Responses to the referee #1:

We thank the referee #1 very much for the comments on our manuscript. The comments are valuable during the revision process and will further guide our research. We have studied the comments carefully and revised the manuscript accordingly, which we hope will meet with your approval. The comments (bolded) and responses are fully addressed as follows.

The manuscript presents how the backwater jacking and intrusion of the main reservoir influence the hydrodynamic and water environment characteristics of the tributary bay. To my knowledge, this is likely the first time the main reservoir's backwater jacking and intrusion question is explained clearly. The different effects in different areas of the tributary bay are found. The results can provide guidance for water environment protection in the tributary bays. There are some minor comments listed as below.

Authors' response: Thank you for your positive and constructive comments. Below we present our responses to each comment.

1) Line 59 - Line 61: "A tributary bay is always influenced by backwater jacking and intrusion with the rise of the water level of the main reservoir because such changes induce changes in the hydrodynamic conditions in the tributary bay". "the rise of the water level" is not specific, "fluctuation" is better. And any relevant references for this statement?

Authors' response: We have changed "the rise of the water level" to "the fluctuation of the water level" according to your suggestion. We also have added the studies of Ji et al (2010) and Wang et al (2014) as references to support this statement.

2) Introduction section: Please explain what is backwater jacking and what is intrusion, which can make the paper more comprehensible to readers.

Authors' response: We have added the meanings of backwater jacking and intrusion from the main reservoir in the revised manuscript as follows.

Backwater jacking occurs in tributaries when dams or other obstructions raise the surface of the water upstream from them. Intrusion is the process that the water from the mainstream intrudes into the tributaries.

3) Line 61- Line 63, Line 64 - Line 66, and Line 91- Line 94: The statements need some more references to support.

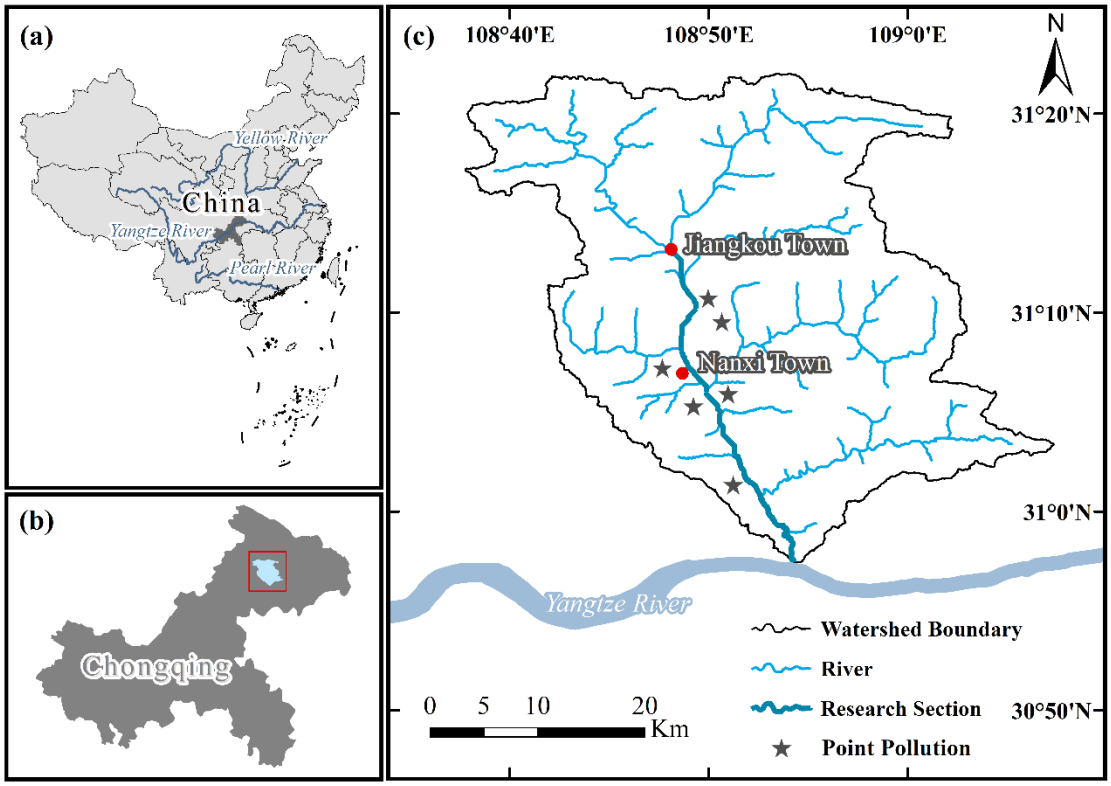
Authors' response: Thank you for your suggestion. We have added the studies of Hu et al (2013) and Yin et al (2013) to support the statement of Line 61- Line 63, added the studies of Fu et al (2010), Holbach et al (2013) and Yang et al (2013) and to support the statement of Line 64- Line 66, and added the studies of Zhao (2017) and Long et al (2019) to support the statement of Line 91- Line 94.

