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Interactive comment on "Spring net community production and its coupling with the CO_2 dynamics in the surface water of the northern Gulf of Mexico" *by* Zong-Pei Jiang et al.

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This manuscript contains a lot of data that a priori looks very good. Good comparison of the different methods can be done only in a particular area, while the rest of the data, mainly the pCO2 and NCP from O2/Ar, would be a good data set. In the secction Methods there are a lot of explanation of how to arrive to the NCP calculations that can be found in the literature but very little is explained about replicates, average, and data quality controls or transformations (e.g. PQ to change from O2 units to C units is missed)

The manuscript needs a little bit of more order to be able to read it fluid. Suggestions

are made in the pdf attached.

Part of the discussion is based in differences between methods due to different stratified or mixed column states. I think the writer is interchanging "mixed layer" and "mixing column" concepts and making therefore wrong assumptions. Uncoupled 02 and CO2 fluxes and definition of sink or source of CO2 can be the result of smoothing CO2 values to a mean, but I cannot really tell without knowing the raw data. Also comments attached.

Supplementary material of Figure S1. Is the data from the webpage only for the river discharge? This graph doesn't have x axis label. It should use dates instead and change consecutive numbers 1-12 to meaningful dates.

Supplementary material of Figure S2 (a,b) shows regresion lines to show tendencies forced by few data points in the river. R2 is not shown but is expected to be very low to use it.

Please also note the supplement to this comment:
https://www.biogeosciences-discuss.net/bg-2019-88/bg-2019-88-RC1-supplement.pdf

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