

Interactive comment on “Optical backscattering properties of the “clearest” natural waters” by M. S. Twardowski et al.

Anonymous Referee #2

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General comments: This paper provides a detailed description of the foundations behind the backscattering measurement and how to make measurements in very clear waters. It also provides a biological interpretation of the backscattering measurements collected along a transect line in the South Pacific Ocean. The paper is written in a clear manner that is easy to read. It addresses issues important to the operation and interpretation of a newer class of instruments that are becoming more commonly used.

Specific comments: I think that the total backscattering at 650 nm should not be presented as "not distinguishable from pure seawater". You state that the values from Morel do not extend to this wavelength. I think that it should be presented that "the total backscattering at 650 nm was within the error in the estimated backscattering by water at this wavelength". This is a small change, but the form currently used makes it

seem as if the two are well known and equal, versus the measurements falling inside the error bounds of the estimates for scattering by water. Of greater concern is the use of the $bbp(650)$ in the analysis. If the particulate backscattering is indistinguishable from water, then it should not be used in the analysis shown in Figures 5, 7, 8, and 9. Looking at Figure 7 I am left wondering how all the ratios are positive when the absolute value of $bbp(650)$ is clearly negative a large amount of the time. The paper needs to describe how you chose to exclude data from the $bbp(650)$ profiles or modified the $bbp(650)$ values when doing analysis.

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