4) Line 101- Line 102: Please add the necessity of the study area selection and explain why you select Tangxi River but not other tributaries.

Authors' response: Tangxi River is a typical tributary bay of the TGR, which is influenced by backwater jacking and intrusion severely in recent years. This phenomenon accelerates the deterioration of water environment of Tangxi River. Thus, the Tangxi River was selected as the focus of this study. This information has been added in our revised manuscript.

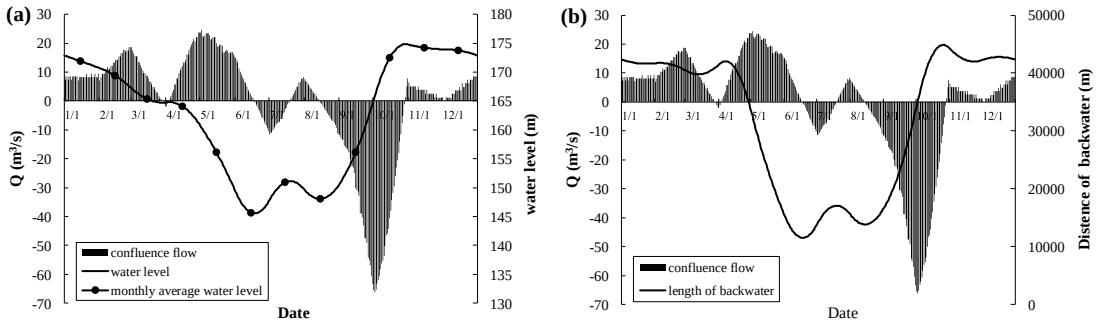
5) Line 220 - Line 221: Please specify the location of the point pollution load.

Authors' response: We have specified the location of the point pollution load on Fig.1 in the revised manuscript. The new Fig.1 is shown as follows.



6) Fig. 4.: It is hard to understand the meaning of fig.4., please add the legend or explain the meaning of the lines in your figure.

Authors' response: We have added the legend of fig.4 as follows.



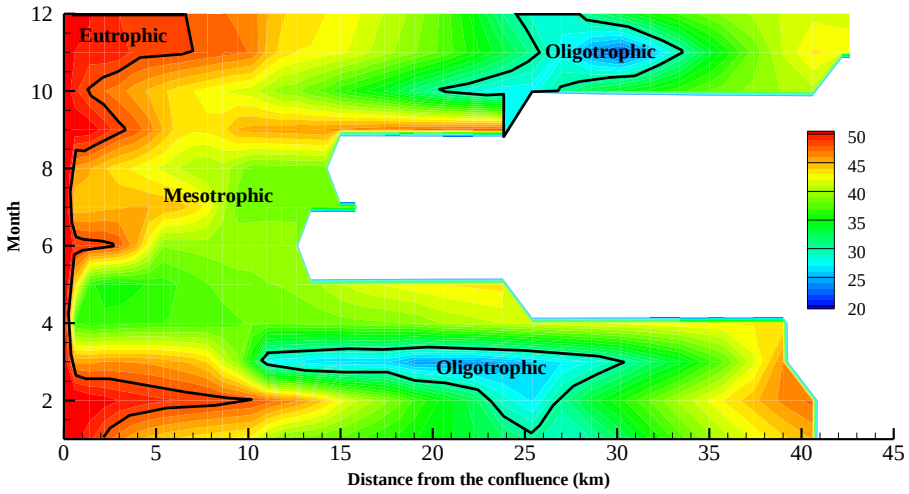
7) Line 417 - Line 418: "There was an obvious quality concentration boundary in the tributary bay, which was basically consistent with the regional boundary of the flow field". Are the boundaries of each month in Fig. 9. - Fig. 12. same to the boundaries of each month in Fig. 2. - Fig. 5.? If not, please make a comparison.

Authors' response: Yes, the boundaries of each month in Fig. 9. - Fig. 12. are the same

to the boundaries of each month in Fig. 2. - Fig. 5. We divided the tributary bay into two areas according to the flow field.

8) Fig. 16.: Title of horizontal axis in fig.16. is ". . . Yangtze River junction", which is not consistent with the previous description ". . .confluence".

Authors' response: We have changed the title of horizontal axis in Fig.16 from ". . . Yangtze River junction" to ". . .confluence". The revised figure is shown as follows.



9) What are the degradation coefficients of COD, NH_3-N, TP and TN?

Authors' response: The degradation coefficient of COD is 0.0032 d^{-1}, the degradation coefficient of NH_3-N is 0.0032 d^{-1}, the degradation coefficient of TP is 0.0018 d^{-1}, the degradation coefficient of TN is 0.0018 d^{-1}. We have added the degradation coefficients in our revised manuscript.

References

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