

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

Anonymous Referee #2

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This manuscript by Qu describes the groundwater hydrochemical and isotopic characteristics and relationships between surface water and groundwater in the Weihe River. There is no novel aspect on the methodology, such as Piper plot, Gibbs diagram, and ionic ratios, statistical analysis. The authors did not combine the analysis of hydrogeologic conditions with a database of chemical and isotopic data to illustrate the relationship between surface water and groundwater bodies. The whole paper lacks new understandings of interaction between surface- and ground-water in general. The manuscript is not organized well for a publication in a top international Journal. Addi-

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tionally, it needs to convey some new understanding that ideally is applicable to other study areas. In the conclusions, the authors need to explain the relevance to research elsewhere. I consider that it does not constitute a valuable scientific contribution.

Abstract shows some results with lack of valuable conclusions. What's the evidence for "There is a close relationship between the surface water and groundwater." The authors should show some detailed data for the stable isotopic compositions in different water types in the ABSTRACT.

The INTRODUCTION does not provide good background to the study and places it in an international context. It is overelaborate without giving a straightforward idea of what the paper would like to present. The authors did not point out the specific aims of this study. What is not clear is what new general information you hope to provide. What new and scientific contribution wil come out of this paper?

Study Area: What's the main environmental issue associated with water resources in this study area? Please show the full statement for 'EC,TDS, RDO, WHO' when they first occur in the paper.

Materials and methods: Line 119:'The principle of division' For this method, does it have assumed condition? If use chloride or other tracers, how about the results? Line 127:'...is calculated with δD as a standard.', please explain it.

Results and Discussion: Section 3 is too long and tries to describe too many things. The thrust of this paper is to identify the interaction between surface water and groundwater. You should try to keep this as the main focus of the paper. Apart from 3.4.2, most of the contents in the section 3 are results. Line 259: for the data source from the 27 GNIPs set up in China, please add the specific references.

Conclusions: This section just summarises the main findings of the project. In this section explain in more detail how your project helps us to understand processes in these environments more broadly; the paper will have more impact if researchers from

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elsewhere in the world can see relevance to their studies and a paper in a major international journal such as HESS needs to have broad appeal.

Figure 1, please show the coordinates of the map. Could you add the groundwater level contours on Fig. 1? Figure 5, is it for showing the results on groundwater samples? not clear. Please be prudent to use the cluster analysis and avoid the false correlation, especially for the groundwater samples. Figure 6, add 'a' and 'b' for the left and right diagrams, respectively. Add the corresponding figure captions. 'Isotopic variation of surface water' There is only one data for one reach of the river. What's the variation? Figure 7, the types of lines are not clear.

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