

Interactive comment on “Parameterization of the light absorption properties of chromophoric dissolved organic matter in the Baltic Sea and Pomeranian Lakes” by Justyna Meler et al.

Anonymous Referee #1

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General comments

The paper presents very interesting work. Obviously, a lot of careful work has gone into this study and the assessment of model performance is detailed and thorough.

It does, however, not become clear what the motivation for of this work is. What are potential applications for each of the presented models and where is the advantage over previously published work? What progress has been made?

Specific comments

Why was a linear function fitted to the data in Figure 2 rather than a curve which would appear to represent the entire data range better?

C1

Slope values for the data set presented seem fairly high. What about the quality of the data used to establish the models developed here: is there a dependency of slope values on concentrations which is caused by artefacts due to limited data quality (the use of a short pathlength in combination with relatively low CDOM concentrations)? Low coefficients of determination for the calculation of slope values point towards issues here.

Direct comparison of the different models (presented here and previously published) might be easier if values were presented in separate tables for every statistic metric rather than each model. Similarly, Figure 10 could be re-arranged, so that each panel shows the outputs of all models for a single chlorophyll concentration which would enable a more direct comparison.

Page 7: It would be helpful to add a short description and purpose of the different statistical metrics.

The structure, especially of the Discussion section (e.g. paragraph II. 537ff.), should be revised as it is difficult to follow the argumentation at times. The Discussion contains paragraphs better suited in the Introduction and Results sections.

Technical comments

The language needs to be tidied up thoroughly prior to publication. It distracts from the content.

The symbols for CDOM absorption coefficients and abbreviation for chlorophyll a concentration are used inconsistently throughout the manuscript.

Lines 177 – 180: Add reference for protocol used in this work.

Line 188/ Eq. 4: Specify at which wavelength chlorophyll specific absorption coefficients calculated.

Line 198: The term 'standard deviation' is slightly mis-leading in this context as Eq. 5b

C2

is used as descriptor of the overall error rather than variability in the data.

Line 203: Move symbol definitions to the top of the paragraph, i.e. line 197.

Line 264: How are relative RMSE values calculated? If a parameter has a logarithmic distribution, simply dividing the RMSE by the mean value creates a potential bias.

Line 452: 'uncertainty level' - Which statistical metrics does this refer to?

Line 519ff: This paragraph contains multiple subjective assessments of model performances. It would be helpful to add numbers to support the statements made.

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