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## ***Interactive comment on “Using satellite-derived backscattering coefficients in addition to chlorophyll data to constrain a simple marine biogeochemical model” by H. Kettle***

**H. Kettle**

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First of all, many thanks to the reviewer for taking the time to review this manuscript.

### General Comments

I hope I have dealt with some of the reviewers concerns by the new Fig 7 which shows quite clearly whether or not the parameters are well constrained. I have also removed the discussion on export production and air-sea CO<sub>2</sub> flux, and included more units in the descriptions of the satellite algorithms. I have also changed the conclusions of the paper - please see new conclusions section.

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## Specific comments

p4206 L16 I have now removed line from abstract

p4202 L26 yes sorry, I have amended the text to 'possibly resurfacing up to hundreds of years later'.

P4202 L 1-2 I have amended the text to sinking below the thermocline.

P4204 L3 IOP is defined in the abstract but I have defined it again for clarity and I have put 'absorption coefficient' in the text also now.

P4204 L15 I think it is clear that it is real data.

P4205 L6 It is normalised to the vertical but I have not changed this in the text as it is a standard remote sensing term.

P4206 sorry it is not independent of lambda, this is for 490nm - I have now changed the text.

P4206 L7 Have now added  $\text{mg m}^{-3}$  for chl units.

P4206 L9-12 Following comments from other reviewers too I have simplified this section to avoid confusion.

P4207 L11 Yes good point - I have changed this now.

P4207 L19 yes the units have now been corrected to m/d

p4209 L3 now changed to 'half saturation'

p4210 L15 why is the analysis restricted to z90? That is a good question. I think that it is the standard approach but you are right if I was running the GA again I would not restrict it to this range. Unfortunately I can not run the GA again due to CPU constraints. I do not think it will significantly change the results though as I am mainly interested in wavelengths at 490nm and it is the shorter wavelengths (400nm) that will be lost by cutting off at z90.

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p4211 L1 No the optimisation is performed separately at each site - this has now been made clearer. The variance is over the entire time period - this has been added to the text.

P4213 L4 A figure showing the results from the GA has now been added (fig 4).

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Interactive comment on Biogeosciences Discuss., 6, 4201, 2009.

**BGD**

6, C1266–C1268, 2009

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