Response to Reviewer #3

We greatly appreciate your constructive comments. Your comments will be individually addressed in the revision of the manuscript. Below we provide a point-to-point response to your comments and clarify the important points of your main concerns.

The main objective of this study is to provide a comprehensive assessment of the impacts of China's international trade of goods and services on water resources and uses in different provinces. The impact on water quality due to pollution is not the main concern of this study. Therefore, we will delete the statements and claims not directly related to the core of the study in the revision of the paper. The statements we consider important will be supported with references from the literature. We will check the grammar and typo throughout the manuscript with help from a native English speaker at our institute.

Response to specific comments

1. We will consult with a native English speaker for the usage of the word here.

2. The suggestion is taken. The definition of DWUC and TWUC is moved from section heading to the text body.

3. The description of the data will be better presented for clarify in the revision of the manuscript. We agree with the reviewer that the return flow from agriculture should be considered in the calculation of water use in the sector. We will deduct the return flow in the calculation of the water use in agriculture when revising the manuscript. Based on the data in the Water Resources Bulletins of the nine major river basins in China, the return flow rate in the agricultural sector ranges between 25- 35%. Deducting the return flow will lead to a reduction in agricultural (blue) water use by the same percentage range. Consequently, the quantities of total water use and virtual water trade will be smaller than the numbers presented in the current version of the manuscript. However, the down scale of the quantities will not affect the conclusions made in the paper.

In all the industrial sectors, the recycling and reuse of water within each sector are considered in the calculation of DWUC presented in Table 1 (the procedure follows Zhao et al. (2009)). The wastewater discharge from the industrial sectors is not deducted from the water use calculation. This is because the polluted water may not be used by downstream areas without treatment. The lack of the information on the pollution intensity and the detailed rate of discharge from individual industrial sectors also adds difficulties in deducting the return flow in the calculation of water use in the industrial sectors.

This study only assesses the uses of blue water resources in all the economic sectors. The reason for not including green water in the assessment is for the content consistency across sectors. Apart from agriculture (and to a much lesser extent, its downstream sectors), all other sectors only use blue water. It will not be appropriate to compare the agricultural water use with the rest of the

sectors if the former included green water. We agree with the reviewer that excluding green water usage may lead to a bias in the virtual water content in the water scarce regions. However, in this study, the virtual water content of individual sectors is the national average due to the lack of the data for individual provinces. The possible bias to the water scarce regions due to the exclusion of green water has no effect on this study.

4. This study assesses the impact of China's international trade of goods and services on water resources and uses with specification of provinces and individual sectors. The results presented in Figure 5 are at the provincial level. The volumes at the country are the summations of the individual provinces. We will make this point clearer in the revision of the paper.

5. We fully agree with the reviewer that the intra-national trade is important in affecting regional water uses and balances. However, the motivation of this study, as stated in the title, is to explicitly address the impact of China's international trade on water resources and uses in individual provinces. The results of our study demonstrate that China's international trade has a significant impact on water resources and uses in different provinces. This, however, does not deny the importance of the intra-national trade in balancing water budget in different provinces. We can not provide an assessment of an intra-national trade because it is beyond the scope of this study. To avoid confusions and enhance stringency, the relevant sentences in discussion will be rewritten in the revision of the paper.