

Interactive comment on “Nordic Seas total alkalinity data in CARINA” by A. Olsen

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The author make a comprehensive summary of the quality of the ALK data in the Nordic Seas using a number of intercalibration and validation methods. It is an important task to quality check data sets for comparison with future CO₂ system measurements as to evaluate the effect of CO₂ on the oceans and the magnitude and direction of the CO₂ air-sea fluxes. This is a good and thorough work and provides a needed check on the quality of these data. I have made a few important minor comments that should be addressed before the manuscript can be considered for publication.

Specific comments:

Abstract Row 1: Specify more what Carbon means here. Is CARINA database including all carbon parameters isn't it mainly dissolved inorganic carbon compounds and not organic carbon? That should be made clear.

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It is confusing to include the Southern Ocean and the AMS data in the abstract when they are not presented in this particular paper. Refer to these other studies in introduction.

Row 15: Was SO data quality check also controlled separate from the others? Data coverage and Parameters

Table 1: Cruises #117 and #119 states that no CRM was used to correct ALK. This is not true. CRM correction was performed 19970623 when CRM value was available for that batch (#23). This was performed also for DIC see reference Chierici, M., Drange, H., Anderson, L.G., Johannessen, T., 1999. Inorganic carbon fluxes through the boundaries of the Greenland Sea based on in situ observations and water transport estimates, *Journal of Marine Systems* 22, 295-309,

Page 314 Chapter 3.1. There have been published papers on metadata, and accuracy and precision studies have been described in the ESOP 1994 and 1995 cruises named in Table 1. Miller et al., 1999 DSR II should be referenced since they have made a first interannual variability check for the GSDW. Also verifies that the AT data for #117 and #119 was CRM corrected.

3.2.1. Redundant repetition of the reference Tanhua et al., 2009b. Explain the source and use of the method and reference clearly but do not overdue it. Perhaps use a table summarizing the important feature, application, use and source of each method and assign abbreviations that is then used in the text.

4.2. The reason for the 19940224 data needed correction of 15 was likely due to Carina database has for some reason not used the CRM corrected data set in the database. I am not sure how to address this, a note?

Add reference: Miller, L.A., Chierici, M., Johannessen, T., Noji, T.T., Rey, F., Skjelvann, I., Seasonal dissolved inorganic carbon in the Greenland Sea and implications for atmospheric CO₂ exchange, *DSR II*, 46, 1473-1496, 1999.

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