

***Interactive comment on* “Research on Hydrogeochemical Characteristics and Transformation Relationships between Surface Water and Groundwater in the Weihe River” by Jihong Qu et al.**

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Q1: In my opinion, the pollution in this study area is an aspect that we should pay attention to. But it didn't give any information about the pollutants. Will the pollutants change the hydrochemical contents of the waters?

A1: Thanks for your comments. Please refer to line 75: 'The influence of river pollutants on groundwater is mainly banded and has a relatively small area of influence'. It means that we don't need to take the influence of pollutants for consideration in this study.

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Q2: For the STUDY AREA part, the Figure 1 of the sampling sites is not corresponding to the description, and it is not complimentary to enlighten the readers of the study area. For example, the places Xizhangzhuang village of Xiaohe Town and Dongwangqiao village of Liyang Town of the Line 76 are not showing in the figure. It would be helpful, if the contour of water table could be shown in the Figure 1

A2: Thanks for your comments. The scale of the map has restricted showing the places in Fig. 1. Meanwhile, Xizhangzhuang village has occupied almost half area of Xiaohe Town. The monitoring sites are installed in Xizhangzhuang village of Xiaohe Town and Dongwangqiao village of Liyang Town, thus the two villages are considered as substitutes for the regions, which are shown in Fig. 1.

Q3: In the DISCUSSION part, the interpretation of presented hydrochemical ions data could be supported with a more detailed description of the hydrological setting and lithology of the aquifer(s). All the discussion of the hydrochemical contents could go deeper if the geological settings were considered.

A3: This paper mainly focuses on hydrogeochemical characteristics and transformation relationships between surface water and groundwater in the Weihe River. The hydro-geochemical characteristics analysis is basically completed including HCO_3^- , SO_4^{2-} , Cl^- , Na^+ , Ca^{2+} Mg^{2+} , and δD and $\delta^{18}\text{O}$ of the surface water.

Q4: Generally, the manuscript is carelessly prepared. Text are readable, however, the abbreviations are not explained, and the figures are not well organized. So it is hard to read this manuscript clearly.

A4: Thanks for your comments. (1) The main text has been revised to be easily understandable, which could be referred to the tracking vision. (2) The abbreviations of 'EC, TDS, RDO, WHO' are cleared in the text, line 97, 116, and 135. (3) The captions of figures are all revised.

Q5: In details, what is the reproductivity of the hydrogen and oxygen isotopes? Please

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point out all Chinese references (in Chinese) for the international readers that do not understand Chinese language. It is hard to tell the difference of the lines in the Figure 7.

A5: Thanks for your comments. (1) The hydrogen and oxygen isotopes in this study are primarily analyzed as follows: The reason is that the farmland in the Chaiwan section and the Wangsizhuang section is mainly irrigated using Weihe River water, and the infiltration of irrigation water causes the enrichment of hydrogen and oxygen isotopes in the groundwater. The hydrogen and oxygen isotope characteristics are more similar to those of the Weihe River. The CHW02 and CHW03 sampling points in the Chaiwan section are located in an area affected by river irrigation, and CHW01 is a household well. The hydrogen and oxygen isotope values are $CHW03 \geq CHW02 > CHW01$. Similarly, WSZ02, WSZ03 and WSZ04 in the Wangsizhuang section are located in an area affected by river irrigation, and WSZ01 is a household well. Thus, the hydrogen and oxygen isotope values are $WSZ04 \geq WSZ03 \geq WSZ02 > WSZ01$. (2) Although references in this paper are written by Chinese, the majority are published in top journals by English. Only two of them are in Chinese and have been labeled in the reference section. (3) There are five types of lines in Figure 7 whose legends are already shown. The Global meteoric water line and China line coincide on the top. Then the three lines are Shijiazhuang, Zhengzhou and groundwater samples respectively.

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-654/hess-2017-654-AC3-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-654>, 2017.