

## ***Interactive comment on*** “Thermocline mixing and vertical oxygen fluxes in the stratified central North Sea” *by* L. Rovelli et al.

### **Anonymous Referee #1**

Received and published: 3 August 2015

The paper ‘Thermocline mixing and vertical oxygen fluxes in the stratified central North Sea’ presents an interesting study of the oxygen dynamics in the thermocline and bottom boundary layer of the seasonally stratified North Sea. The authors quantify the supply of oxygen to the BBL from the base of the thermocline and highlight the importance of including this mechanism when studying seasonal oxygen depletion. They discuss potential implications of future climate warming on this oxygen supply to the BBL.

The paper is well written and well structured. I have some minor comments.

P9907, line 10 ‘economic’ rather than ‘economical’

p9910 line 10 - discrete water sampling. No method details for Winkler samples

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p9910 line 19 - was the CTD O2 sensor calibrated using the Winkler samples?

p9915 line 15 'Superimposed on the barotropic currents, we observed the presence of baroclinic velocity contributions (Fig. 3b and c).' is repeated on line 19

p9916 line 23 - refers to figure 6 but there is no figure 6

p9916 lines 26 and 27 - refers to the O2 timeseries from the POZ lander but the method section (p9910) does not include details of the oxygen sensor on the POZ lander. Where does the  $-0.42 \text{ umol kg}^{-1} \text{ d}^{-1}$  come from?

Figure 1 - change 'economical' to 'economic'

Figure 4b - label on figure - change 'ensambles' to 'ensembles'

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Interactive comment on Biogeosciences Discuss., 12, 9905, 2015.

**BGD**

12, C4041–C4042, 2015

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