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Ocean Science
Discussions

Interactive comment on "Numerical implementation and oceanographic application of the thermodynamic potentials of water, vapour, ice, seawater and air – Part 2: The library routines" *by* D. G. Wright et al.

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General: Presented paper is an important guide for the practical implementation of the thermodynamic properties of different states and natural mixtures of water (pure fluid water, ice, seawater and humid air). Formulations of these properties are described in the Part 1 and endorsed by IAPWS and IOC.

Specific comments: 1. Using the same superscript 'SW' referring to "SeaWater" and "Salt dissolved in Water" can confuse due to different properties of these substances.

"Salt dissolved in water" can be in salt groundwater springs, salt lakes etc.

2. The International System of Units (SI) in Oceanography (UNESCO technical papers in marine science#45) recommends using "Sea pressure" parameter, i.e. hydrostatic pressure at the point of the ocean. This parameter is derived by substituting atmospheric pressure from absolute pressure – but not standard pressure, as shown for parameter p0 in Convert_0.bas. Following presented equation, negative p0 pressure will be derived at the surface in a case if the real atmospheric pressure is lower then the standard pressure.

3. In the presented paper, it is not clear what the procedure for numerical implementation and acceptance of the regional coefficients for the absolute salinity determination should be used.

4. Introduction of the Reference salinity is going to become another historical anecdote about the acceptance of the standard value 35 for the different definitions of salinity. At the time of introduction of the PSS-78 chosen value of 35 was determined by chlorinity method. Keeping historical constituency of salinity measurements was more important then SI-unitizing of the salinity parameter. Now, using of two CTD-measured parameters of salinity (reference and practical) will generate misrepresenting of salinity data. I would recommend reading more carefully the materials about the history of introduction of the PSS-78, with respect to the great work done. Some information could be found in UNESCO papers mentioned below and here: http://www.salinometry.com/salinity-history/

5. It would be good to see in references the fundamental collection of works in the PSS-78 development: UNESCO Technical papers in Marine Science #37 "Background papers and supporting data on the Practical Salinity Scale 1978 ", UNESCO,1981

Technical comment: Practical salinity is dimensionless parameter, and using PSU units in the library scripts is unacceptable.

Interactive comment on Ocean Sci. Discuss., 7, 649, 2010.