density from electrical conductivity and temperature” by S. Moreira et al.

Anonymous Referee #2

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This manuscript provides a relatively simple and straight forward approach to improve the estimation of water density from water temperature and electrical conductivity by including variables to incorporate the effects of different solutes in the waterbody. I think this material is of interest to the readers of HESS; however, I think that a few additional things could be added to significantly improve the manuscript prior to being officially published (described below).

Additional Discussion items that would be useful:

1. Given that the approach developed in this paper does require considerable water quality information, it would be useful to provide a suggestion on how to use the results of this paper to estimate the coefficients in other water bodies that do not have this detailed information.

C1

2. The main benefit of this new approach appears to be an improvement in the absolute estimate of density. It would be helpful to discuss the absolute improvement in the density estimated versus the relative improvement. In other words, does this approach primarily shift the curves in Fig. 1 (first column) up and down? If this is the main improvement, it will not significantly change the results that have been obtained in most modeling exercises. I think that this discussion should be included.

General comments:

1. Most people refer to Mono as Mono Lake not Lake Mono.
2. In your comparison of methods, why is the most common approach the UNESCO approach not used for Rappbode, Geneva, and Constance. Even if it provides similar results to another mention, it should be at least mentioned.

Specific Comments:

Page 1. Modify the title to say “approach to estimating lake water density”

Page 1, line 14. Consider adding the word “absolute” in front of the word accuracy.

Page 1, line 21. Remove the words by far.

Page 2, line 6. Wouldn't it make sense to add seasonality as your main example?

Page 2, line 12. Add the word “do” between that and not.

Page 3. Line 5. I would delete this sentence

Page 3. Line 7. Why not include this sentence in the paragraph before this.

Page 3. Line 33. Consider adding (and lake specific variables describing the effects of differences in the chemical composition of the water) to the end of the sentence.

Page 4. Line 3. Change the word deliver to provide.

Table 1. Consider cutting back on the number of significant digits, unless they are real.

C2

Table 2. There is no discussion of the starred lamda's in the table. If it is important it should be included in the paper. If not it should be deleted. Consider cutting back on the number of significant digits, unless they are real.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-36, 2016.