

Interactive comment on “Data recovery of A06 and A07 WOCE cruises” by N. M. Fajar et al.

Anonymous Referee #2

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In this manuscript Fajar et al are attempting to “recover” alkalinity, dissolved inorganic carbon (DIC) and pH data from two oceanographic sections in the Tropical Atlantic that have been judged as of poor quality and not suitable for use in global synthesis products. The authors claim that the carbonate data from A06 and A07 (the CHITHER1 cruise) can be “objectively revised and corrected”. If so, this would be useful in light of the few historical carbon data in the tropical Atlantic. However, after reading the manuscript I am not convinced that they succeeded with this task for various reasons that I will comment on below.

The authors claim that the pH calculated from TA and DIC data are “realistic”, or that the ratio DIC/TA is “valid”. The DIC was measured with a gas chromatographic method during these cruises and the pH was measured with an electrode calibrated in a TRIS buffer solution at unknown reference temperature. It is clear that these data are unreliable from the chemical analytical perspective. Although the sentence is not perfectly

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clear, and there is no information in the cruise report, it seems that the alkalinity data from these cruises are calculated from the pH and DIC data! It is therefore not correct to discuss the DIC/TA ratio, but rather the pH/DIC ratio (keeping in mind the poor quality and unknown reference temperature of the pH data). It is thus understandable that the DIC/TA ratio is, as the author state, “valid” since the DIC values went into the calculation to determine TA in the first place. This is thus not an independent analysis and of little value. Later in the manuscript the authors claim that “the combination of TA and DIC data produces suitable pH results”! That is, the authors use TA “data” that is calculated from DIC and pH to calculate pH again.

The authors use the “3-DwMLR method” to calculate new TA data although it is never stated from which parameters the MLR was derived and how the MLR fitted the data Fajar et al claims that the less patchy sections in Figure 3 is evidence for a “better” data set. It might possible be evidence of less scatter in the data, but has nothing with accuracy to do, not it is evidence that the data are closer to the true value.

The manuscript is poorly written and there are many instances where I struggle to understand what the authors are trying to convey. There are also other, more formal, problems with this article. For instance, where are the “recovered” data available at a world data center?

The authors claim that the “recovered” the “whole carbon database” for the cruises A06 and A07. Even though the analysis of Fajar et al. might be interesting for a scientific paper discussing decadal changes in the equatorial Atlantic Ocean, the results of this study has very little to do with data and should not be published in ESSD. The main criticism being the use of calculated TA as if it was a measured property.

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