

## ***Interactive comment on “Technical note: Uncertainty in multi-source partitioning using large tracer data sets” by Alicia Correa et al.***

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We are very grateful to Bettina Schaepli for her thoughtful comments, which we will fully consider in order to improve our Technical Note. We appreciate the general comment that the Technical Note is very condensed as our intentions were to emphasize the mathematical development for potential applications in future case studies (Matlab code for reproducibility was supplied). However, we fully agree that we should extend on the explanations for clarification and readability, particularly in the results and discussion sections.

Regarding the more detailed comments:

1)  $f$  represents the fraction of contributions of sources A, B, C and D, respectively of

C1

the used sub-index.  $C$  represents the set of sources A, B, C, D and mixture M  $x$ ,  $y$  and  $z$  are variables that belong to the sets:  $x$  to the set of A, B, C, D and mixture M  $y$  to the set of standard deviations in each principal component  $z$  to the set of  $\delta^{18}O$ ,  $\delta^{13}C$  and C  $x$ ,  $y$  and  $z$  are used as aids used to make the mathematical description of the equations more compressed and understandable. This will be further described in the methods section, but we prefer to maintain standard mathematical formulations since we focus our efforts on the mathematical development of the three-dimensional application (not previously developed).

2) We will include the equation and description of the estimation of the confidence interval accompanied by a reference to the  $t$  student table in the revised manuscript.

3)  $U_1$   $U_2$   $U_3$  are widely used terms within the EMMA literature representing the principal components applied to the chemistry of the mixture, being PC1, PC2 and PC3 respectively. However, we will describe these variables in more detail in the methodology and the results sections of the revised manuscript.

4) We will include the calculated degree of freedoms in a table and intend to create a virtual example with subsets of data to show the effect of outliers on calculated uncertainty bounds in terms of a simple sensitivity test.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-197>, 2019.