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Supplement of

Coordination of rooting, xylem, and stomatal strategies explains the response of conifer forest stands to multi-year drought in the southern Sierra Nevada of California

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Figures S1 a) monthly GPP and b) latent heat flux of full sensitivity analysis grouped by rooting depth

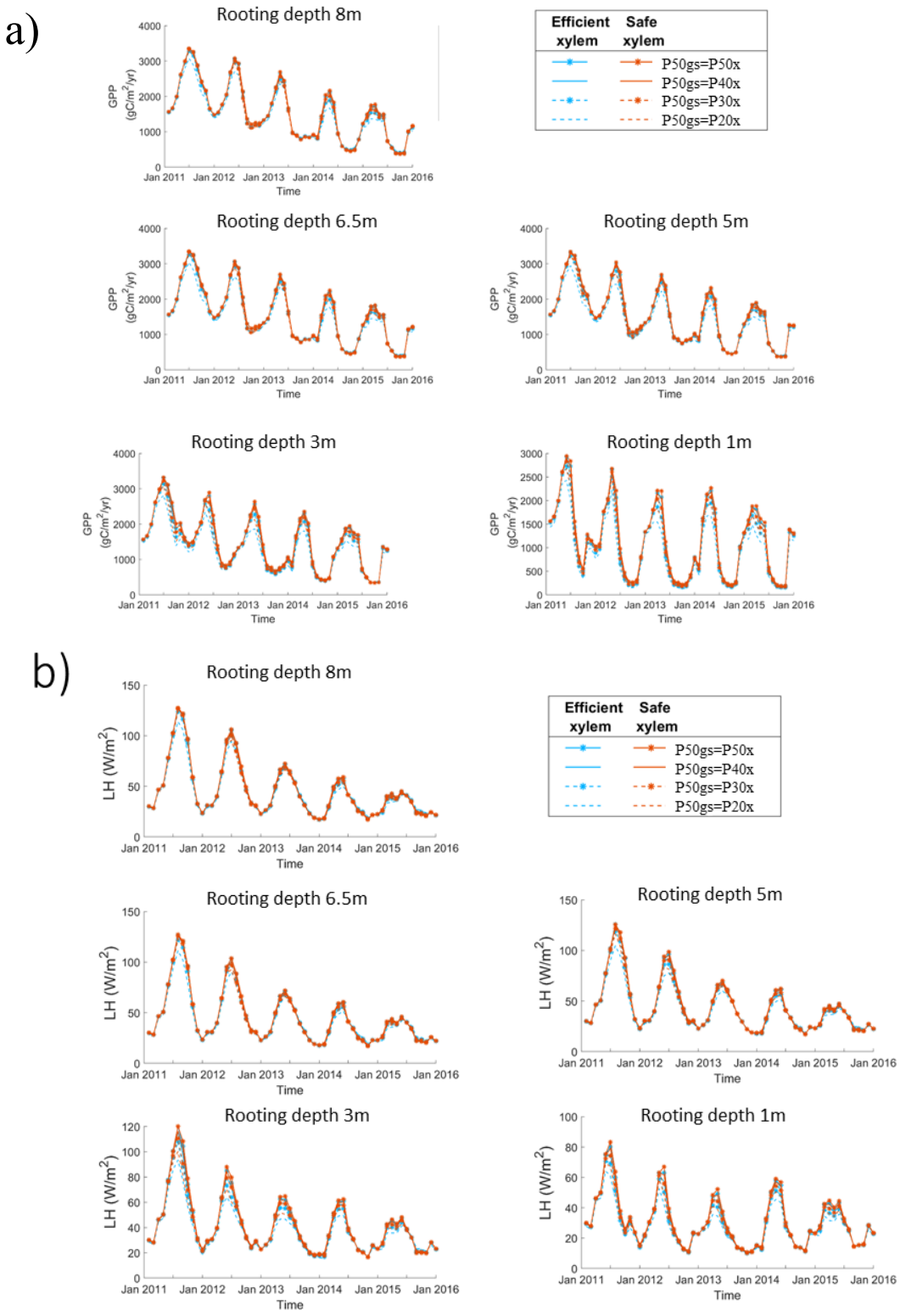
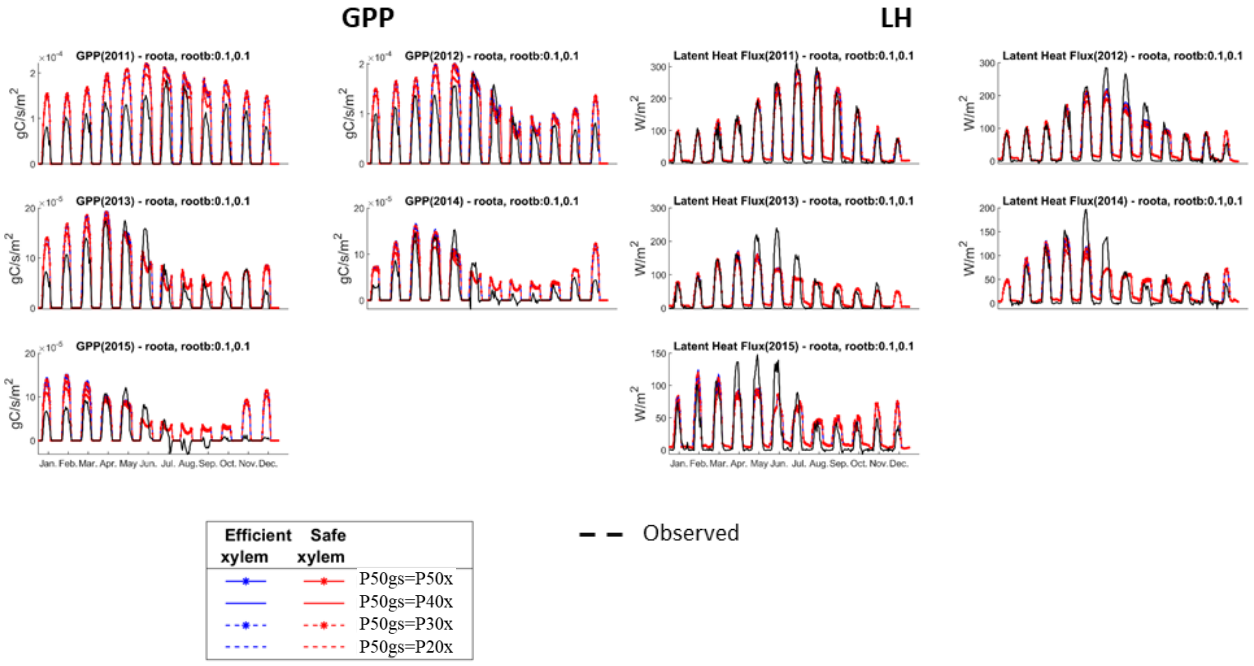


