**Ocean Science**
Discussions

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# *Interactive comment on* "Modelling of underwater light fields in turbid and eutrophic waters: application and validation with experimental data" *by* B. Sundarabalan and P. Shanmugam

**Anonymous Referee #2**

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Anonymous Referee

General remarks The authors present an improved radiative transfer model for simulating underwater radiometric parameters and quantities especially in turbid and eutrophic waters. The model results are validated with measured radiometric quantities in a wide variety of coastal waters. Because the underwater light fields are influenced by many factors the present model is designed to include new surface boundary conditions, bottom boundary conditions, new phase function, source function by comparing to existing models. The results are apparently converging with measured radiometric data for different waters. This work seems very interesting and may provide alternative approach to simulate underwater light fields in coastal waters. While the proposed model rep-

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resents a significant advance of previous models in turbid and eutrophic waters, it is my opinion that the manuscript can be accepted for publication after a minor revision based on the comments given below.

Specific comments The treatment of homogeneous and inhomogeneous water column conditions is a complex problem which is not addressed simultaneously in the previous work. To simplify the situation, the authors consider the average of these two terms (both may not be equal) to compute the light field at a given depth. I think this solution is convincing for turbid and eutrophic waters, but this section lacks some recent references.

It is not clear what are the depth and surface resolutions of the model. Can the model solve the underwater light field at any arbitrary depth? I recommend giving a brief description how the simulations were done; for example, bottom type and sea surface slope etc.

Concerning in-water optical models, more details on how these models were developed and what were the ranges of in-situ data used for deriving the model parameters. Some parameters require a reference.

Addition information with regard to the error calculation is required.

Check the consistency of some symbols and notations used in the manuscript.

The authors may consider providing information on the computational time of the present model.

A brief discussion about existing RT models should be incorporated.

Interactive comment on Ocean Sci. Discuss., 11, 2119, 2014.