Ocean Science Discussions

Ocean Sci. Discuss., referee comment RC3
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Comment on os-2022-2

Trevor McDougall (Referee)

Referee comment on "Technical note: TEOS-10 Excel – implementation of the Thermodynamic Equation Of Seawater – 2010 in Excel" by Carlos Gil Martins and Jaimie Cross, Ocean Sci. Discuss., https://doi.org/10.5194/os-2022-2-RC3, 2022

Dear Carlos et al.,

Please note that the comment on your paper by Rich Pawlowicz is actually a "referee comment", so your paper has in fact been reviewed by two reviewers (Paul Barker and Rich Pawlowicz). I am posting this as a "referee Comment" so that the computer system will then tell me (as editor) that the paper has received two reviews, and we can proceed with it.

I have read both reviews, and your several replies to these reviews, and I recommend acceptance of this OSD manuscript, so it proceeds for typesetting and publication in Ocean Science. Well done.

I have one minor comment. I read that, at least at one stage, you were concerned with the words "potential density" and thought that it should perhaps be called "conservative density". I disagree. The word "potential" in "potential density" refers to the density and not to the temperature that is used to evaluate the density. A "potential density" is calculated by doing a thought experiment where an insulating bag is placed around a seawater parcel and its pressure is changed. The "potential density" is the density of the seawater parcel at the new pressure. This value of density can be calculated either as rho_twiddle(SA,pt,p_ref) or as rho_hat(SA,CT,P_ref). The answers are the same whether potential temperature, pt, or Conservative Temperature, CT, is used in these two different polynomial expressions.

Well done, and I look forward to seeing this manuscript published.