The reviewer #2 is thanked for the constructive comments on the manuscript. The responses and proposed modifications are outlined below.

General comments

The work presented by Zhou et al., *is relevant to HESS. The contents are comprehensively described and provide very good insights into the rivers functioning, mean water transit times and water sources in intermittent streams in southeast Australia by using major ions and electrical conductivity. However, I suggest some minor revisions commented below.*

Response: The reviewer is thanked for acknowledging importance of our work. This was the main message we are trying to disseminate in this paper.

Specific comments

Watch out the grammar and the wording of sentences. For example, is it correct "contribute uncertainty to MTT" or should it be "contribute to uncertainty in MTT" (line 120)?

Response: Thanks for the comments. We will check the grammar and reword sentences throughout the paper (including Line 120).

The Discussions interpret the results very well. However, in my view, there may be a little more discussion in the subsection Comparison with perennial streams on how your findings are susceptible to changes in the climate (e.g., drought resilience of watersheds, limited streamflow generation processes, and changing status of the instream water quality) since you mention this important issue both in the Abstract and in the Conclusions.

Response: Thank you for the constructive advice. We will add more content on differences between perennial and intermittent streams. These will be 'If intermittent streams are mainly sustained by small and young water stores from near-river corridors than larger volume of regional groundwater system that is common in perennial streams, then maintaining healthy of near-river environment will be critical to protect the water resources. the smaller volumes of water sustaining streamflow also mean that intermittent streams are more susceptible to short-term variations in rainfall caused by climate changes, and the flow regime of several intermittent streams in southeast Australia (including the Wimmera) have changed over recent years. Some of this discussion is already in the paper but we will highlight it.

Technical corrections

Line 26: I would name the upper Wimmera River here since you are introducing the study site, rather than later on line 33, all of a sudden;

Response: We will add 'the upper Wimmera River' on Line 26.

Line 50: You could explain why TTDs provide better information than MTTs, since you are mentioning this (e.g., TTDs describe all the transit times of the water parcels in the streamflow; however, MTT is a common metrics for TTDs, as it represents the mean transit time of the water leaving the catchment (McGuire and McDonnell, 2006)). Then keep going with explanations and implications of MTT, as you have already written;

Response: We will add a little more discussion that TTDs provide more information on the distribution of water ages within the sample rather than just the mean transit time. This allows a finer-scale understanding of catchment processes (e.g., changes of water stores with flow). In practice, even with time-series data, it would probably be difficult to estimate TTDs in a system as large as the upper Wimmera because the system is likely to be heterogeneous.

Line 60-64: what about mentioning the release of water of different ages also as a function of the catchment's wet/dry conditions?

Response: We can certainly add those details. Again, due to heterogeneities, it would be difficult to do this in a catchment of this size as the stores of water are likely to differ spatially and there may also be differences in the timing that the stores (e.g., the soils or perched riparian groundwater) in different parts of the catchment become active.

Line 86: following up the comment of Anonymous Referee #1, quoted below "Since most earlier studies used monthly data with LPMs, I would not say that subweekly data are required when using attenuation of the stable isotope signal", I also suggest to reformulate the sentence, and stating why you say that sub-weekly or, more generally, high frequency tracer data are commonly needed. For example, it can be said that high-frequency and long-term tracer data are generally recommended to appropriately describe fast catchment-scale hydrological behaviors and the tail of the TTDs, respectively. See:

1. Kirchner, J. W., Feng, X., Neal, C., and Robson, A. J.: The fine structure of water-quality dynamics: the (high-frequency) wave of the future, Hydrol. Process., 18, 1353–1359, https://doi.org/10.1002/hyp.5537, 2004, *2. von Freyberg, J., Studer, B., and Kirchner, J. W.: A lab in the field: high-frequency analysis of water quality and stable isotopes in stream water and precipitation, Hydrol. Earth Syst. Sci., 21, 1721–1739, https://doi.org/10.5194/hess-21-1721-2017, 2017.*

Response: This was discussed above in relation to the comments of Reviewer #1. It is true that MTTs have been estimated with less frequent data. However, as those references indicate, using more frequent data would allow for TTDs to be estimated and would also allow a better understanding of when and how different stores of water become activated. Our approach in this study to use ^{3}H was that it allows MTTs to be estimated in relatively large rivers without the need for time-series ^{18}O or Cl measurements that are not available in this catchment. We realise that this approach misses some of the details of the processes, but it does provide very valuable information on catchment functioning.

Line 334-336: 'Overall, the major ion geochemistry of the groundwater, stream water from the different flow conditions, pool water and, NRW are similar'. What about EC? Differences in EC between stream water (2430-15,330 µS cm-1) and near-river water (1035 to 6080 µS cm-1) during zero-flow period are significant, and you could explain why.

Response: In the upper Wimmera River, regional groundwater has the highest EC values and relatively high values of EC were also recorded in pool waters. On the contrary, stream water and near-river water (NRW) are less saline as they have contributions from fresh and young water stores. The difference in EC values between pool water and near-river water is mainly caused by evaporation in the pools. Additionally, the description in line 328 to 330 is probably confusing reader as 2430-15,330 µS cm^{-1} was the range for pool water (we described it as stream water at zero flows). We will clarify this.

Line 416-418: 'The variation in ^{3}H activities with $\delta^{2}H$ (Fig. 6a) and TDS concentrations (Fig. 6b) most likely reflects the mixing between older regional groundwater and younger evaporated stream water'. It is not clear to me why you have drawn these conclusions. Could you explain better?

Response: This was also discussed above in relation to the comments of Reviewer #1. This explanation explains the available data (including the $\delta^{18}O$ and TDS). The sample with the highest $\delta^{2}H$ records evaporation (as implied by Fig. 4) and the samples with the lowest ^{3}H look to have a component of older saline groundwater. As noted above, there may be a difference between the pools with larger groundwater contributions than those dominantly fed by surface water. We will ensure that this is clearly explained in the revised paper.