We sincerely thank the reviewer for the encouraging and constructive comments. We appreciate your positive assessment of our study, particularly the potential of our approach to contribute to the development of standard methods for deriving plant hydraulic properties in a non-destructive manner.

Below, we provide point-by-point responses to the reviewer's specific comments.

1. ***Eq6: where is this equation used?***

Equation 6 is used to adjust the influence of temperature on hydraulic conductance, allowing the derived values to be standardized to a reference temperature of 25 °C. Specifically, Eq. 6 is substituted into Eq. 5 to compute the whole-plant hydraulic conductance at the corresponding temperature and water potential. All subsequent hydraulic conductance values presented in the manuscript—including those in Table 1—are reported at 25 °C. We will improve the description of this part in the revised manuscript.

2. ***L169: add country name of Flint University.***

Flinders University is in Adelaide, Australia. We will add it in the revised manuscript.

3. ***Fig3: unit of daily radiation is MJ/m2/day; unit of daily precipitation is mm/day***

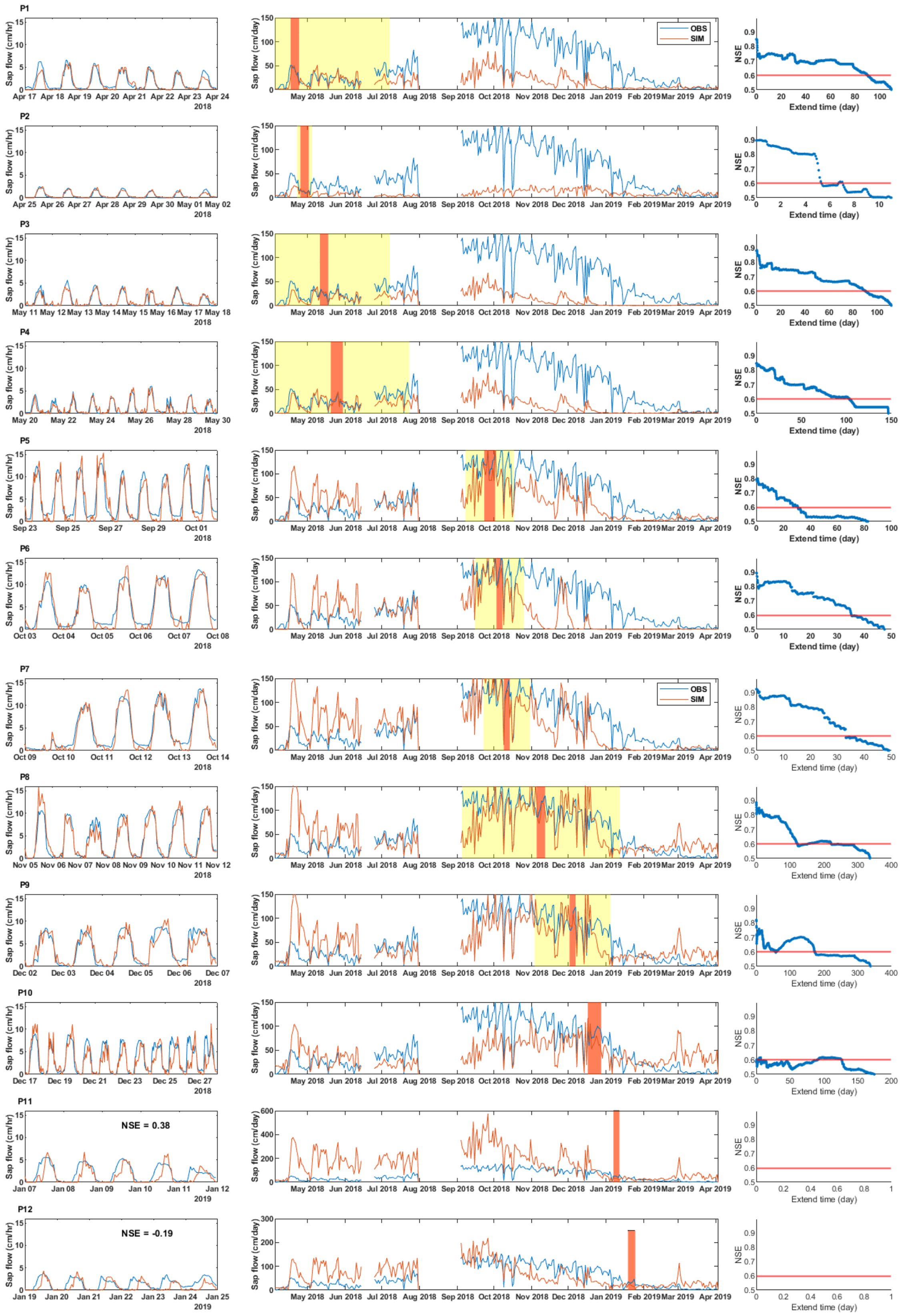
We will change it in the revised manuscript.