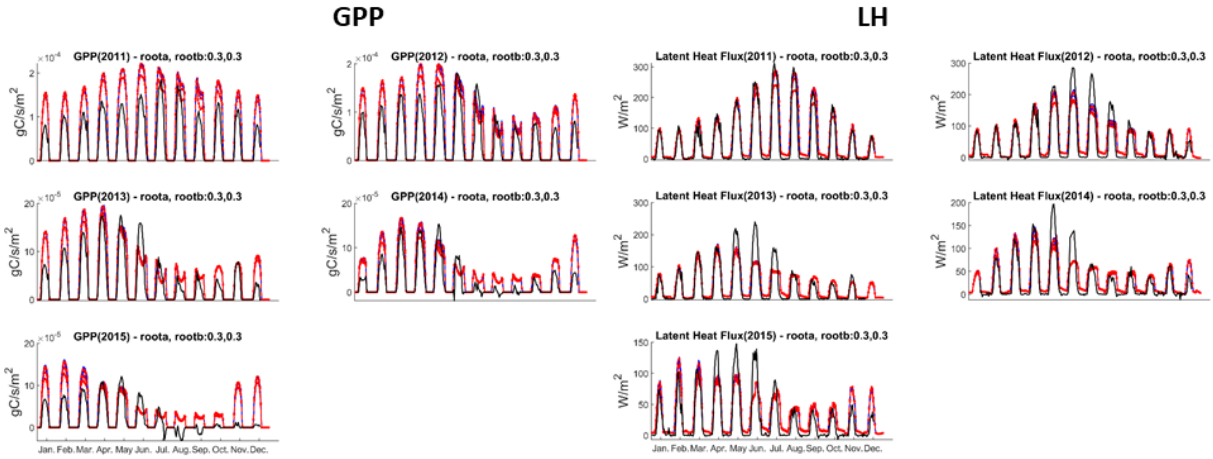
Figure S2. Mean hourly GPP and Latent Heat flux by month and year of five effective rooting depth scenarios: a) 8m, b) 6.5m, c) 5m, d) 3m, and e) 1m.

