Reply on RC2  
Everton Giachini Tosetto et al.

Author comment on "Planktonic cnidarian responses to contrasting thermohaline and circulation seasonal scenarios in a tropical western boundary current system" by Everton Giachini Tosetto et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-216-AC2, 2022

We sincerely appreciate the useful insights you provided to improve our study. As detailed in the rebuttal letter below (responses in bold) we took into account all corrections and suggestions to prepare the revised version of our MS. The lines mentioned below refer to the new corrected version to be submitted.

Tosetto et al. present a study on the influence of ocean currents and freshwater runoff on cnidarian population. The study is based on an extensive dataset obtained during two long-distance cruises. There is a lack of such extensive datasets and the authors relate the observed cnidarian community structure to the observed physical parameters. I find the study very interesting and I am sure many researchers with an interest in jellyfish will as well. However, I find the manuscript difficult to read and I would suggest several improvements before publication.

I am not a native English speaker, so my comments regarding the language should be taken only as suggestions. However, I find many sentences too lengthy and confusing. I urge the authors to consult a native speaker on this topic. There are numerous abbreviations in the text and a list of acronyms is a must.

R. Thanks for your concern, language was improved in the new version and a list of acronyms was included (Table 1).

As many of the potential readers, I am coming from a different part of the World and I am unfamiliar with the hydrography of Brazilian shelf and with many of the observed cnidarians as well. I’d suggest the authors to include a schematic representation of the currents in the study area and refer to it in the introduction and in the section 3.1.

R. Thanks for the suggestion. We included the schematic representation of currents in Fig. 1.

Also stating more clearly in the first half of the paper, which species are considered oceanic and which coastal, would make the text easier to read for those who are less familiar with the cnidarians of the South Atlantic.

R. Thanks for the suggestion we included examples of coastal and oceanic species.

I think both hypotheses could be better supported by the collected data. E.g. showing that
group X could be matched with a lower salinity, would support the hypothesis that stronger continental runoff supports coastal species. Also a correlation between the fluorescence, mixed layer depth and abundance of cnidarians, would be a stronger indicator that the enhanced primary productivity is the cause for cnidarian proliferation. However, the first hypothesis is relatively well supported by Fig. 7. On the other hand, although the second hypothesis seems plausible, the presented support for it is rather weak.

R. Thanks for your suggestion, we included gradient analyses (RDA) for the three systems.

I am also surprised that the authors didn’t use the satellite data to support their hypotheses. Geostrophic currents based on the the altimetry data could be obtained for the entire area (e.g. from the Copernicus portal: https://marine.copernicus.eu/). Same goes for the surface chlorophyll concentration. I am not insisting the authors should add this, but I am quite sure it would significantly improve the manuscript.

R. Thanks for the suggestion. Dossa et al. 2021, already compared the same ADCP datasets with geostrophic currents.

Comments, suggestions and corrections by lines:
L45: “such circumstance was observed in spring” – “such conditions were observed in austral spring”
R. Thanks for the suggestion. We changed the sentence.

L54: remove “still”
R. Thanks for the suggestion. We removed it.

L55: cSEC eastward? Isn’t it westward? And I guess SEUC should be eastward then?
R. Thanks for the noticing. We corrected both.

L63: Remove “In this context,”
R. Removed.

L75: “sorted” – “identified”
R. Thanks for the suggestion, however we believed that “sorted” is better in the context of the sentence.

L88: “10^-3” – “10⁻³”
R. Corrected.

L95: “hourly averaged”; remove “located”
R. Corrected.

L96: “affected” – “contaminated”; “reflections from the bottom”
R. Corrected.

R. SADCP data were processed and edited using the Common Ocean Data Access System (CODAS) software package developed at the University of Hawaii (http://currents.soest.hawaii.edu). The relative velocities were rotated from the transducer to the Earth reference frame using the ship gyrocompass. The global positioning system (GPS) was used to retrieve the absolute current velocities. The orientation of the transducer relative to the gyroscopic compass and an amplitude correction factor for the ADCP were determined by standard calibration procedures (Joyce, 1989; Pollard and Read, 1989). See also in Dossa et al. (2021).
L97: remove “shallow”. I’d suggest to rephrase the sentence to something like: “The current measurements were resampled to 0.1° spatial resolution and depth integrated.”
R. Corrected.

