

***Interactive comment on “The water column distribution of carbonate system variables at the ESTOC site from 1995 to 2004” by M. González-Dávila et al.***

**Anonymous Referee #2**

Received and published: 8 June 2010

The paper represents an interesting story based on carbon time series north of the Canary Islands. I recommend publication of the paper after moderate to major revisions.

General comments:

Time series are of importance for our understanding of the nature, so also for these series from ESTOC. The paper looks into several aspects of the data which are all interesting, but the language is unfortunately not always correct and accurate, and this has to be improved. This is also the case when it comes to consistency; e.g. the authors have to decide between the unit  $\mu\text{mol kg}^{-1}$  or  $\mu\text{mol/kg}$ , they also have to decide which units they want to use for the distance between ESTOC and the Canary Islands

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(100 km at page 1999 and 60 miles at page 2001), and they should be consistent using CT and AT, also in the figures.

Specific comments:

The position of the ESTOC site is repeated several times in the document, this is not necessary.

On page 2002 the authors write about the “...upper salinity minimum centring at about 750 m depth...”, referring to Fig.2. This is not possible to see in the figure. Also on page 2003 they state that CT reaches a maximum near 1000-1100 m, but this is difficult to see due to the choice of colours.

It is stated that the CT was calculated using pH and AT, and further CRM's is used to correct the CT; this has to be explained better.

When precision and accuracy are mentioned, it should be stated if this means  $\pm$  the value.

Page 2006, line 5: “... a fifth of the observed ...”. As far as I understand, an increase in NCT of  $1 \mu\text{mol/kg}$  is compared with an increase in CT of  $0.94 \mu\text{mol/kg}$ , which indicates that 1/20 of the observed annual increase is due to salinity changes, NOT 1/5 as is written.

Technical corrections:

Page 1996, line 8: delete “CO<sub>2</sub>”.

Page 1996, line 10: “surface partial pressure”, NOT “partial surface pressure”.

Page 1996, line 14: I suspect it should be upper 100 m and NOT 200 m?

Page 1998, line 9: “oceanic partial pressure”, NOT “partial oceanic pressure”.

Page 1998, line 14: “prove the same?” What is meant by this?

Page 1998, line 23 to 25: rewrite sentence.

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Page 1999, line 7: I suggest the header is changed to "The experiment".

Page 1999, line 9-10: Here it is stated that the ESTOC is 100 km from some of the Canary Islands, while at page 2001 the distance is given in miles. It has to be decided which one to use.

Page 1999, line 10: "...in 3685 m of water..." is not good language.

Page 1999, line 17: "... were added to. ... ", which makes me wonder when the oxygen and nutrients time series started? Please add this info.

Page 1999, line 25: "collect water samples", and NOT "collect water for samples".

Page 2001, line 9-10: be more clear when it comes to precision and accuracy ( $\pm 1 \mu\text{atm}$  and  $\pm 2 \mu\text{atm}$ , respectively).

Page 2001: be consistent with the units.

Page 2002, line 13: add "and" between Péres et al. (2001) and Llinás et al. (2002).

Page 2003, line 18: the sentence starting with "Conversely, after the maxima..." has to be rewritten and clarified.

Page 2005, line 26-29: the sentence starting with "The NCT over the first 200 m layer..." is unclear, please clarify.

Page 2010, line 2: spelling of remineralisation.

Page 2011, line 8: "...small lower..." . Rewrite.

Page 2013, line 1: the words "water source" is not necessary.

Page 2015, line 12: "... over mainly..." What is meant here?

Page 2021: please explain what "delta" means in this table.

Page 2023: pH has NOT unit  $\mu\text{mol/kg}$

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Page 2024: there is no continuous line from 1994 to 1996 in the figure.

Page 2026: no units for pH in figure text.

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Interactive comment on Biogeosciences Discuss., 7, 1995, 2010.

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