

Interactive comment on “On the influence of wind and waves on the underwater light field” by M. Hieronymi and A. Macke

Anonymous Referee #1

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This manuscript follows on from Hieronymi et al. 2012, which establishes the modelling framework employed. It takes the work further by exploring the effect of different wind-induced wave conditions. The paper is generally well written, with clear graphics, and adds useful information to the previous publication. However the authors may care to address the following points:

1. The present paper could be significantly shortened by making better use of cross-referencing to background material that already appears in the earlier one.
2. The abstracts of the two papers are very similar, suggesting a much greater overlap in subject matter than is apparent on reading the full text. In order to differentiate the two papers, it would be useful if the material in Section 4 (the summary) appeared in the abstract.

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3. The title is somewhat misleading, since the paper considers only a very restricted sub-set of the possible influences of wind and waves on the underwater light field. Enhanced reflection at low solar angles, the effect of white caps and bubble clouds, and wavelengths other than 490 nm are all excluded.
4. The results presented are for the sun at zenith, 10% diffuse sky illumination, and very clear oceanic waters. There is a need for some kind of sensitivity analysis to indicate to what extent the conclusions drawn from the simulations carried out under these highly idealised conditions can be applied under more realistic conditions.
5. The authors raise the question of whether wave-induced underwater flashes have any significance for phytoplankton photosynthesis, but do not appear to draw any firm conclusions on the issue. Perhaps the question could either be addressed properly, or simply dropped from the paper?

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