

Interactive comment on “Microstructure observations during the spring 2011 STRATIPHYT-II cruise in the Northeast Atlantic” by E. Jurado et al.

Anonymous Referee #2

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Review of Microstructure observations during the spring 2011 STRATIPHYT-II cruise in the Northeast Atlantic

This manuscript presents a new set of microstructure observations obtained as part of the STRATIPHYT project. Observations show increased K_T and epsilon at the northern most stations, and the differences in stratification are attributed to the amount of observed mixing. This manuscript provides a nice follow-up to the more detailed accounts presented in JDW2012, although may be lacking in a more developed discussion. The authors do a formidable job at unraveling a complicated data set with limited additional observations. With a few changes, the manuscript should be well

C828

suited for publication.

General comments:

The authors suggest that the turbulent properties measured by the microstructure profiler will aid in understanding the phytoplankton dynamics. Although the full details of how phytoplankton might respond given these observations is out of the scope of this manuscript, can the authors make any simple estimates / statements at the end of the manuscript on what might be expected? Do plankton favor highly turbulent/mixed waters that likely have more nutrients?

The main conclusion of the paper is that increased K_T and epsilon are found at the most northerly stations. In Fig8, is this conclusion still valid given the size of the uncertainties of epsilon (without considering panel a)? I think this figure would be much improved if it were plotted in a realistically scaled x-axis, by latitude, rather than station number.

The authors test possible mechanisms that might be causing these increased turbulent quantities, such as winds, double diffusion, stratification stability. None of these possible mechanisms are mentioned in the abstract (perhaps they should be) and the readers are left wondering which of these are actually important. For example, it is said that double diffusion may be important in 22% of the bins but in the end, given the other observations of wind induced mixing and stratification, is this actually important?

Detailed comments:

p2154, 10-11: remove "to it." in abstract: should mention whether or not profiling through MLD? will this be important?

13, where is the scaling factor in this equation? unclear without reading manuscript

14-15, no mention as to why increase K_T was observed? which mechanisms?

19, likely references of models could be included here

21, "Changes in stratification" are these vertical changes? lateral? which are more

C829

important to phytoplankton dynamics

p2155, 12, references for lower mixing away from boundaries

13, remove "s" in vertical structure

28, remove "the" between "between" and "atmospheric"

29, remove "the" between "and" & "turbulence"

p2156, 1, add dates of new cruise

10, KT of 10^{-1} is not low

14, what is meant by similarity variable?

29, comma after results, comma after conclusions

p2158, 4, define was is meant by segments

5, remove ing of ending

13, remove also

14, add profiles after temperature; remove ", and the" after temperature, add "."

19, remove "The values of of"

p2159, 1, remove "ing" of falling

3, references after studies

8-9, unclear was is meant in this sentence

15, "averages of the time" was is meant ?

18, unclear

p2160, 27, in the cases where the MLD was hard to distinguish, did the authors also try a density criteria? See Holte and Talley, 2009

C830

p2163, 25, remove "in the cruise" and change "around" to "at"

p2164, 2, add ", as" between "Atlantic" and "reported"

3-5, sentence is unclear

9, figure 9 grey boxes are very hard to see from the figure unless zoomed in by a large amount. is it more clear if they are made white?

p2165, 3-10, so in the end, is this an important process?

13, reference after "upper ocean"

p2167, 1-3, these figures show the relationship between the wind and KT nicely at the stratified stations. Does this agree with the statement on p2161, line 1?

13, expand on what is meant by "memory effect of the previous winter"

p2170, 13, again, unclear what is meant by a memory effect of the previous winter

Interactive comment on Ocean Sci. Discuss., 9, 2153, 2012.

C831