

Interactive comment on “Spatial variability of phytoplankton pigment distributions in the Subtropical South Pacific Ocean: comparison between in situ and predicted data” by J. Ras et al.

J. Ras et al.

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Manuscript revision in response to reviewer comments. Corrections have been made directly in the text. Additionnal minor corrections have also been made throughout the manuscript.

ANONYMOUS REFEREE #1 Specific comments : pg3411, line6, 9 : Claustre and Maritorena, 2001 reference added to the list ; Morel et al. (2007) reference does exist in list.

Pg3417, line 10 : Morel and Maritorena (2001) reference does exist in list.

Pg3422, line 10 : Ze corrected in text

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Pg3422, line 15 : Fig 8 changed to Fig 9 in text

Pg3422, line 24 : Fig 8 changed to Fig 9 in text

Pg3422, line 26 : Fig 9 changed to Fig 10 in text

Pg3423, line 14 : “ in the “ oceanic desert ”, essentially situated ” has been removed in the text.

Pg3424, lines 4.5 : Moore and Chisholm (1999) added to list in text ; Garczareck et al. (2006) does exist in list.

Pg3424, line 24 : “ studied ” replaced by “ study ” in text.

Pg3426, lines 21-22 : depth of the DCM : the difference between the South Pacific Gyre system and the Southern Ocean is the fact that mixed waters reach important depths in the latter zone and the water column is probably homogenous. The DCM formation in the South Pacific is therefore not controlled by the same processes as in the Southern Ocean : very schematically we consider that in the South Pacific, the phytoplankton population “ chooses ” to develop at important depths due to light, depth of the nutricline etc, while in the Southern Ocean the deep phytoplankton population has probably been transported down due to physical mixing and cannot survive at such depths.

Pg3426, line 27 : “ Morel (2007) ” changed to “ Morel et al (2007) ” in text

Pg3427, line 13 : “ 160,m ” : correction made in text

Pg3427, line 27 : Fig 10 changed to Fig 8 in text

Pg3427, lines 23-24 : Hooker et al. etc. These are references to data : they have been replaced by the reference to Uitz et al. (2006) who reference in detail the data which was used.

P3427, lines 28-29 : “ rather dominate ” correction made in text

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P3428, line 16 : “ discrete ” changed to “ sparse ”

P3430, line 9 : “ remarkable ” changed to exceptional in text

Pg3430, line 21 : “ probably been advected offshore from ” corrected in the text

Pg3432, line 5 : “ thanks ” changed to “ due ” in text

Reference list : has been checked and corrected in text

Figures : Figure 4 : character size in this figure has been increased.

ANONYMOUS REFEREE #2

- Page 10: Presence of divinyl chlorophyll a was checked for in the upwelling samples: the spectral purity of the allomer before the chlorophyll a peak was verified and no trace of divinyl chlorophyll a was found.

- The abbreviation Hex is introduced in the Table 1 which is first referenced in the Material and methods section. Then we have introduced it as suggested on page 11, line 12. Other abbreviations were introduced in the same manner.

- Page 12 line 8: concerning the presence of prasinoxanthin and alloxanthin. This was re-checked on the chromatograms (spectral data was also verified). Prasinoxanthin is definitely not present in the Marquesas samples. Alloxanthin, however, has been found in some samples but at concentrations close to the detection limits.

- Page 18 line 14 : correction made in text

- Page 18 line 27 : clarity replaced with “ transparency ” in text

- Page 20 line 7 : “ Hex/TChla % ” removed in text

- Page 20 line 10 : “ nitricline ” replaced with “ nutricline ” in text

- Page 21, lines 1-8: thank you for interesting information

- Chapter 4.2.4: a mention of HNLC conditions has been added to the text in this

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paragraph

- Cannot the global model be summarized as a look-up table? : This begins to deviate from the aim of this paper which is essentially of a descriptive nature, and it would probably be worthy of a separate publication. However, figure 9 in this paper may already allow for a comparison to be made with other sources of data. For a closer approach, the paper by Uitz et al (2006) provides sufficient information for comparison to be made with the global model data. [Reference: Uitz, J., Claustre, H., Morel, A., Hooker, S. (2006). Vertical distribution of phytoplankton communities in open ocean: an assessment based on surface chlorophyll. *Journal of Geophysical Research*, 111, (C08005, doi:10.1029/2005JC003207)]

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