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Biogeosciences Discussions

Interactive comment on "A comparison of the variability of biological nutrients against depth and potential density" *by* J. While and K. Haines

Anonymous Referee #2

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Review of: A comparison of the variability of biological nutrients against depth and potential density Author(s): J While and K Haines MS No.: bg-2009-221

This is a relatively simple but potentially important paper that provides a better basis for the inclusion of nutrient data in various analyses of the oceans' biogeochemistry (not just modeling studies). The authors have shown that historical nutrient data, both from the BATS site and from the WOD, can be better constrained if they are based on potential density of the waters from where those nutrient samples are collected, than if based on the absolute depth.

I have no problems with the details of their analyses, and indeed, the samples upon which those analyses are based are from a very large dataset of all available measurements, which is quite impressive. As such I believe that their conclusions are solid, and

that this paper should be accepted for publication.

Apart from their mislabeling their Figures 2 and 3 in the text, and leaving a sentence out of their legend for Figure 1 (distinguishing between the solid and dashed lines in Fig. 1C), I have only one suggestion:

Is it fruitful to analyze the seasonality of these results? That is, might not the variance with both depth and density be greater during seasons of active vertical mixing, especially winter convective mixing? This point becomes important when one examines their map of station data in Figure 2, which for the North Atlantic reveals exceptionally dense station coverage at high latitudes. It would seem that the same analysis on a subset of data centered in winter and summer might show just how important connective mixing is.

Interactive comment on Biogeosciences Discuss., 6, 10177, 2009.