

Interactive comment on “Seasonal variability of upwelling radiance polarization over the Southern Baltic surface” by Włodzimierz Freda

Anonymous Referee #2

Received and published: 21 March 2018

The manuscript presents a very important topic in ocean color remote sensing and uses an extensive dataset combined with Monte carlo simulations. In my opinion the manuscript requires some revision to improve flow of text and aims of the study. Here are some aspects that could help improve the manuscript

General questions after reading the manuscript i am wondering -would polarization be useful in winter times assuming more days of overcast skies and diffuse light?

-what are the uncertainties in your observed dataset?

-i am missing the statistical analysis of the data in Table 1 to show the 'seasonal variability' of the dataset or at least the simulated dataset in my opinion since the goal of remote sensing is to get Remote sensing reflectance an essential climate variable, i

C1

am wondering would it not be possible for your study to derive Rrs from the insitu (assuming this will be your reference dataset) measurements assuming a Bb etc then you also do the same for simulated polarized light to estimate the Rrs and compare the two Rrs from simulation and insitu looking at differences over seasons

-the IOPs of the different water types would vary seasonally and i am wondering do you have any additional data to support some of the points you raise in the discussion that is measurements of the water constituents and backscattering maybe even from satellite as a proxy. e.g Primary production enhanced or algal bloom could lead to higher scattering of the target region in the open water

-what is the message from Table 2 how can one use such information? what are the implications of this study findings in advancing ocean color remote sensing

additional comments Abstract line 1 -revise 'Polarization of light may be used to improve the remote colour sensing of sea water.', is it not something like 'Polarization of light leaving the ocean surface has the potential to improve quality of information retrieval from ocean color remote sensing (OCRS)'

line 2 -'sun glints' do you mean 'surface reflected and sky glint'

line 8 -'several years' can you put a number to this?

line 11 -'strong correlated' can you put some numbers to this as this is a qualitative statement

Introduction line 16 -replace 'marine' with 'aquatic' to include all water types

paragraph 1 -there is an interesting paper by Brady might be of interest to you Brady et al 2015. Open ocean fish reveal an omnidirectional solution to camouflage in polarized environments. Science. 350(6263):965-969

paragraph 3 -replace 'colour remote sensing' with OCRS ->ocean color remote sensing

line 17 - what do you mean by this sentence 'Another factor that disturbs the colour

C2

remote sensing is surface reflected light that comes both from sky reflections and sun glints, that for some directions makes it difficult to gain a signal from water depth.' -is it not the case that surface reflected and sky glint affect OCRS → because they are part of total water leaving radiance (glint + water constituents)?

line 2 page 6 - 'after ?.' what does this mean?

Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2017-97>, 2017.