

Interactive comment on “Effects of ecological factors and human activities on nonpoint source pollution in the upper reach of the Yangtze River and its management strategies” by X. W. Ding et al.

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Dear referee who gave the comments, Thank you very much for your comments and suggestions. As you mentioned, our work aims to improve the NPS simulation method and supply a new tool for analyzing the driving forces of the spatial and temporal variations of NPS pollution. In our model, precipitation and terrain are considered, which enhance the accuracy of the Export Coefficient Method. In addition, we divided the NPS pollutants into dissolved one and absorbed ones, and proposed their respective

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contributions to NPS pollution from ecological and human activities sources quantitatively. Thank you for approving the importance and original contribution of this work, and we also agree that there still have some expressions need to be revised in the following version. The revisions would include the followings based on your suggestion. 1. Introduction – Line 10-22. We also realize that meteorological/ hydrologic conditions are very important to human-related NPS pollution. We will clarify it and change the expression. 2. Materials and Methods – In our research, the value of α depends only on the spatial and temporal distribution of rainfall. We ignored the impact of the location of sub-watersheds (i.e. the distance between a sub-watersheds and outlet). The reason is that our work focused on the output of NPS pollution, that we just simulated the loads generating on the surface, and that we didn't consider the process of transport and decay. We will specify it in the revised manuscript. In the future, we will take the “distance” into account as a key point to improve the assessment. 3. Results and Discussion – We did a lot of efforts to improve the Export Coefficient Method, which was adopted to simulate the loads of dissolved substances. For the research area, we proposed a new method to calibrate the export coefficients of dissolved pollutants and obtained a set of export coefficients for each type of land use. This might be the reason why the relative errors for dissolved substances are much lower than those for the sediment/absorbed pollutant. 4. Results and Discussion –We will discuss the “change pint” of the year of the 1980 and added it in the revised version. 5. Results and Discussion –Section 3.4– Line 15-22. The terms “source control” means the control of NPS pollution generation, and “sink control” means the control of NPS pollution loss. As mentioned in item 2, our research only focused on the loads generating on the surface, and ignored the transport and loss of NPS loads. So we call “fertilizer reduction” as “source control”, while call “nutrient management” as “sink control” considering that the nutrient source (fertilizer) has been put into the farmland. We will discussion it in the following manuscripts in the future. 6. Results and Discussion –The reduction rate of 9.17% for contour tillage was calculated by this study. Due to limited space, we didn't discuss it more. We will discussion it in the following manuscripts in the future.

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7. Results and Discussion –Controls – We will add the control practices specifically developed for agricultural activities, forest land, etc., such as buffer strips, farm ponds, constructed wetlands, etc.

Thanks again for your good suggestions and hope to discuss the following version or some other topics concerning nonpoint source pollution with you. Thank you again for your time.

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