

## ***Interactive comment on “A trait database for marine copepods” by Philipp Brun et al.***

### **Anonymous Referee #1**

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Manuscript Reviews Manuscript for Earth Syst. Sci. Journal Data Discuss.,  
doi:10.5194/essd-2016-30, 2016 Title: A trait database for marine copepods by Philipp  
Brun, Mark R. Payne and Thomas Kiørboe

The authors build a very interesting dataset and wrote a very interesting article. The objective was to construct, structure and make available for the scientist community the first large dataset about copepod life traits that they tried to make it as exhaustive as possible. (based on current knowledges and data availability. To do so, the authors first explained clearly the definition of life traits and why they are important to study. Recently, the trait-based has started to be more and more popular; marine ecology. This new approach used to better understand marine ecosystem functioning requires urgently new kind of data to be perform, preferably in a large amount and over wide ranges of taxons, geographical area, phenological stages, ... So far, those information have been available but scattered in different labs, teams or research. They also have

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been set in specific purpose, so build with a specific format, included a few numbers of life history traits. The authors pinpointed this lack and proposed to remedy that issue proposing a dataset that has been constructed with the requirements like accessibility, homogenisation, exclusivity, large amount number of data as constraints for their roadmap. Authors compiled traits information on marine pelagic copepods, from published literature and from experts, and organized the data into a structured database. They collected up to 11 9345 records for 14 functional traits. Particular attention was given to body size, feeding mode, egg size, spawning strategy, respiration rate and myelination. Authors proposed their database to be used to investigate relationships between traits, to produce trait biogeographies, or to inform and validate trait-based marine ecosystem models.

On the whole this paper is well written and makes a very useful contribution to the field. The methodology used sounds adapted. From my point of view, the following objectives are highly relevant and I like the way they were addressed. The methodology used is, as far as I can judge, well conceived, and well executed. The resulting dataset can be easily accessed and Such data compilation exercise is crucial to allow 'traits-based modelling and approaches to be successfully and fully used. That kind of new studies combined with a relevant and reliable dataset are expected to provide solid results in the near future for our understanding of marine ecosystem dynamics in a changing world. However, I am not a "traits-based modelling" specialist and hence the editors might want to seek additional advice from colleagues, who will be far more competent in matters linked to relevance of the dataset for future research. Nevertheless, despite a complete and solid methodology part, some information are not enough developed in the present manuscript about the strengths and relevance of "traits-base modelling" compare to other classical approaches. I think those information could be useful for non-specialist to understand the objectives of this work.

Please note that I used the line numbering from the .pdf file version provided by the journal.

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## GENERAL COMMENTS

In introduction, authors explain clearly and in a concise manner what is the definition of “traits” for organisms, what are their roles, and how the “traits-based approach” differs from more classical and historical approaches which considers, typically, links between environmental factors and species or group of species. Trait-based approach studies diversity and describes the structure and function of communities or ecosystems among key traits. Nevertheless, at this point I think an explanation is missing about what the “trait-based” approach can bring for the understanding of the ecosystem that “classical-historical approaches” can not. If I am convinced about the novelty and the legitimacy of using that new approach, I don’t see what are the expectations compare to those that could be issued from a classical approach, in the introduction. The authors write lines 29-30 “...feeding, survival and reproduction. Functional traits determine the outcome of one or several of those missions...”; but I do think that results for those missions can be determined by less mechanistic approach like the impact of environmental factors, the quality and abundance of resources. I would like to understand why the authors have chosen “trait-based study” among others, apart from the innovation part. This question may look “out of the subject” I guess for people who are familiar with “traits-based” approaches but for scientist who are not, it would be helpful to have some further explanations, without going to far in the details.

## SPECIFIC COMMENTS

About trait information in Part 2,2 of the manuscript, authors reported that it is not always straightforward to assign a “value” of trait to an organism because of lack in taxonomic resolution or because the “behaviour” displayed by the individual can fall in different category for one trait (like feeding category). Both quantitative and qualitative trait can be difficult to allocate. Suggestion: would it be possible to provide a kind of level of confidence? That could help the user to have an idea about the reliability of the assignation and so to decide whether or not the data can be used for her/his purpose.

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Figure 2 I am not sure to understand the color circle code. I understand the colorbar, gray means no data, and then from 0 to 100 the % of coverage for taxonomic families of marine copepods. But what about circles that have only their perimeter in color, and a different color inside? For example: Calanidae second column ? Is it about that as some traits are taxonomically clustered, few records for higher order taxa may suffice to describe the entire diversity?

## SPECIFIC QUESTIONS

Is the article itself appropriate to support the publication of a data set?

The article itself is appropriate to support the publication of the dataset. The quality of the data is sufficient enough, and the size of the data is expected to grow in the near future. The dataset can be easily downloaded from the given identifier, nevertheless I would recommend the author to provide a direct HTML link inside the manuscript. Authors provided details about the ranges of the data in terms of : type of traits, taxonomic distribution, organism length, biogeography, in the result part of the manuscript. Furthermore, authors acknowledge that variance in quantitative traits are subject to measurement errors that may be significant, so where possible, they accounted for measurement errors by reporting standard deviations.

Is the data set significant – unique, useful, and complete?

The dataset is significant enough to be useful and usable although some would qualify it not big enough or to specialized on copepods zooplankton. The database is expected to grow, and there is room for work using just copepods organisms data regarding to their importance in the marine ecosystem.

Is the data set itself of high quality?

It self the current dataset is conveniently down-loadable and usable. There is no need of a proprietary software to access and manipulate the data since you have collected them. Furthermore, the setting of the data inside the dataset is clear, easy to under-

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stand and to manipulate for a personal research. The article itself is quick and concise, its structure allow to clearly understand the goal and the specificity of the dataset. The mathematical part is short and correct. Expect Fig. 2 (see my comment earlier), all the figures and table are clear and ready to be published.

To summarize, I consider the dataset understandable and practical enough for a personal use.

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