

Interactive comment on “Optical tools for ocean monitoring and research” by C. Moore et al.

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I found this paper to be exceptionally well written, highly readable and written in a style accessible to the non-specialist. As a review of the state of the art in optical sensing within the oceans it appears thorough and up-to-date and is certainly well-referenced. The manufacturer list is very useful, and I could not find any selectivity or partiality in the list. However, to avoid any doubt over impartiality, it is important that the commercial interests of the authors are fully and openly declared. For Moore, his affiliation is clear, if Lewis still has an affiliation with Satlantic then this needs to be acknowledged. If any of the other authors have commercial affiliations then they too need to be listed.

The following points of detail emerged from my reading of the paper as a generalist rather than a specialist in this area of sensing technology:

Page 661 lines 22/23 - I'm not sure that "continue" in line 23 is quite the right word

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given that the sentence starts with "improve and reach a broader community".

Page 662 line 2 - is this not a sweeping statement about LIBS? I realize the details are dealt with later, but there is a risk of simplifying the many issues with this (and other technologies) given the range of concentration of substances of interest in the ocean.

Page 662 line 22 - also refer to the Jonsson et al paper within this issue (P Jonsson, I Sillitoe, B Dushaw, J Nystuen and J Heltne, Observing using sound and light - a short review of underwater acoustic and video-based methods).

Page 663 line 3 - "AOP sensors are inherently passive" - is there another word for inherently that avoids any possible confusion for the non-specialist with the I in IOP?

Page 665 line 9 - I think a comment on the success, applicability, assumptions etc of the inversion methods would be appropriate here. It's a good example of the sensor/processing combination that may become more prevalent?

Page 667 line 19 - perhaps "transitioning"; is more appropriate than "transcending"; (rise above).

Page 667 line 20 - no mention of speed of response, which is a particular advantage of the optical technology for this measurand.

Page 669 line 20 - I'm not familiar with the Hartmann array - is it worth a few words of explanation?

Page 670 line 27 the references do not seem to cover the use on AUVs - the Cunningham et al. (2003) reference already used would be suitable here as an AC9 was used on the Autosub as well as a flow cytometer (which is where the reference is used).

Page 671 line 19 - "biological variability" - to avoid doubt this needs to be qualified as to what aspects of biological variability can be assessed with these methods.

Page 673 line 4 - PSII should be written out in full on first occurrence?

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Page 673 line 11 - "nanostructure" - what precisely is meant?

Page 673 line 13 - is not the fluorescence lifetime not the "average time" but the time for the fluorescence to decay to $1/e$ of the initial value?

Page 674 line 15 - two ands in a row

Page 687 line 27 - is it worth mentioning the question of representativeness of the very small samples used by MEMS systems, e.g. for patchy and low concentration phytoplankton species in cytometry.

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