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Interactive comment on "Processes determining the marine alkalinity and carbonate saturation distributions" *by* B. R. Carter et al.

Anonymous Referee #1

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I made two attempts to review this paper but each time became distracted. I was successful on a third attempt - and realized that the length and detail were problematic for me. An honest comment is that this reads very much like a thesis with all the style that this implies. It could very well be suitable as a monograph or for a journal that specializes in reviews, but for a mainstream science journal where space and word count are prized it is much too wordy. This is not to minimize the very extensive effort put in to this careful analysis, and there may be room for senior Editorial discretion.

I found the insights into the very strong Red Sea signals to be new and interesting (and I would assume that the Persian Gulf might be similar)and that they make great sense. I was less compelled by the extensive riverine input analysis. Those signals are there, and have been known for perhaps a century or so; but seasonal and other

temporal changes will occur on a large scale (see Figure 7) and it is likely that individual investigators will make their own adjustments for this on a local basis.

Section 4 provides a nice analysis of the influence of competing processes and I found this more useful than the regional analyses that precede it.

I think I missed any references to the very high shelf pore water alkalinity and the benthic flux results? I would guess that is more significant than the minor influence of ikaite.

The suggestion of future work (page 18) suggests more of the same. I would have preferred to see some insights into what new experiments, field or laboratory, could be devised or hypotheses tested in some real way.

Interactive comment on Biogeosciences Discuss., 11, 11139, 2014.