Dear Reviewer:

Thank you for your letter and for the reviewer's comments concerning our manuscript entitled “Stable water isotope monitoring network of different water bodies in Shiyang River Basin, a typical arid river in China” (Manuscript Number: essd-2021-465).

According to the comments of the reviewer, we have revised our manuscript carefully. The primary corrections and the response to the reviewers’ comments are as follows.

Response to Reviewer #1

Reviewer #1: The MS has indeed improved, and most of my comments have been answered. I only have one concern that has not been addressed to the required extend. The dataset is not placed in the international literature enough. Yes, you have described its importance mainly using studies from the Shiyang River Basin (e.g. Sun et al. 2021, Zhu et al., 2021c,d). Please embed you study in international literature and I do not mean here that you should cite more papers from international journals, but compare your dataset to other rivers and their catchments of the same scale. I know it would be difficult because compared to the relative short length of the Shiyang River (250 km (lie 80)) it has a relatively large catchment size (>41000 km^2). The bottom line is to compare what you have gathered to other rivers and catchments from other continents. Even to sub-cacthments. Dedicate a separate section to this in the Ms, so the readers would not only see how unique the Shiyang River Basin is (that you have now included in the revision), but would get a clear idea on how it compares to other rivers and river basins. Rivers that may be comparable (please do search for others: Ångerman (Sweden), Glomma/Glåma (Norway), Digul (New Guinea), Pastaza & Ventuari (S America), etc. ... and I would search for comparisons primarily based on the catchment size and runoff rather than the length of the river.

Response: As you suggested, we have compared the Shiyang River basin with other

rivers and catchments. The additions are as follows:

There are many rivers and watersheds similar to the Shiyang River basin in the world. Angerman River, located in northern Sweden, is the third largest river in Sweden, with a total length of 450 km and a watershed area of 32,000 km^2 (Mitrovica and Forte, 2004). Many hydropower stations are built along the Angerman River due to the rapids (Melin, 1970). Glomma River is the longest river in Norway. 13% of Norway's land area belongs to the Glomma River, with a total length of 598 km and a watershed area of 42,000 km^2 (Petterson et al., 2016). The agricultural area accounts for 5.8% of the catchment area, and the catchment area has about 675,000 residents (Helland, 2001). Digul River in Indonesia, with a total length of 525 km, covers an area of 29,700 km^2 and is covered with swamps and rainforests (Ploeg, 2013). Compared with the Shiyang River basin, these rivers and basins have little difference in basin area (the Shiyang River basin covers 41,600 km^2) but significant difference in length (the Shiyang River is 250 km). The Shiyang River has a short length, a large basin area, and a large population, which makes the Shiyang River basin one of the inland river basins with high population density in the world. Its per capita water resources are low, with a net utilization rate of over 95%, far exceeding the internationally recognized reasonable utilization rate (Wei et al., 2013; Li et al., 2013). Compared with the Glomma river, the Shiyang River basin has a large agricultural area and a dense population, but its length is short, and its development time is early, so the contradiction between water resources and the ecological environment in the Shiyang river basin is the most prominent. Compared with the catchment area, the relatively short river, such as the Orinoco River in South America, has a length of 2740 km and a drainage area of 948,000 km^2 (Lavelle et al., 2013). Its drainage area is similar to that of the Yangtze River, the longest river in Asia (with a drainage area of about 1 million km^2), but its length is short (the length of the Yangtze River is 4504 km) (Wang et al., 2012). The Yangtze River and Orinoco River in South America are rich in precipitation and water resources, while the Shiyang River lies deep in the hinterland of Eurasia, with little and irregular precipitation, large evaporation, and long drought period, so the Shiyang River basin has become the focus of public

attention.

Mitrovica J X, Forte A M.: A new inference of mantle viscosity based upon joint inversion of convection and glacial isostatic adjustment data, Earth. Planet. Sci. Lett., 225(1-2): 177-189, doi:10.1016/j.epsl.2004.06.005, 2004.

Melin R.: Hydrological regions in Scandinavia and Finland, Hydrol. Res., 1(1): 5-37, doi:10.2166/nh.1970.0001, 1970.