L101: “grouped into three geographic areas”
R. Thanks for the suggestion. However, due the distinct current systems in place in the study area, we prefer interpreting them as systems.

L104-105: “... dominant species, logarithmic abundance was used in all analyses.”
R. Thanks for the suggestion. However, we prefer referring as data transformation, in accordance with statistics literature.

L129: “intrusions over the shelf” – Of what? Be more specific. Oceanic water probably.
R. We changed to “intrusions of oceanic waters over the shelf”.

“Pernambuco Plateau” – What is this? Should be marked in Fig. 1
R. Thanks for the suggestion. We marked it in Fig. 1.

L130-131: “intrusions over the shelf were observed” – how were they observed?
R. Transport of water was observed by the coastward currents.

L 134: Regarding the fact that the circulation is an important part of the study, I don’t think it is enough to reference a paper. As said, a schematic would help. And a better description as well.
R. Thanks for the suggestion. We included the schematic representation of currents in fig. 1 and improved the description of the circulation patterns.

L136-137: SACS – Probably T < 13°C? And according to the profile this is below 150 m and not in the first 150 m.
R. Thanks for the suggestion, we changed to “reaching up to ~150 m depth”.

L141: Why is salinity higher on the shelf in autumn? One would suspect that higher runoff would lower the salinity. Is the influence of rivers limited only to a very narrow belt?
R. With the higher temperature during autumn, the evaporation/precipitation budget is higher, increasing the overall salinity (Assunção et al. 2020). We improved the text to make it clearer.

L144-145: The fluorescence indicates river influence over the shelf in autumn. How does this fit with higher salinity?
R. See our response to the previous comment.

L159: remove “also”
R. Thanks for the suggestion. We removed it.

L160: % of the total catch? By mass or number of individuals?
R. By number of individuals. 100 m⁻³. We improved the text.

Section 3.3
I find this section a bit confusing and it would need a clearer structure. It switches from hydromedusae to siphonophores and back. The precision of many values is overstated by using too many digits (e.g. 1067.6 ind. 100 m⁻³). Only the number of reliable digits should be used. I’d suggest to structure the section more clearly and follow the same pattern, otherwise the reader quickly gets lost between species, abundances, locations and seasons.
R. Thanks for your concern. We reordered the section. About the second part, we
are not sure about what you refer as “too many digits”. All values were presented with 1 decimal digit.

L241: There is no figure 8b.  
R. Thanks you, it should be 2b.

L253: “spreads” – “spread”  
R. Corrected.

L255-258: The reduction of the current intensity in autumn is not so clear. You discuss the depth and speed of the current and sometimes conclude that the surface current was of similar strength. Fig. 2 would lead me to that conclusion as well. A plot of satellite derived geostrophic currents could be very helpful here.  
R. Thanks for the suggestion. These patterns of NBUC depth and intensity were discussed in details in Dossa et al. 2021, where the same ADCP dataset was used and compared with geostrophic currents.

L287: How about S. chuni?  
R. Thanks for noticing. We included the species in the list.

L304-305: L. meteori is not shown in Fig. 5. Are these species considered oceanic or coastal?  
R. We included only the more abundant species in Fig. 5. There is not much information about ecological requirements of this species in literature. During our spring cruise, it occurred exclusively in the open ocean, particularly over the slope.

L306: The second spring is probably autumn.  
R. Thanks you, we corrected it.

L315-316: I would say that your conclusions are valid for the Brazilian shelf only, since they were not tested elsewhere.  
R. Now we referred to our study area and only suggest that the pattern may be similar in other WBCS.

L319-321: This is a bold claim given the presented results. It kind of makes sense, but I am sure you have enough data to better support your claim.  
R. Thanks for the concern. We believe that this conclusion was supported by our data and discussed in details in lines 337-349.

Figure 2: The arrows are way too small and there is too many of them.  
R. Thanks for the suggestion. We improved he figure to make it more readable.

Figure 3g: There is a huge upper limit of fluorescence in autumn. It would be interesting to see which stations contribute to that. Something like fig 7c but for chlorophyll would help and maybe support your third hypothesis. Maybe a plot of satellite chlorophyll concentration would be useful as well.  
R. Thanks for the suggestion. We included distribution maps of surface temperature, salinity and fluorescence in supplementary material (Fig. S1).