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Interactive comment on "Atlantic CFC data in CARINA" *by* R. Steinfeldt et al.

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Response to referee #1 on 'Atlantic CFC data in CARINA' by Steinfeldt et al.

It is indeed considerable to omit section 3 on the LSQ procedure or to put it into an appendix. As this is not suggested in the other review, we will keep section 3. The other reason for this decision is, that for the CARINA CFC data from the Arctic, the LSQ method works well. This is propably because the deep water there is much more homogenious than in the rest of the Atlantic. To overcome the problem with the temporal CFC increase, we only applied a constant time correction factor. We did not try to correct each CFC sample to a common date, which would be possible via the CFC age method - as suggested in the review - or the TTD method. First, some uncertainties remain, such as the choice of the CFC surface saturation during water mass formation which affects the age and thus the temporal correction, so the resulting time

correction still has some error. The principal problem would also not be solved: In the subpolar north western Atlantic, the temporal variability of the CFC concentration due to circulation and water mass formatuion variability is comparable with the temporal CFC increase, at least for the period 1992-2004, where most of the CARINA data are collected. For the small concentrations in the tropics, the relative error of the CFC measurements is quite large, so an offset between cruises would remain even if the time correction would work perfectly. Other comments:

1) The '0' flag data CFC data are not interpolated, so here no '0' flags occur. The introduction contains some general information on CARINA, but the details can only be found in the specific CARINA papers. The topic of the '0' flag should (and probably will) be discussed in the general CARINA paper (Key et al., 2009).

2) Indeed most cruises have an acuuracy better than 5%. Information on the accuracy for single cruises is found on the CARINA website (http://cdiac.ornl.gov/oceans/CARINA/Carina_table.html). This address will be quoted in the manuscript. The minimum error for the reproducibility of CFCs of about 0.005 pmol/kg is now mentioned in the manuscripts, which leads to larger accuracies in the case of CFC concentrations smaller than 0.1 pmol/kg.

3) CARINA is the continuation of the GLODAP data set. The CARINA data have been collected more recently than most of the GLODAP data. The CFC data in GLODAP did not go through a secondary quality control procedure.

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