Biogeosciences
Discussions

Interactive comment on "Capturing optically important constituents and properties in a marine biogeochemical and ecosystem model" *by* S. Dutkiewicz et al.

Anonymous Referee #2

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The manuscript describes an update version of the MIT biogeochemistry and ecosystem model that contains explicit treatments of the main optically active constituents (OAC) of seawater, including 9 different phytoplankton functional groups. One important feature is the independent treatment of detritus and CDOM. The model is presented, and simulation results are compared to selected field data. By changing the relative importance or optical characteristics of each OAC, the numerical experiments allow to estimate feeds back to the system's biogeochemistry, and that is the main goal of the manuscript. The work is well written and relevant, and the model will be much improved by discussions and input from the scientific community, making Biogeosciences Discussions a good forum for the paper. I thus recommend the publication of this work.

Questions and Comments: 1- Introduction: It is not clear to me the choice of using a specific AMT-15 cruise, as oppose to the others.

2- Model description: a. are the 25 nm bands averages? b. What are the spectral resolution of the absorption and scattering coefficients used? c. Phytoplankton functional types – throughout the text, the term is sometimes replaced by community or species. I would suggest to keep as PFT, to be consistent with the objectives of the work. d. How should the reader interpret the "phytoplankton establish a repeating pattern after about 3 years".

3- Model results a. I found section 3 too long, and I am also not too sure what new can be learned from the individual comparisons with PHYSAT results and MAREDAT dataset

4- Sensitivity experiments a. I missed a discussion for probable causes for the experiments dealing with bb of phytoplankton had no apparent feedback on the system.

Interactive comment on Biogeosciences Discuss., 12, 2607, 2015.