Hu and his/her colleagues use 1976-2017 pearl river estuary monitoring data to present a analysis of PRE oxygen depletion history assessment work. The strength of this work, in my eye, includes two points. One is the 42 years of historical data itself, and the other is fig.7b, namely the statistics of hypoxic sites. The weakness of current work is also very apparent. There is a lack of deep exploration for the mechanism of the occurrence of the hypoxia, or oxygen depletion. Also, I think authors can go even further in the ststistics job. To improve the current work, I have the following comments and suggestions.

Main:

what is the scientific question of this work?

Why use a very old equation (Hyer et al 1971) to calculate DOsat? (line 120). Why not try the newer one? See Garcia and Gordon 1992. (Garcia and Gordon, 1992)

Authors use several independent field investigation results., but without indicating the data quality control result. Can these data be directly compared? What is the offset between variouis data set? How the water sample was collected on board? In lab what is the DO measuring method and corresponding quality control?

Why the surface water can be low in DO? Sometimes surface water can be hypoxic (line 280-285). Why? There is some work talking about this feature (surface water hypoxia) and authors should cite. Search for work by MH Dai, and /or WD Zhai.

Go deeper in statistics: authors should compare pearl river discharge history, pearl river basin GDP or fertilizer ultilization history, or any other available anthropogenic data, with their oxygen data for the period 1976-2017. In some place in the main text authors mentioned a few about this (e.g., line 355), but that's not quantitative, instead very shallow. Try compare oxygen and anthropogenic activities by numbers, and present readers by scatter plots. That would be more strong, straightfoward, and perswasive. I see authors already show some historical data (fig. 11) along. That's good. I encourage authors further incoporate oxygen data into the same plot and seek for some pattern or relation. In the main text, authors repeatedly mentioned about some threshold time point (sediment load 1999 at line 378; nutrients 2000 at line 363 et al), so I suggest try compare the oxygen data and corresponding historical data if possible.

Instead of showing grid contour maps, it is clearer by using scatter plot to show readers how the oxygen minimum value, as well as hypoxic (or low oxygen) area and oxygen depletion amount, varied from year to year.

The autumn oxygen depletion event is highlighted by the authors. But how that came into being? I am curious that authors mentioned a 'distinct mechanisms' for this autumn oxygen depletion. So, what is the mechanism? In the main text it explained as 'intricate coupling of

physical and biogeochemical processes', that does not quench readers' thirst. Oxygen depletion occurs under stratification and organic matter decay. What do authors mean by saying 'intricate coupling of physical and biogeochemical progress'? Some noval mechanisms identified in this autumn event, rather than stratification and organic matter decay? I would like to know that.

Authors suggest the peal river decreased its sediment load in recent years. And a decrease in riverine sediment load result in better light condition in the PRE, so better phytoplankton grwoth and hence worsen bottom hypoxia. While the logic sounds good, authors are suggested to do some quantitative explorations. For example, I see that authors have the suspended sediment concentration (ssc) data for dataset 1 (table 1). So what is the contour distribution patter of ssc in PRE? Maybe it matches well with the surface DO or bottom DO? What is the scatter plot if plot ssc with oxygen data?

Minor:

Hard to follow: line 27-29. What is the meaning of this sentense saying low oxygen area? If only read abstract, readers have no idea what is low oxygen. 3mg/L? 2mg/L? 4mg/L? and what is 'distinct mechanisms'?. If readers only read abstract, it is confusing.

Again, 'low oxygen' is mentioned in the main text (introduction line 86-87, without definition. It is really confusing to say low oxygen in a hypoxia work. Withou definiation, water beneath pycnocline can always be called low oxygen, as it is not saturated. If this is the case, then the 'low oxygen' means nothing serious in the PRE, since it is very common in many places worldwide. I see in line 99-100 there seems a low oxygen definition, it comes a little late than expected. Also I have no idea if this definiation at line 99 can be applied to term 'low oxygen' prior to this line.

Changjiang diluted water, instead of Yangtze river diluted water, is recommended. Line 63.

I am not a physical oceanographer, but for salinity, usualy no unit is needed. See line 121, line 128 and et al.

Section 3.1: What is the depth of 'bottom'? what is the sampling stratigy for the cruises during 1976-2017? How the water was collected, via what sampler? How the DO was measured?

Line 240 temperature also enhance stratification.

Fig2-8, fig10. Too hard to read. Too small fonts.

Fig7a is confusing. It is surface or bottom? What is the meaning of color bar? Why the dots color conflicts with color bar?

Data availability: it is better to upload authors data into a public data storage, instead of share upon request. But that also depends on the data policy of the local government I guess.

Garcia, H.E., Gordon, L.I., 1992. Oxygen solubility in seawater: Better fitting equations. Limnology

and Oceanography 37, 1307-1312.