

Earth Syst. Sci. Data Discuss., author comment AC2
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Reply on RC2

Oriane Bruyère et al.

Author comment on "Hydrodynamic and hydrological processes within a variety of coral reef lagoons: field observations during six cyclonic seasons in New Caledonia" by Oriane Bruyère et al., Earth Syst. Sci. Data Discuss.,
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Comment #1 of Reviewer #2 (website): In the Section 6, the overview about the data set describes the high-resolution sections for temperature, salinity and so on. I think this part should be improved more at the current version. Firstly, about the observation errors in these five regions or in the lagoons, could you add more analysis? Secondly, compared to other reference data or climatology, could you show the difference? It will highlight the values of these new observations. Finally, as the title indicated there are related to the 6 cyclonic seasons, could you conclude how far the distance (or the time lag) from the cyclones will lead to the clear impact on the lagoon hydrology? Any one of them will be give more scientific contribution.

Answer to Comment #1 of Reviewer #2: We thank Reviewer #2 for this constructive comment. With regards to the first comment, we admit we are not sure to what the reviewer refers to with the term "errors". If the reviewer refers to observational errors due to instrument lags and faults, we can say that we have paid great attention to the systematic maintenance/calibration of all our instruments at frequencies recommended by the manufacturers (we have stated within the document, see Line 376). Furthermore, we have identified and documented any potential error-data points within the metadata of all datasets, such that data users are made aware of this before use and can adjust accordingly.

With regards to the reviewer's suggestion to compare our datasets with existing or past data, we remind the reviewer that, as mentioned in the manuscript (lines 204-205) we are working in unmonitored lagoons, which unfortunately means there were no data sets or climatologies to compare with. Furthermore, our intentions with this paper are to make available these first reference observations for future studies.

To finally address the last part of the comment, the aim of this data-paper was mainly to present an overview of the observations acquired and not specifically to analyze the impact of cyclones. A PhD work is on the way to analyze this specific point about cyclones and we thus decided not to spoil his work. Within this study, in section 6, we illustrated some examples of key signatures of cyclones that occurred during our sampling period, such as sea levels, sea-states, temperature, current, salinity on the forereef as well as inside lagoons and passes.

Comment #2 of Reviewer #2 (website): As we known, around New Caledonia there are long history of observations around lagoons as said in Line 54-59. Are

all the observation surveys included during the cyclonic seasons around NC, especially between 2014-2021? What are the relationships with the previous surveys? It looks the zone E has a bit overlap with the one at near Nouméa. So could you add more words to explain why to ignore those observations if existing?

Answer to Comment #2 of Reviewer #2: As we mentioned in line 58-63, past research works have been centered into 2 lagoons (Nouméa during the period of 1995-2010 and Ouano around 2013-2015), and these datasets do not overlap with cyclone seasons or major cyclones. To our knowledge there are no others observational strategies targeting cyclonic season during our period of observations (2014-2021). Concerning past observations into Nouméa lagoon (Zone E), we ignore these past observations mainly because data are not accessible and sampling strategies were not dedicated to high-frequency measures during cyclonic seasons.

Comment #3 of Reviewer #2 (website): As they said at Line 460: "All data sets presented herein are freely available on SEANOE in dedicated repositories in NetCDF format." However, based on my checking, the data links for SEARSE and SAR (<https://doi.org/10.12770/dad19639-c901-4edb-85cd-1fd546aa4cdb>, and <http://dx.doi.org/10.12770/96e4f2ef-e809-4005-b5df-529adc4e3306>) show they are not open access like the rest. So could you clarify it explicitly?

Answer to Comment #3 of Reviewer #2: We thank Reviewer #2 for pointing this out and admit an oversight in how we presented this within the paper. We have made available the SEARSE and SAR data sets within the Sextant repository and we have clarified this within the text (lines 458-459) and include the working DOI links in Table 1.

Comment #4 of Reviewer #2 (website): Figure 1 the letters from A-E at the top panel for the surveys are not followed chronologically as the color bar shown, which will be better for a good consistence.

Answer to Comment #4 of Reviewer #2: We thank the reviewer for pointing this out and agree that it may cause confusion. We followed the comment and have changed the letters in Figure 1 and 2 accordingly to keep the chronological aspect. Moreover, we added these letters in the survey timeline in Figure 1.

Comment #5 of Reviewer #2 (website): Some variables contained in the NC files can be improved for completed information. For example, one CTD profile in Dec. 2014 from SPHYNX surveys named 55275.nc provide very good field, but only one issue found about PAR which unit is not clearly stated.

```
float PAR(depth, station) ;  
  PAR:_FillValue = -999.f ;  
  PAR:longname = "Irradiance" ;  
  PAR:units = "PAR/Irradiance, Biospherical/Licor" ;
```

Answer to Comment #5 of Reviewer #2: We thank Reviewer #2 for highlighted this major error in CTD Netcdf files. We took this into account and have changed the units within the attributes of PAR variable to "microEinsteins/meter^2sec" and the long_name attribute to "Irradiance Biospherical/Licor" into each CTD files of SPHYNX, NOUMEA, CADHYAK and NEMO campaigns. We have reprocessed and reviewed all files and variables again, and have made these available in SEANOE database.

Comment #6 of Reviewer #2 (website): Line 22: delete "stake" because the processes presented in this study like temperature and salinity variability also covering the natural variability.

Answer to Comment #6 of Reviewer #2: We thank you for pointing this out, and would like to also state that we had presented our manuscript to two English native speakers, who have extensively reviewed, corrected and made recommendations to the language and grammar in this paper.

Comment #7 of Reviewer #2 (website): Line 185: missing understanding for "the N/O Alis"

Answer to Comment #7 of Reviewer #2: We thank Reviewer #2 for this comment, and understand the potential for confusion in using N/O, the French derivative for R/V (i.e., Research vessel). We modified as follows: R/V Alis in line 194.