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Discussions

Interactive comment on "Performance evaluation of ocean color satellite models for deriving accurate chlorophyll estimates in the Gulf of Saint Lawrence" *by* M. Montes-Hugo et al.

MM Montes

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Reviewer Specific comments: Page 9308 -Line 3: I'm curious what kind of result you would obtain if you use aph*(λ) spectrum presented by Bricaud et al.(1995) in addition to the SEADAS default one.

Author It is a relative question since it would depend on the type of algorithm used for estimating chl in the first place. This will be translated later in more uncertainty as it was highlighted along the text. We performed some calculations of chl based on EC and in situ aph* and then we couple these results to Bricaud et al. 1995 expression in order to compute aph* These preliminary results show that using a variable aph*

parameterization as a function of chl as suggested by Bricaud et al. 1995 increased the median relative bias per cruise up to 11.8%. This error is smaller than that based on constant aph* value per wavelength as computed in our contribution. However, this reduction is part explained by the lack of independency between variables (i.e., chl shows up as independent and dependent variable parameter) used to develop the aph* function of Bricaud et al. (1995) function.

Reviewer Page 9310 -Line 2: λ0 of QAA is not always 555 nm; for high absorbing waters (a(λ) 0.3 mËĘ-1), Lee et al.(2002) proposes to use rrs(λ0) at 640 nm instead of that at 555 nm.

Author In QAA version 5 algo (see reference) Lee suggested 550Âǎ555 or 560 nm depending on the sensor. This is the version used in our calculations. We agree that 640 nm should be used in very absorbing waters but this has not been the case in the GSL during our surveys where a(440) usually below 0.3 1/m. Also, SeaWiFS has not a 640 nm channel. Despite this, we added to the text this 'potential' situation.

Reviewer -Line 6: "CDOM" that you call in the manuscript is indeed CDM (colored detrital matter = CDOM + non-algal particles). This term should be modified throughout the text to avoid confusion.

Author That was modified throughout the text when needed. Some studies are based on acdom but some work with acdm

Reviewer -Lines 12-13: 6 centered wavelengths (412, 443, 490, 510, 555, and 670 nm) rather than 5 wavelengths. Author Ok, done

Reviewer -Lines 11-22: In the original GSM algorithm, the final aCDM(443) is produced by multiplying a correction factor 0.754188 at the end (Maritorena et al., 2002, Applied Optics, Volume 41, pp. 2705-2714). This factor is no more used (Maritorena, 2010, personal communication). I'm curious what kind of result you would obtain if you remove this factor.

Author Sorry but I couldn't find that factor 0.754188 in Maritorena et al. 2002. We work in SeaDAS 7.0 with the version of GSM corresponding to Maritorena et al., 2002. It is out of the scope of this contribution to investigate these differences.

Reviewer Page 9313 -Lines 7-9: Not clear. Do you mean that aph(443) estimates using QAA fell between those using EC and GSM?

Author It was meant that the number of valid aph443 estimates for all the datasets was EC > QAA > GSM. We improved the text adding intermediate for qaa

Reviewer -Lines 24-26: What is the definition for low, intermediate, and high aph(443) values?

Author This is defined in section 2.6

Reviewer Page 9314 -Line 4: "QAA(0.83) with respect to EC(0.66) and GSM(0.29)". What are these values in the parentheses? This sentence might confuse a reader.

Author they refer to proportions of samples having a relative bias smaller than 50% We rewrote

Reviewer -Line 14: td (time difference, h) should be explained both in the text and the Figure 3 caption.

Author Done

Reviewer Page 9315 -Lines 3-29: It's hard to read values in white-black colors of the Figure 4. This can be fixed by using difference colors.

Author We tried before with other palettes and we found that a grey scale it is a better way to show contrasting values

Reviewer Page 9319 -Lines 20-21: NOMAD dataset used for SA algorithm includes many case II waters as well.

Author We agree and eliminate case I waters. We rewrote "First, SA computes a(670)

with a model constructed as a function only of phytoplankton concentration as estimated from chlorophyll a (Bailey et al., 2010)"

Reviewer Page 9320 -Line 3: Insert "to" between "respect" and "aerosol"

Author Done

Reviewer Page 9320 -Lines 12-14 and 16-18: Any references?

Author No sorry, this interpretation is based in river discharge rate differences between May 2000 and April 2001

Reviewer Additional references (not shown in the manucript): Bricaud, A., Babin, M., Morel, A., and Claustre, H. (1995), Variations in the chlorophyll-specific absorption coeffi- cients of natural phytoplankton: Analysis and parameterization, J. Geophys., Res., 100(C7),13321-13332.

Author We added this reference along the text

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