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Biogeosciences Discussions

Interactive comment on "Distribution and recurrence of phytoplankton blooms around South Georgia, Southern Ocean" *by* I. Borrione and R. Schlitzer

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General comments

The authors bring new lights on the interannual variability of the spatial bloom distribution around Gorgia Island and its intensity based on the analysis of the chla satellite data from SeaWIFS over the 1997 to 2010 period. Original result is the determination of an area of persistent bloom over the study period according to a new method based on 'Frequency Bloom Occurrence'(FBO), which is in agreement with the climatology. The authors show that the bloom delimitation is constrained by the topography. Interannual variability of the bloom dynamic and magnitude are also investigated in this

study. The potential factors responsible of the patterns observed are reviewed in the discussion but with a lack of depth. Additional data would be helpful to rule out (or not) some hypothesis. It would be interesting to investigate the potential correlation of the IAV of the bloom with any solar flux, wind, SST variations over the study period. Wind intensity as well as solar flux radiation control the mixed layer depth and could explain change of the beginning of the bloom observed.

Specific comments

The paper is well structured except for the sections 3.1 and 3.2. Results of satellite data analyse should be described first and secondly results derived from the FBO method.

3.2 section Why did you chose to show the spatial distribution of chl a at these specific dates? If there is no valuable reason, you should rather report the spatial distribution for one month for all the studied years.

Discussion section Could you briefly describe the methods used by Park et al. (2010)? Do they use also SeaWIFS data? The bimodal structure seen in the chla temporal evolution has also been pointed out in the Kerguelen area (Jouandet et al., 2011) and a comparison with this paper would improve the discussion (cf Table 1 of both papers).

Conclusion Implication of the bloom IAV on the biological carbon pump needs also to be investigated

Figure Figure 3: add the bloom area from Park et al. (2010), it would facilitate the comparison with their study easier.

Figure 5: this figure is not very clear and the informations provided by it are already shown in Table 1. Only the table should be kept.

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