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Biogeosciences Discussions

Interactive comment on "Anthropogenic stressors and eutrophication processes as recorded by stable isotopes compositions in coral skeletons" *by* O. Levy et al.

Anonymous Referee #2

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1) General comments:

This manuscript aims to investigate the effects of organic matter discharge from a mariculture facility in the Northwestern Red Sea on the C and N stable isotope signatures in skeletons of the massive hard coral genus Porites. This is an interesting study subject (particularly in the light of previous intense dispute between Y. Loya and B. Rinkevich addressing the ecological consequences of this mariculture facility), but not explicitly novel or innovative. In my opinion, the title of the manuscript does also not reflect the relatively small, local and specific data set presented. In addition, the manuscript has several structural problems (please see specific comments below), does not sufficiently

explain methodology, and the discussion (although very short) tends to over-interpret data and to ignore most apparent questions arising. I can therefore unfortunately not recommend this manuscript for publication in Biogeosciences.

2) Specific comments:

Title: It does not reflect the contents of this manuscript. Introduction: Generally too extensive, needs more focus and general-to-specific organization. Lines 16-26 on page 7658 at the beginning are redundant platitudes. References are incorrectly used at several places (e.g. line 26 on page 7658, line 2 on page 7660). Use of terms (e.g. "enhanced time resolution", "reef health", "rich coral reef", "study of gradients in the isotopic records", "human affect influences") misleading and rather blurry. Description of scientific gaps and justification of study should be clearly explained. Material& Methods: Confusing and sometimes nebulous; description of different samplings (transplants versus gradient sampling) needs to be improved. What were the sizes of the colonies? How and when were the samples taken? What time period is covered by which samples? How long were the cores? How many replicates? Results: Confusing and nebulous as the methods; How can 6-7 years of high-resolution be obtained from each colony (first sentence) if transplants were deployed between 2001 and 2005, but in the abstract (line 10) authors write about 2 decades. Section starting on page 7662, line 25 and ending on page 7663, line 8 belongs to Material & Methods. Discussion: Terms such as "environmental stress" and "reef health" should be clearly explained. Authors should rather focus on the data than trying to extrapolate it. Most important and apparent questions are not addressed: What are the potential underlying mechanisms that organic matter discharge by the mariculture could affect the C, but not the N stable isotope signature? Why are measurements of coral skeleton stable isotope signatures such a powerful tool in order to assess anthropogenic stressors? What are the advantages of this methodology compared to other methods such as measurement of sedimentary organic matter content or oxygen consumption? Please also explain how this methodology could be used to distinguish between local and global factors as

stated at page 7664, line 25?

3) Technical corrections

Authors should consistently use either past or present tense, but not mix between both. The manuscript would highly benefit from editing by a native speaker. There are several spelling and grammar errors that decrease readability and understandability.

Interactive comment on Biogeosciences Discuss., 7, 7657, 2010.