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Interactive comment on "A multi-method autonomous assessment of primary productivity and export efficiency in the springtime North Atlantic" *by* Nathan Briggs et al.

Anonymous Referee #2

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This manuscript provides a detailed account of a multi-method assessment of primary production and export efficiency carried out in the North Atlantic between April and June 2008. The research team used an impressive array of autonomous and classical measurement techniques and devoted an important effort to calibrate their instruments. The methodology appears to have been carefully applied and the text is generally well written but difficult to follow in many places (e. g., section 3.2), due to the multiplicity of methods and acronyms (see also comments). The Discussion is thorough and well argued. Overall, this is an interesting manuscript that represents a substantial contribution to marine primary production measurements. Some generally minor comments are given below. Other comments Page 2 Lines 1-7. The term "understanding" ap-

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pears 5 times in these lines. Perhaps some synonym can also be used. Line 5. “and also of the effects of PP” Page 5 Line 19. Define bbp (It does not appear until line 28). Lines 25-27. I suggest adding some brief background concerning the application of volume backscattering functions and POC estimations. Page 6 Line 16. “a 30 m vertical interval and a 1 day time interval were considered equidistant”. Explain more clearly. (The same in page 7, lines 4-5). Page 7. Lines 6-8. Explain more clearly. Line 11. Explain briefly the role of the Bagniewski et al. model, cited in the explanation of Fig. 3 (and later in the text). Line 23 “in-situ KPAR”. Is this the KPAR derived from eq. 2? Page 8 Line 15. Define ïĄś (greek theta). Line 23 (and following). Air-sea. Page 9 Lines 12-17. Difficult to follow. Explain more clearly. Page 10 Line 10 (eq. 7). It would be helpful to provide some background on the deduction of this empirical model. Page 11 Lines 12.13. Explain more clearly. Perhaps a scheme would help. Line 4. This observation may be valuable for 14C fixation experiments and should be discussed in more detail. Page 12 Lines 5-10. Figure 8 does not have indcations a, b, c . . . Line 8. Where is GPPbbp in Fig. 8? Line 11. “both GOP/GPPChl and GPPcp/GPPChl were substantially lower” Lower than what? Line 24. Eliminate “depth-integrated” (repeated later). Page 13 Lines 1-2. It would be helpful to indicate that this “apparent community respiration” refers to the negative NCP. Line 22 (and page 14, line 2). Indicate that the slope is given in Fig. 9. Page 14. Line 16. Revise sentence. Page 15 Line 1. Eliminate the first Âń the Âż. Line 32. “advection of the float realtive to ML”. Explain more clearly. Page 19 Line s 9-10. Where can we see the “flux attenuation in the 100 m below the euphotic zone”?.

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