

Interactive comment on “Low Florida coral calcification rates in the Plio-Pleistocene” by T. C. Brachert et al.

Anonymous Referee #2

Received and published: 18 January 2016

I like the manuscript, it has very important data and I think it deserves to be published. Nonetheless, I am concerned about the comparisons between growth characteristics of fossil corals with those of modern corals. Lough & Barnes (2000), and Carricart-Ganivet (2004) data are from an environmental gradient, not from a time-line gradient: the fossil coral growth characteristics data presented in the manuscript are from a time-line gradient (i.e., the same location). Also, since light is a primary environmental skeletal growth control, it is important to clarify at what depth the fossil corals were growing. At least in *Orbicella*, growth characteristics change with depth; density increases and extension, and calcification rates decrease with depth (see Bosscher. 1992. Coral Reefs, 12: 97-103; Carricart-Ganivet et al. 2007. J Exp Mar Biol Ecol, 351: 27-36). Finally, the growth strategies observed for *Porites* and *Orbicella* (Carricart-Ganivet 2004;

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Lough 2008) are due to coral skeletal architecture and how density banding arises in each genus. Density banding in *Porites* (porous skeleton) arises from thickening of the skeleton through the depth of the tissue layer. Meanwhile, in *Montastraea* (solid skeleton) it arises from different amounts of thickening laid over exothecal dissepiments laid down at different times of the year (Dodge et al. 1992. Proc 7th Int Coral Reef Symp, pp 186–195). Thus, if *Solenastrea* and *Pseudodiploria* (not *Diploria*, see Budd et al. 2012) have a solid skeleton as *Orbicella*, density band formation must be as in *Orbicella* and the growth strategy the same (see Helmle et al. 2000. Proc 7th Int Coral Reef Symp, pp 186–195).

Interactive comment on Biogeosciences Discuss., 12, 20515, 2015.

BGD

12, C9197–C9198, 2016

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