

## ***Interactive comment on “Measurements of total alkalinity and inorganic dissolved carbon in the Atlantic Ocean and adjacent Southern Ocean between 2008 and 2010” by U. Schuster et al.***

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I would like to commend Schuster et al. for making their data available and providing also excellent documentation through this paper. This is an important contribution to marine carbon cycle science.

However, it is also a shame that Schuster et al., provide no information on the ancillary data required to interpret the carbon data that they report on, i.e. salinity, temperature, nutrients and oxygen. I think that whenever measured, information on these data, methods and QC, should be included in reports such as this as they are vital for inter-

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preting the carbon data. Ideally these data should be subjected to the same level of QC as the carbon parameters. The analyses performed in CARINA for instance, revealed huge issues with nutrient data, so even if these are frequently considered as routine measurements, they may have significant errors.

I recommend that the paper is accepted for publication provided this remark, and the additional following minor issues are appropriately addressed.

P624 line 1-2, add citation for this statement

P624 line 3-4, for added impact, please specify how much higher the atmospheric CO<sub>2</sub> concentration would have been.

P624 line 19-21, please add citation for this statement.

p630 line 19, please delete "value"

p630-631, 1st level QC. At line 17, the authors state that during the 1st level QC, the data were checked for obvious outliers, however in Section 4.1 not further detail is provided on this routine. Please provide some more information on how outliers in the dataset were detected (for instance through property-property plots) and how they were dealt with, i.e. flagging or exclusion.

p631, lines 3-6. Please add information on typical magnitude of the CRM offsets that were used to correct the data. Please also add information on the variability of these offsets. I think that this could be suitably addressed by adding one figure for each cruise, that shows all CRM DIC and AT offsets as a function of time.

Table 1. The expocode for James Cook, is not 74OH (with the letter "O") as given in this table, but 740H (i.e. 74"zero"H), see also <http://www.nodc.noaa.gov/General/NODC-Archive/platformlist.txt>

Further, for cruise DI332, "a minimum of three duplicate depths" were sampled at each sampling station. If the authors drew and analysed samples from each of the duplicate

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niskins at these depths, please present the mean standard deviation of these measurements, this will provide excellent information on the precision of the analyses, including errors that may have arisen during the sampling procedure.

Finally, I am a bit confused by the statement "1st level quality controlled. . .were submitted....at the end of the cruise to CLIVAR and Carbon Hydrographic Data office (CCHDO), and 2nd level quality controlled data (....) have been included in the GLO-DAP 2 effort via CDIAC." that appears in the sections on DI346 and JC032. The ramifications of this is that the data at CCHDO have only been subject of primary QC, where as the data at CDIAC has also been subjected to 2nd QC, so that, in principle, different versions of these data resides as these data centres. If this is the case, it is unfortunate, if I have misunderstood, please clarify.

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