

Interactive comment on “Optical remote sensing of the Gulf of Gabès – relation between turbidity, Secchi depth and total suspended matter” by R. Katlane Essersi et al.

Anonymous Referee #2

Received and published: 7 February 2011

This review refers to the latest version of the paper (correction after the first review of anonymous referee #1)

GENERAL VALUTATION

The authors are approaching a very interesting topic, though the contents presented in the paper are quite poor and the presentation is not precise (i.e. a lot of typo). The main result is the validation of an existing empirical relationship, developed by Nechad et al. for the Belgian coastal waters, for the study site. On the other hand, no explanation is given on the choice of semi-empirical models rather than a radiative transfer model-based approach. Even if more parametrization is required, a simple radiative transfer

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model can be calibrated with the data collected and a more reliable estimate of TSM can be computed. At least, it should be nice to see an argumentation, sustained by a literature overview, in the introduction. Moreover, the depth of the water column can be directly taken into account in these models, providing information on the interference of the bottom signal to the remote sensing reflectance. This is particularly important in coastal – shallow water, as it seems to be in your case.

SPECIFIC COMMENTS

- Citations: all the citations in the text should be changed: i.e. Buroillet et al. (1979), and not Buroillet AND al. (1979): this form is an abbreviation of the latin “et alii” (it means “and others”).
- page 1, line 31: you say that the study site is a shallow continental shelf. Please give quantitative information (i.e. mean, minimum and maximum water depth).
- page 1, line 41: The study of ... illustrateS ...
- page 2, line 7: reference of Morel et al., 1983, not found in the bibliography.
- page 2, line 22: you say that MODIS derived TSM were compared and correlated. This is not shown after: indeed only MODIS turbidity derived (eq.2) is shown, and nothing on eq. 1 (TSM) is done. So, or you refer only on turbidity relationship and maps, or you show the analogous work done for TSM.
- page 2, line 38: please specify which features.
- page 3, lines 3,4,5: a lot of typo in the equations (parenthesis)
- page 3, lines 6–18: here you mention TSM but then you don't show the results. Please refer to the previous comment for corrections.
- page 3, line 25: the citation of Doerffer R., 2010 should not be into brackets.
- page 3, line 32: please give the definition of case II waters.

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- page 4, line 10: a “.” is missing after “(Fig.2)
- page 4, line 14: here you measure the turbidity and say that also TSM is high. Can you give the value of TSM. Moreover, the values reported in Fig. 2 are not so high (TSM is almost always lower than 4.5 mg/l): with these concentrations I guess you should see the bottom.
- page 5, line 2: a “S” is missing: in ...showS
- page 5, line 6: algorithm (1) (more appropriate is to say “relation”) is not validated in this paper!
- page 5, line 12 (and fig. 4): here you show the relationship between turbidity derived from MODIS (applying eq. (2)) and turbidity measured in situ. I agree there is a correlation, but if eq. (2) is correct for the Gulf of Gabes, I would expect a 1:1 correlation. I think this figure is tricky and you did not explained well the procedure you are doing. When then you create the turbidity maps, do you take into account this relationship for the correction or you just apply eq. (2)? This is not clear. I think you should do it! If the answer is YES, then you have just adapted relationship (2) to your study site, it's the same as doing a calibration of the parameters in eq. (2). Then, a validation with an independent dataset should be done, and you can't say that the same relation can be applied in the Belgium waters and in your case. If the answer is NO, then Fig. 4 should show a 1:1 line, as this is a validation, and you would expect the estimates to be equal to the measures. And, it is clear that this is not the case, if I have understood your work in the right way.
- page 5, line 14: a “.” is missing at the ens of the paragraph.
- page 5, line 36: you have to clarify the procedure you have followed: algorithm (2) was adapted (re-calibrated) or just tested?
- page 6, lines 3-4: ... the algorithm... are (is?) ... shows: pleas be consistent with single-plural subject of the sentence

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- page 7, lines 21-23: please check this reference. The Italian does not make sense!
- page 9, line 8: turbidity is an optical measurement, but not the TSM, you should rephrase “relationship between in situ measurements...”

Interactive comment on Ocean Sci. Discuss., 7, 1767, 2010.

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