4. ***Fig 3c: how can the accumulative precipitation go down? Do you mean net precipitation here? e.g., precipitation minus (actual/reference/potential) evaporation? In case of the latter, clearly explain which evaporation is used.***

Thank you for pointing out this confusion. In Fig. 3c, the "accumulative precipitation" actually refers to the sum of rainfall over the preceding 105 days, calculated on a rolling basis. Since this is a moving window sum rather than a cumulative total from the start of the season or year, it can decrease if recent rainfall decreases compared to earlier periods within the window. We agree that the current label may be misleading, and we will directly describe it as the sum of rainfall in the preceding 105 days. We are not referring to net precipitation or subtracting any form of evaporation in this figure.

5. ***Fig4: this figure is rather small and therefor difficult to read.***

Thank you for the helpful comment. We agree that the current layout makes Fig. 4 difficult to read. In the revised manuscript, we will change the layout to a one-column format to increase the figure size and improve legibility. The revised version of the figure is shown below.


P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P11
P12
Sap flow (cm/hr)
Sap flow (cm/day)
OBS
SIM
NSE
Extend time (day)
NSE = 0.38
NSE = -0.19
May 2018 Jun 2018 Jul 2018 Aug 2018 Sep 2018 Oct 2018 Nov 2018 Dec 2018 Jan 2019 Feb 2019 Mar 2019 Apr 2019
Apr 17 Apr 18 Apr 19 Apr 20 Apr 21 Apr 22 Apr 23 Apr 24
2018
Apr 25 Apr 26 Apr 27 Apr 28 Apr 29 Apr 30 May 01 May 02
May 11 May 12 May 13 May 14 May 15 May 16 May 17 May 18
May 20 May 22 May 24 May 26 May 28 May 30
Sep 23 Sep 25 Sep 27 Sep 29 Oct 01
Oct 03 Oct 04 Oct 05 Oct 06 Oct 07 Oct 08
Oct 09 Oct 10 Oct 11 Oct 12 Oct 13 Oct 14
Nov 05 Nov 06 Nov 07 Nov 08 Nov 09 Nov 10 Nov 11 Nov 12
Dec 02 Dec 03 Dec 04 Dec 05 Dec 06 Dec 07
Dec 17 Dec 19 Dec 21 Dec 23 Dec 25 Dec 27
Jan 07 Jan 08 Jan 09 Jan 10 Jan 11 Jan 12
2019
Jan 19 Jan 20 Jan 21 Jan 22 Jan 23 Jan 24 Jan 25

6. ***Fig4: In your validation periods you largely underestimate sapflow in summer. This is also the case when you calibrate on summer sapflow. How is this possible? You'll expect that the parameters would be able to simulate this? I think it will be good to elaborate on this mismatch in the manuscript. Furthermore, could equifinality in model parameters play a role here? No information on parameter optimization is shared.***

Thank you for this insightful comment. We agree that underestimation of sap flow occurs in some summer calibration periods (notably P5, P6, & P7) , and we will elaborate on this mismatch in the revised manuscript. Specifically, we will add the following explanation:

"…… In some early summer calibration periods, the model underestimates sap flow in late summer (P5 - P7). This underestimation is not due to a limitation in maximum hydraulic conductance but rather results from the shape of the vulnerability curve, specifically the relatively high (less negative) Ψ_{50} values derived for these periods. A higher Ψ_{50} indicates greater sensitivity of hydraulic conductance to declining water potential, causing hydraulic conductance to drop rapidly under moderate water stress. This sharp decline in hydraulic conductance effectively limits sap flow in the simulation. The temporal dynamics of Ψ_{50} are analysed in more detail in the next section (see Fig. 5)……"

Regarding the information on parameter optimization, the optimal parameter values are presented in Figure 5 to 7, and their posterior distribution are shown in Figure S3. These distributions are tightly clustered and exhibit narrow ranges, suggesting relatively low uncertainty. We will revise Figure 8 to additionally display the standard deviations of the posterior parameters, in line with Reviewer #2's suggestion. While equifinality is always a consideration in model calibration, in this case, we believe its impact is limited. The narrow posterior distributions indicate that the model parameters are relatively well-constrained and that equifinality is unlikely to be a major driver of the observed mismatch.

