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Interactive comment on "Data compilation on the biological response to ocean acidification: an update" *by* Y. Yang et al.

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We thank referee #1 for his/her comments and suggestions. Our replies, in italics, are below.

- This paper describes the Ocean Acidification International Coordination Centre (OA- ICC)'s effort to compile data of studies on the biological response to ocean acidification. Without a doubt, this is a very important effort, and I am glad to see this much needed paper documenting the effort come out timely. This paper gives readers some idea of the data repository in terms of taxonomic coverage, type of biological responses, geographic coverage, etc. It also describes the origin

and history of the data sets and informs readers of the tags that can be used to retrieve all of the data sets from PANGAEA. This important paper will make a great contribution to future biological OA data synthesis and model effort to help better assess the vulnerability of the marine ecosystem and forecast future changes. Overall, I think the paper is well written and should be published after incorporating the below comments:

We appreciate the positive overall comments of the referee.

- It would be a big plus to the paper, if the authors could dig into these data sets and present the actual results of biological responses, i.e., whether the biological response is a positive, no effect, or negative. For example, you can consider to present a table with the type of organisms/ecosystem, its life stage, the biological process studied, and then its biological responses.

  It should be noted that this is a data paper, the aim of which is to present a data compilation. Assessing the biological response from the compiled data is beyond the scope of the paper and would be outside the scope of the journal Earth System Science Data. The referee is however correct: it is the use of this data compilation that matters in the end. In fact, it has already been used for several meta-analyses, for example Liu et al. (2010) and Kroeker et al., (2013).

- Page 894, Section 2.1. Geographic coverage, please state specifically what it is? There are 3 locations for biological response OA studies: location of the water collection, location of the organism collection, and location of the lab.

  In the OA-ICC data compilation the location of study sites indicates where the studied organisms were collected or where natural communities investigated are located. This issue of geographical coverage will be clarified in section 2.1 of the revised version of the manuscript.

- Page 900, the first sentence about duplication, this would be a good opportunity to call on the community to create some kind of unique identification for biological

response OA studies? This could be something like what the EXPOCODE is being used by the carbon community to detect duplication.

We agree that having a unique identification for data sets on the biological response to ocean acidification would be immensely beneficial. We will add this in the list of recommendations and will suggest that data centers consider this addition and provide technical guidelines for implementation.

- For future biological response OA data archiving, I do not think that data from studies with only one carbon parameter should be eliminated. Even one carbon parameter can tell us some idea of the trend of changes in the carbonic system. This is especially true considering that we can sometimes derive another parameter, such as total alkalinity from salinity.

  In the OA-ICC data compilation, data sets which reported only one carbon parameter were eliminated because our goal is not to simply archive data. A major objective is to recalculate the carbonate chemistry with a standard procedure, hence ensuring a coherent database which can then be smoothly used in meta-analyses. Since it is difficult to compare the results of papers which reported less than two carbonate system parameters, we have also contacted editors of the main journaks in the field to recommend that they make sure that variables of the carbonate chemistry are reported in full and with the required level of detail (see supplementary information to our manuscript).

References cited

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functioning. *Aquatic Microbial Ecology* 61:291-305.

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