

Interactive comment on “Assessing ecohydrological separation in a northern mixed forest biome using stable isotopes” by Jenna R. Snelgrove et al.

Anonymous Referee #2

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The authors studied the isotopic dynamics in gross precipitation, bulk soil water, mobile soil water and xylem water of four tree species, observed in a northern mixed forest (Ontario, Canada) during the growing season 2016. They put their results in context with the two water worlds / ecohydrological separation hypothesis.

The manuscript presents a well carried out study and shows a nice data set. The study fits well within the scope of HESS, however, it needs some revision. In particular, the discussion is too long and could benefit from trimming and condensing. The discussion is generally a good review of current literature, however, it is too detailed and distracts too much from the authors' main findings and thereby fails to highlight and explain

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the observed differences in bulk soil water, mobile soil water and xylem water. The discussion should focus more on the authors' main results and their interpretation, and for this interpretation, it would help a lot to integrate the points in 4.3 earlier.

It would be also interesting to dig a bit deeper into why xylem water differed between species, pointing more at possible different species' strategies in water use (not just rooting depth) and their influence on xylem water, such as water storage in trunks /other plant compartments, different water use (water spender vs. water saver), dormancy, etc.

In addition, it should be discussed more in detail how the different methods applied could have affected the results. Lysimeter vs. equilibration technique vs. cryogenic extraction. IRMS vs. ICOS (2 different analyzers).

Also, there are many figures (8 figures). Maybe some figures could be moved to the appendix? It would be good to make clearer that there is some overlap in data with a previous study of Snelgrove (2019). (Table 1: tree information, Fig. 6: mobile soil water, SWC data of sites He and Or/Pw?).

I added my line-by-line notes as attachment.

I am looking forward to reading the manuscript again!

Please also note the supplement to this comment:

<https://hess.copernicus.org/preprints/hess-2020-592/hess-2020-592-RC2-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2020-592>, 2020.

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