7. ***Fig 4: Currently, you calibrated on a few days. What if you would calibrate on an entire season? Would the model then be better in capturing all-season plant hydraulic properties?***

Thank you for this thoughtful question. Based on your suggestion, we tested two additional calibration strategies to explore this idea further. First, we calibrated the model over the entire data period (see Fig. R1). The results show that sap flow is overestimated in the winter and underestimated in the summer. This suggests that plant hydraulic properties vary seasonally, and calibrating over the whole year leads to parameter values that represent a compromise between winter and summer conditions. As a result, the model fails to capture seasonal dynamics accurately. Second, we calibrated the model using only summer data (September to December), and the results are shown in Fig. R2. As expected, the model performs well during the calibration period (summer), but significantly overestimates sap flow during the winter. This again highlights the seasonal variability in hydraulic properties. In summary, calibrating over an entire season can effectively capture the average behaviour during that season, but it cannot fully represent plant hydraulic properties across all seasons due to their temporal variability. To accurately capture seasonal dynamics, it is necessary to allow model parameters to vary over time. We will include Figs. R1 and R2 in the Supplement Materials to support this discussion.

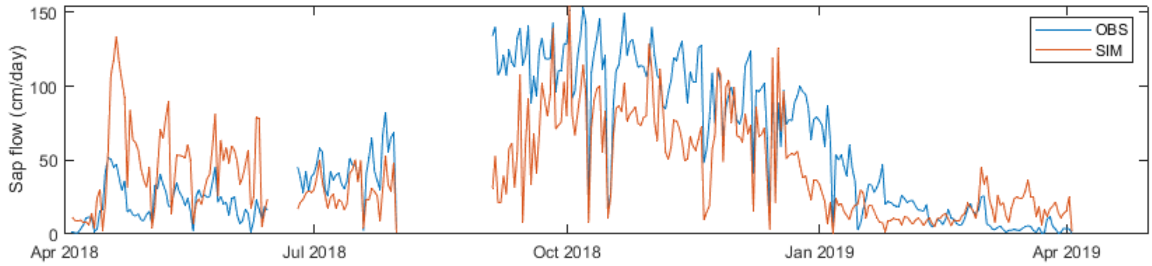


Figure R1. Simulated sap flow from the whole data period compared with observed sap flow (NSE = 0.54).

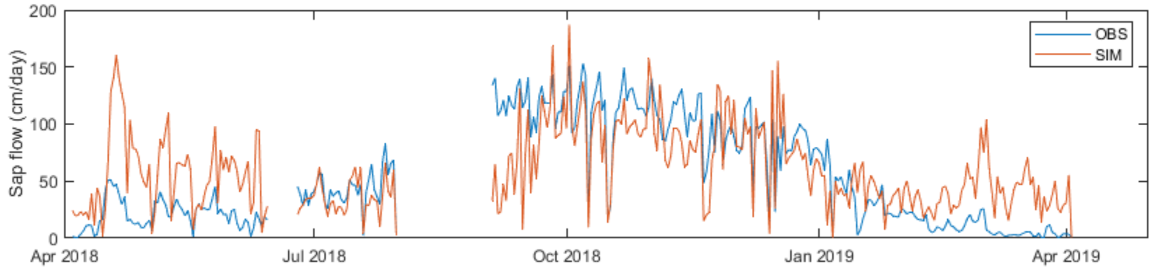


Figure R2. Simulated sap flow from the whole data period compared with observed sap flow (Calibrated NSE = 0.65; validated NSE = 0.37).

8. ***Table2: From this table it seems that Tree2 is 'the best performing' tree. How do the sapflow time series of the other trees look like?***

The sap flow time series of the other trees in calibration and validation are provided in Figs. S1 and S2 (in the same format as Fig. 4) in the Supplementary Materials. Their performance is similar to that of Tree 2. We chose to present Tree 2 in the main text primarily due to space limitations and the fact that it has the largest number of calibration periods.

9. ***Fig5+6: What is the difference between blue and red?***

Thank you for pointing this out. In Figures 5 and 6, we use colour to indicate seasonal context: cool colours (e.g., blue) represent the wet season, while warm colours (e.g., red) represent the dry season. We will clarify this in the revised figure captions to avoid confusion.

10. ***L359: Figure 6 => Figure 7?***

Yes, thank you for catching this. We will correct the figure reference from Figure 6 to Figure 7 in the revised manuscript.