Firstly, we would like to thank all three reviewers and the editorial staff for their continued effort and suggestions to strengthen this manuscript. We have implemented all the changes suggested by the reviewers as listed below.

L80: patter -> pattern

L209: remove the tilde of "30"

L224: 'Wind velocity and tidal currents' instead of wind and tidal currents?

L313: double "a" in "we observe a a net..."

L426: again a tilde that should be removed

L306: 'as per the Redfield ratio' – reference Redfield (1934).

Reviewer 3 provided some more in depth comments which we address below:

"Firstly, It is surprising the T and S glider are calibrated against the CTD data. However, the chl-a fluorometry is not because of a storm. Surely the CTD fluorometer has been recently calibrated? The few casts available will be a better indicator of the chl-a than the manufacturer's count. I remind you that the manufacturers conversion from fluor to chl-a is estimated using a lab culture or chl-a standard. This is in no way representative of open ocean phytoplankton communities especially if they are mixed communities, which they generally are."

As a first approximation, the manufacturer's calibration was used to generate chlorophyll a, this profile data was compared with the calibrated ESM2 logger data (see figure below). Surface samples were also collected for calibration. These samples exhibit a very narrow range of low concentration but are consistent with the ESM2 logger and manufacturer's calibration.

Furthermore, the ESM2 logger was also calibrated on a previous cruise in the same region. The factor between the ESM2 fluorometer and lab-determined chlorophyll *a* concentrations varied between 1.26 (R^2 of 0.60) and 0.64 (R^2 = 0.85), making the manufacturer's calibration, ESM2 logger and samples consistent. These calibrations show a large variation which we have accounted for in our error estimates. A comparison of the ESM2 logger data from 19/08/2011 15:17UTC and glider dives 1 and 2 (19/08/2011 14:58 to 16:14UTC) is provided below.

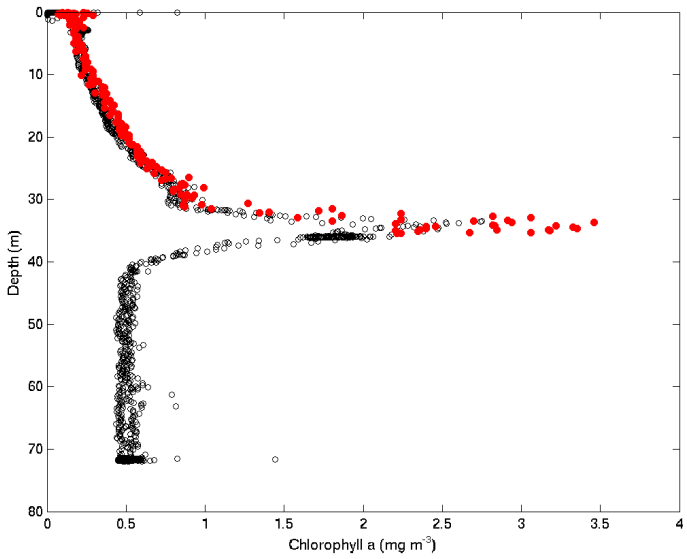

Figure 1: A comparison of chlorophyll *a* as determined by a recently validated ESM2 logger (black) from 19/08/2011 15:17UTC and glider dives 1 and 2 (red; 19/08/2011 14:58 to 16:14UTC). Glider dives stop at 35m as the initial dives of the gliders are run shallow to assess flight parameters rapidly.

"Secondly, it is simply bad practise to not correct your data as best possible for publication. Its unacceptable to publish uncorrected data, especially when undertaking a quenching correction to the fluorescence data is so straightforward (even more so when you have some backscatter data available). It is necessary to display correct data for all future readers and their interpretation of the data. I'm sure the journal will agree that this is imperative. You talk about diurnal signals of the DCM but you have not corrected for quenching! Even if by eye you can see quenching to 25m or so, you still need to correct and make sure 'diurnal' variability is not being impacted by quenching. You have BB data, so correct it."

We agree with the reviewer that every effort should be made to present the best possible data. We feel that, without PAR data, we would not be able to provide a quenching correction of sufficient accuracy even with backscatter data. In productive shelf sea waters such as here, many of the methods applicable to open ocean conditions tend to struggle a bit more. Therefore, we are taking the reviewer's suggestion and removing the data that could not be corrected. Periods of daytime where quenching could be an issue were determined following Corripio et al. (2003). We then used Wilcoxon rank sum tests for each depth bin comparing peak night and day data to test the absence or presence of a difference; this identified the deepest depth to which quenching could statistically be said to occur (19m). This has been added to the manuscript text and the figures redrafted to set the periods affected by quenching to absent.

Corripio, J. G. (2003). Vectorial algebra algorithms for calculating terrain parameters from DEMs and solar radiation modelling in mountainous terrain. *International Journal of Geographical Information Science*, 17(1). doi:10.1080/713811744

"Lastly, Section 6.2 refers a lot of the chl-a data and DCM but all these references are to Fig 3d. One cannot clearly see the variations of this chl-a with the section alone – esp. when you start referring to diurnal variability and links with the winds enhancing chl-a through nutirent supply. . . these statements are too definitive given the way the data is currently displayed. In order to really see the variations a 1D time series of integrated chl-a through the water column should be displayed. If this doesn't reveal any variability then the DCM should be somehow isolated and plotted as a 1D time series. Hence, coming back to the quenching – if you provide an integrated time series, then the data has to have the quenching addressed first as this will bias the time series. It is not clear to see diurnal chl-a variability in the section. A 1D integrated plot of the mean Chl-a should show this… especially if there is a way to isolate that chl-a that is termed part of the DCM."

We refer to the DCM as a point of interest. None of the calculations are based on concentrations within the DCM.

We provide a figure in the online discussion (see previous replies to Reviewer 2) showing a time series of BML chlorophyll and BML backscatter which highlight the variability discussed in the paper. We would be happy to include this figure in the manuscript if the editor sees it as beneficial rather than simply published in the online discussion.

"*The authors are resistant to simply indicate MLD on their plots and yet they state the need to "showing their relative contribution and the mixed layer depth in this two layer system".*

Its easy to put MLD on your plots, so do it. It will help all reading the paper. Do the same for BML (7deg isotherm) since there is so much emphasis on this. It will not clutter the plots what so ever and if the 'black line would be lost in the rapid change from red to blue" then how about picking another color!? White? A single line on the plots will not be an issue and will definitely not hide your gradients."

I am not sure I fully understand what the reviewer is asking for here. The reviewer speaks of both MLD and the boundary for the BML. From this statement I assume the reviewer means MLD as mixed layer depth in the context of a set density difference from surface values - however, this is not mentioned in the manuscript. Though as the reviewer suggests, it is useful information. Therefore, we have added both a thin black line to the sections indicating the 7 degree isotherm and a dotted black line indicating the MLD as the reviewer suggests.