

Interactive comment on “On the permeability of barrier layers” by J. Mignot et al.

J. Mignot et al.

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1. Concerning the second part of the referee's comment no2: "isn't there some statistical test that can be applied to determine whether in each bin the BLT is statistically different from zero" We would be glad to discuss this further with the referee if he has any specific ideas. In our view, this is not straightforward at all since the BL distribution is far from being gaussian. First, as argued in the manuscript, the BLT is either positive, when a BL exists, or equals 0, when no BL is present. Therefore, the distribution is skewed towards high values. Furthermore, in several grid points, the number of casts is relatively weak (of the order of 10) so that the central limit theorem does not apply.

2. Concerning our final remark on the "intensity of the salinity stratification" (comment no 4): We are not very clear yet on the measure/quantity/definition that should be used to characterize the salinity stratification, but we believe that one could/should

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distinguish between “strong” BLs, characterized by a salinity stratification that would require a relatively intense surface cooling for compensation as opposed to “weak” BLs that could be “broken” by a relatively weak surface cooling. This notion might be slightly different from the BL thickness and closely related to the BL potential climatic impact. Further study is however needed to define it. The simplest way would be to associate to the BL thickness and porosity the density stratification (vertical gradient) equivalent to the salinity stratification that causes the BL.

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