

Interactive comment on “Discussion on key challenges facing the application of the conductivity mass-balance (CMB) method: a case study of the Mississippi River Basin” by Hang Lyu et al.

Anonymous Referee #1

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The conductivity mass-balance (CMB) method has been widely applied to baseflow separation studies for years. But there are some issues have not yet been standardized. This manuscript presents an detail study on the issues which hindering the application of the generally accepted conductivity mass-balance baseflow separation method. I think the results may have a substantial contribution on the standardized treatment of key problems in the application of the CMB and the paper can be accepted by minor revision. A few comments and suggestions are listed below.

1. In Line133, page 5, it has mentioned that “assigning the 99th percentile (ordered

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by increasing conductivity) of the stream conductivity monitoring record to avoid the impacts of extremely high SCBF estimates on the separation results”, please indicate which conditions can cause extremely parameter values?

2. The study has applied both the uncertainty estimation methods of BFI proposed by Yang et al. (2019) and Genereux and Hooper (1998) to determine the parameters and the shortest time series in the present study. Why do we use both methods at the same time and what are the differences between them?

3. In table 1, why not compare the uncertainty results of the various WSCRO determination methods?

4. Fig. 1, 3, 6, 7 should be replaced by more clearer pictures.

5. In the conclusion part, it is suggested that large watersheds in other latitudes and climates should be considered in the future research, so as to compare and verify the conclusions of this study, and to obtain more general guiding methods.

6. In the future research, it is suggested that the results of this method can be used to identify the parameters of other methods to improve the accuracy of separation results of other methods

7. Reference format is not consistent. It should follow the guidelines of the Journal.

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