

General comments:

This study proposed a new approach to estimate net community production from space. The authors calculated water parcel trajectories by seeding a circulation model domain uniformly with virtual particles to which they attach the phytoplankton carbon values from the first of a pair of satellite images with 4-6 days interval. Such an estimate of the Lagrangian rate of change of satellite-derived phytoplankton carbon is certainly novel. It is worth publishing but some issues need to be clarified. Details are shown below.

Specific comments:

1. Typos occur here and there. For example,

P8957 Line 25-26: In this study, we use the flow fields from this model for the region shown in Figs. 1–3, saved at 3 hourly intervals for the period 2004–2006.

P8958, Line 2: we restrict our analysis to the 2003–2006 period  
-starting from 2003 or 2004?

P8968, Equation (A1): there are two equations; the latter should be right.

P8973 Fig.1: Chl ( $\text{mmol m}^{-3}$ ), are you sure it is not ( $\text{mg m}^{-3}$ )?

P8978, Fig.6: Panel **(B)** no shows Net Primary Production (NPP) calculated using the VGPM algorithm (Behrenfeld and Falkowski, 1997) for the equivalent time span.

-there should not be a “no” after (B).

2. P8958 Line 16-22: We then convert satellite chlorophyll to PC, by employing a carbon:chlorophyll (C:Chl) model that is based on empirical relationships from laboratory studies (Geider et al., 1997). Our C:Chl model (see Appendix for details) is based on net phytoplankton growth rates derived from the particle trajectory analysis used to calculate the net productivity in our model. It turns out that within the range of surface PAR and temperature for the region, our results are relatively insensitive to the details of this model.

-I am confused with this paragraph. First you say you employ a C:Chl model from Geider

et al.(1997). Then you say your C:Chl model is based on  $\mu$  derived from the trajectory analysis. I read your appendix and still can't figure out the exact approach you take. And if you find out your results are relatively insensitive to the details of this model, how is it if you keep using a constant C:Chl ratio as you used for Fig.1? The calculation of  $I_g$  is also questionable. Why is a climatology used? And what is it? In a word, in order to show a convincing result, I think it is necessary to well define the uncertainty of each variable/parameter used in the model, including Chl and  $Z_e$ , which have large uncertainty in the nearshore water.