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Interactive comment on "Evidence for benthic-pelagic food web coupling and carbon export from California margin bamboo coral archives" *by* T. M. Hill et al.

Anonymous Referee #2

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This paper presents a good study of stable and radio-carbon isotopes as well as nitrogen isotopes in the organic matter of bamboo corals. The authors present a robust data set and use the data to investigate the coupling of the benthic-pelagic food web and carbon export. The paper would benefit from the following clarifications and corrections.

Section 4.1 The calculation of extension rates is fine but is likely rather inexact. It would be good to include an estimate of the uncertainty the authors think is appropriate for these calculations. In Figure 2B, it would be nice to show the expected ocean water curve from this region; this curve would add to the confidence one has in the extension rate calculations. In Figure 2A, it is not clear to me that there are 4 corals with an

identifiable D14C peak that corresponds to 1980.

Section 4.2 The authors present evidence of intercolony reproducibility over time in two corals in Figure 4 and then discuss that similar reproducibility is found in two other corals. It would be nice to see these data as well and this could be accomplished by plotting data from both sets of corals relative to the distance from edge. The time component can be brought in through the discussion and by referring to Figure 2.

The depletion of d13C in one coral is obvious but the explanation does not seem well-founded. It would be preferable to simply say the data are anomalous and will not be further considered.

Section 4.2.1 Batista et al. (2014) reference is not included in the reference list.

Underestimation of growth rates: See earlier discussion of growth rate estimates.

p. 2605, line 15 This sentence is very awkward. Please rewrite.

Section 4.2.2 The authors state that they expect a positive offset from POM but it is not clear that there is one present. Do the authors think there is?

Figure 6. The relationship here is very weak. Is the line that is shown one the authors calculated or based on other research? If it is the former, it should be removed. It is also not clear why there are only 11 points on this graph. The data from Figure 3 suggest there should be many more even with the 15 mm restriction.

General Comments

Terminology: "more positive/negative" Much better to say enriched or depleted.

The authors have chosen to use a term, D14C, that is not common to the biogeochemical radiocarbon community. Given the esoteric nature of radiocarbon terminology, it would be helpful if the term were explicitly defined. Even Stuiver and Polach (1977) admonish, "Both age-corrected and non-age corrected δ14C, Δ, and Δ14C values seem to be with us for an indefinite period, and therefore the radiocarbon dater must clearly

define their meaning each time he uses these terms." It is likely the authors are trying to avoid the problem stated above by using D14C but it seems to add more to the confusion. Bottom line, the terminology needs to be explicitly defined in all papers.

Interactive comment on Biogeosciences Discuss., 11, 2595, 2014.