

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 #1

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Overall, well and carefully done, easily accessible. Relevant and valuable to many applications.

Specific questions, comments:

Page 58, line 18 - Does this statement represent a slight over-simplification? E.g. if one knows the ^{13}C to ^{12}C ratios AND one makes some assumptions about advective mixing, one can estimate last exposure to the surface? E.g. in Olsen et al. they could distinguish Arctic sources from North Atlantic sources but had to invoke advective

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inputs to account for actual ^{13}C values?

Page 60, line 9 - The underway samples do not have an assigned sample depth at least in the xlsx file. Specify sample depth of the inlet location?

Page 61, line 5 - Having handled a lot of sample bottles I think I understand what they intend here, but I doubt that I could have introduced precisely 1 ml of headspace? Explain this a bit more - how and why?

Page 63, line 10 - Do the MatLab libraries represent a useful resource here?

Page 66, line 13 - I find table 3 and the logic behind it very useful. But the language here seems a little confusing: “a further significant reduction to the maximum SD”. ‘Significant’ in this sentence has a qualitative connotation compared to the very careful quantitative use elsewhere?

Page 67, line 13 - this statement about .080 ‰ applies only to the JR271 cruise, e.g. in Table 4, but not to ‘both’? But the T-test described later in this paragraph, to evaluate differences due to container types, applies only to the D379 data, again from Table 4?. We need some clarity here?

Page 67, line 25 (final paragraph) - not sure what these authors want readers to conclude from this paragraph? Among the best measurements? Better than most? Not much worse than others given large variation in sample handling and measurement techniques? If they have, as apparently they do, very good data, both absolutely and relative to prior measurements, they could say so?

Figure 1 - Use some color? The gray shades do not provide enough contrast to my eye.

Figure 3 - Some confusion here. The bold black line indicates the mean ‘gradient’. The thin solid lines then represent the replicate calibration standards which contribute to the mean? And the dashed lines represent data excluded, by criteria described on page 64?

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