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Interactive comment on "Measurements of the stable carbon isotope composition of dissolved inorganic carbon in the Northeastern Atlantic and Nordic Seas during summer 2012" *by* M. P. Humphreys et al.

Anonymous Referee #2

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Humphreys et al. report on del13C measurements from 2 cruises in 2012 in the far North Atlantic. The primary focus of the paper is a description of the sampling and analysis methods. Links are provided to the data which are stored/distributed via BODC. The paper is generally well written and referenced.

Technically, this manuscript has everything that is absolutely required for such a document. In my opinion it would be improved with a few technical changes and minor additions. These are enumerated below in no specific order.

1. "precision" is used throughout to quantify the spread of repeated measurements. I think that "short term reproducibility" would be a more accurate descriptor.

2. I tried two different times and was unable to get to the data files at BODC. I'm not questioning that the data are there, just saying that I couldn't get the listed DOIs in the abstract to work. Since some of the data are already stored at CDIAC. The authors might consider additionally storing the cruise files there since so much of the global c13 collection already resides at CDIAC.

3. Unless I missed it, no mention is made of the 3 other cruises in the region that include c13 data (e.g. 58JH19920712, 58AA20010527, 64TR19900417)

4. Comparison of these new data to the older data isn't required but would be interesting.

5. These data are especially important because they help to fill a gap left by the international WOCE/CLIVAR/GO-SHIP sampling program. This is worth mention.

6. I had quite a bit of difficulty tracking down the cruise reports. Direct links (URL) to the documents would be useful.

7. Tens of thousands of c13 measurements have been made as part of the programs mentioned in #5. How do the methods used here differ? Specfically at issue would be the different vials since they seemed to matter.

8. "overgassing" is a new term for me. Does it mean what it sounds like? (i.e. flushing the headspace).

9. How can a sample bottle have 1ml of headspace AND be "completely full of seawater"?

10. Some results are described as "erroneous". Wouldn't "anomalous" be a better word?

11. Under 4.1.4 constants "x, y and z" are mentioned, but there is no z

12. "SD" is used without definition. It's almost certainly standard deviation, but some use standard error, so it should be explicitly defined.

13. I could not find the data at CDIAC. Provide URL

14. In 5.1, any idea(s) what caused the fliers?

15. Section 5.2. I had difficulty following this procedure. Try a re-write or equation or schematic - something to clarify.

16. In section 5.3 I'm not sure the comparisons are the "best". The comparison to Olsen is good. NOSAMS, is a factory - they do very good work, but a small operation should be able to equal or surpass their quality. More importantly, no mention/comparison is made to P. Quay's results/reproducibility. So far as I know, his data are generally considered to be the highest precision available.

17. In 5.3 the differences in results due to container type are described as "small". While technically true, the difference is also a factor of 2. I doubt that the stated result (.168) is valid for 3 sig.digits, but a factor of 2 probably is significant?

18. In Fig 3 the "MAB","NA" and "CA" are used without definition

19. The colored dots are OK in Fig 6, but useless (to my eye) in Figure 7. Why not make a normal section plot??

20. One last pass of grammatical/sentence structure editing is needed.

Interactive comment on Earth Syst. Sci. Data Discuss., 8, 57, 2015.