Petterson, S. R., Stenström, T. A., and Ottoson, J.: A theoretical approach to using faecal indicator data to model norovirus concentration in surface water for QMRA: Glomma River, Norway, Water. Res., 91, 31-37, doi: 10.1016/j.watres.2015.12.037, 2016.

Helland, A.: The Importance of Selective Transport and Sedimentation in Trend Monitoring of Metals in Sediments. An Example from the Glomma Estuary, East Norway, Water. Air. Soil. Poll., 126, 339-361, doi: 10.1023/A:1005243728540, 2001.

Ploeg, A.: Jan Pouwer's field research in the Star Mountains, west New Guinea, Oceania., 83(1), 49-56, doi: 10.1002/ocea.5005, 2013.

Lavelle, P., Rodríguez, N., Arguello, O., Bernal, J., Botero, C., Chaparro, P., Gómez, Y., Gutiérrez,A., del Pilar Hurtado, M., Loaizaa, S., Pullidoc,S. X., Rodríguez, E., Sanabriaa, C., Velásquez, E., and Fonte, S. J.: Soil ecosystem services and land use in the rapidly changing Orinoco River Basin of Colombia, Agr. Ecosys. Environ., 185, 106-117, doi: 10.1016/j.agee.2013.12.020, 2014.

Wang, T., Wang, H. S., Sun, G. W., Huang, D., and Shen, J. H.: Length-weight and length-length relationships for some Yangtze River fishes in Tian‐e‐zhou Oxbow, China, J. Appl. Ichthyol., 28(4), 660-662, doi: 10.1111/j.1439-0426.2012.01971.x, 2012.

Additional comments:

-state the catchment size of the river (I think it is about 41000 km^2) https://link.springer.com/article/10.1007/s10668-020-01045-w ,

-the relatively short length compared to the large catchment size should be discussed as well,

- the characteristics of the Shiyang River catchment have to be placed into

international context as well.

Response: Firstly, we explained the catchment area of the Shiyang River basin. Secondly, we discussed the catchment area with a large catchment area and relatively short length, according to your suggestion. Finally, we explained the characteristics of the Shiyang River basin in the international context. The additions are as follows:

The river is about 250 km long and covers an area of about 4.16×10^4 km^2 (Wang and Gao, 2021).

Wang, B., and Gao, X.: Temporal and spatial variations of water resources constraint intensity on urbanization in the Shiyang River Basin, China, Environ. Dev.Sustain., 23(4), 1-18, doi: 10.1007/s10668-020-01045-w, 2021.

Compared with the Glomma river, the Shiyang basin has a large agricultural area and a dense population, but its length is short, and its development time is early, so the contradiction between water resources and the ecological environment in the Shiyang river basin is the most prominent. Compared with the catchment area, the relatively short river, such as the Orinoco River in South America, has a length of 2740 km and a drainage area of 948,000 km^2 (Lavelle et al., 2013). Its drainage area is similar to that of the Yangtze River, the longest river in Asia (with a drainage area of about 1 million km^2), but its length is short (the length of the Yangtze River is 4504 km) (Wang et al., 2012). The Yangtze River and Orinoco River in South America are rich in precipitation and water resources, while the Shiyang River lies deep in the hinterland of Eurasia, with little and irregular precipitation, large evaporation, and long drought period, so the Shiyang River basin has become the focus of public attention.

Lavelle, P., Rodríguez, N., Arguello, O., Bernal, J., Botero, C., Chaparro, P., Gómez, Y., Gutiérrez,A., del Pilar Hurtado, M., Loaizaa, S., Pullidoc,S. X., Rodríguez, E., Sanabriaa, C., Velásquez, E., and Fonte, S. J.: Soil ecosystem services and land use in the rapidly changing Orinoco River Basin of Colombia, Agr. Ecosys. Environ., 185, 106-117, doi: 10.1016/j.agee.2013.12.020, 2014.

Wang, T., Wang, H. S., Sun, G. W., Huang, D., and Shen, J. H.: Length-weight and

length-length relationships for some Yangtze River fishes in Tian‐e‐zhou Oxbow, China, J. Appl. Ichthyol., 28(4), 660-662, doi: 10.1111/j.1439-0426.2012.01971.x, 2012.