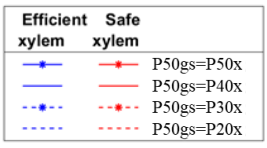
a) GPP and LH of 8m rooting depth



Observed

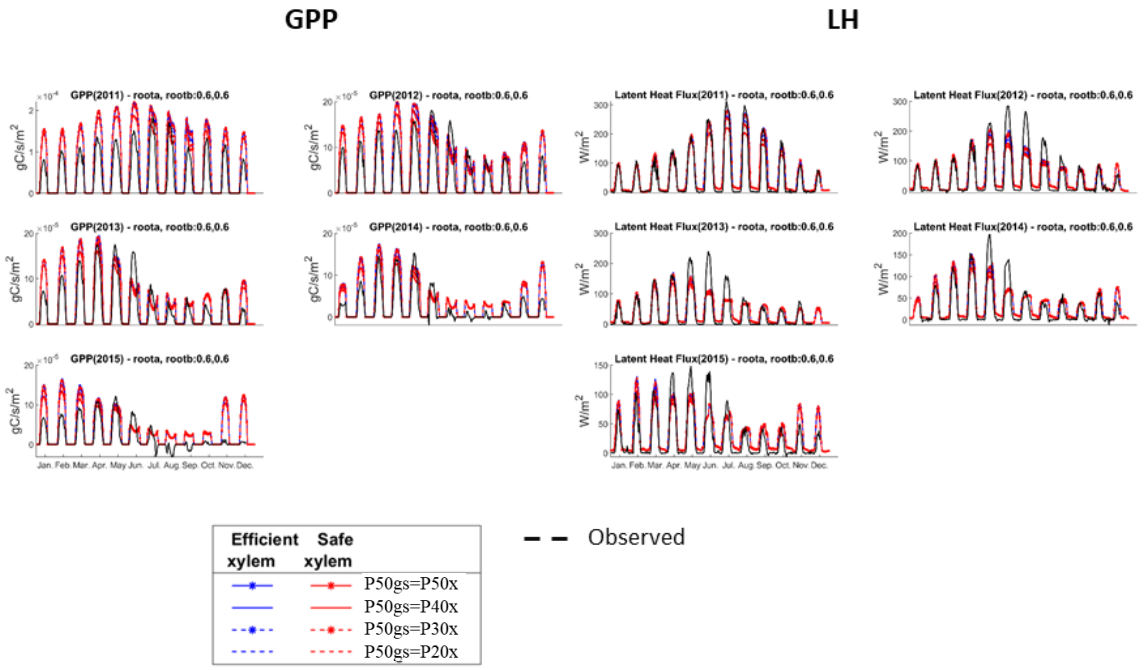
b) GPP and LH of 6.5m rooting depth



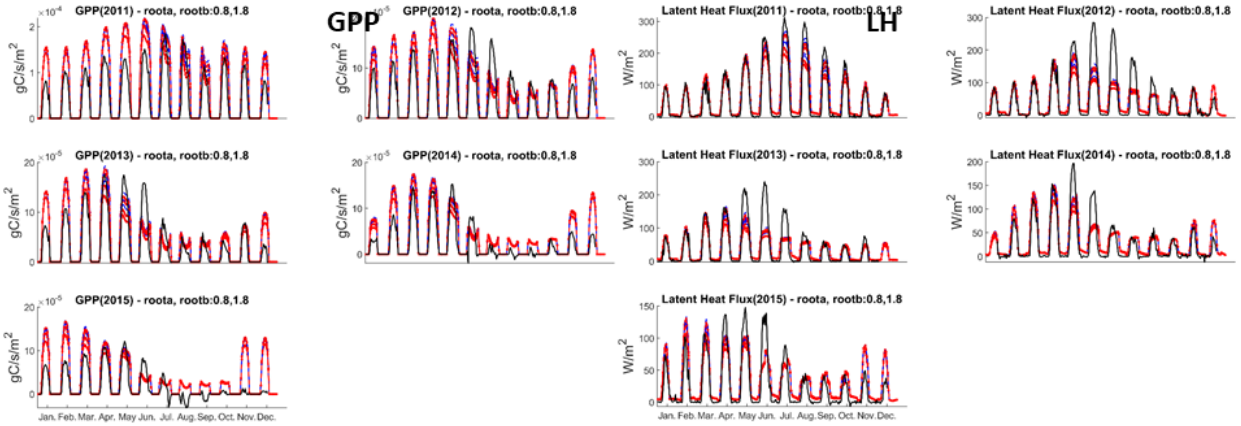


Observed

c) GPP and LH of 5m rooting depth



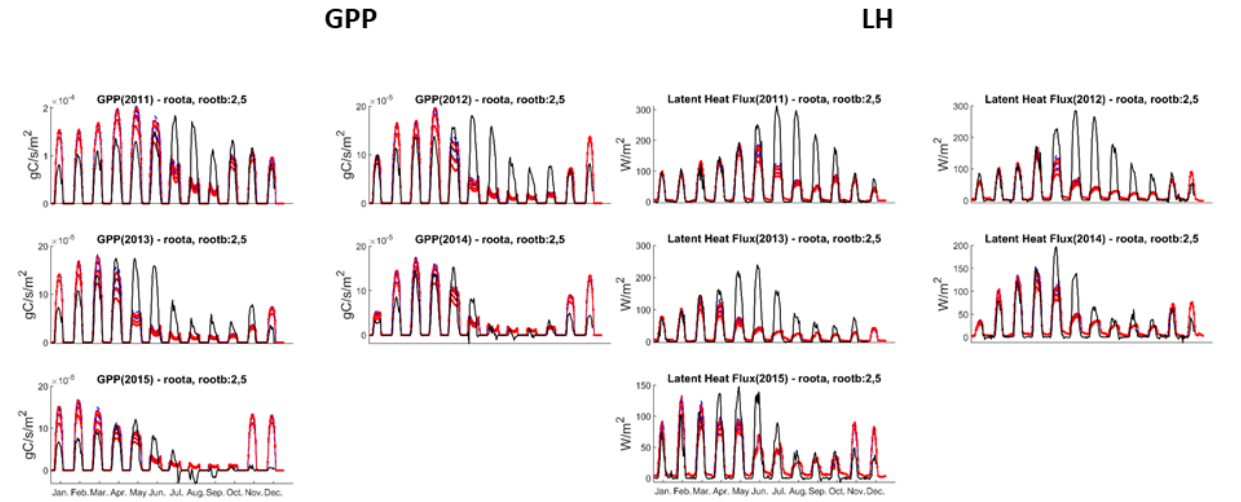
d) GPP and LH of 3m rooting depth



Efficient xylem	Safe xylem	
		P50gs=P50x
		P50gs=P40x
		P50gs=P30x
		P50gs=P20x

– – Observed

e) GPP and LH of 1m rooting depth



Efficient xylem	Safe xylem	
		P50gs=P50x
		P50gs=P40x
		P50gs=P30x
		P50gs=P20x

– – Observed

Figure S3 A.) monthly mean stem fraction of conductance (SFCL, K/Kmax) of all cohorts and B.) monthly mean leaf water potential (LWP) of all cohorts

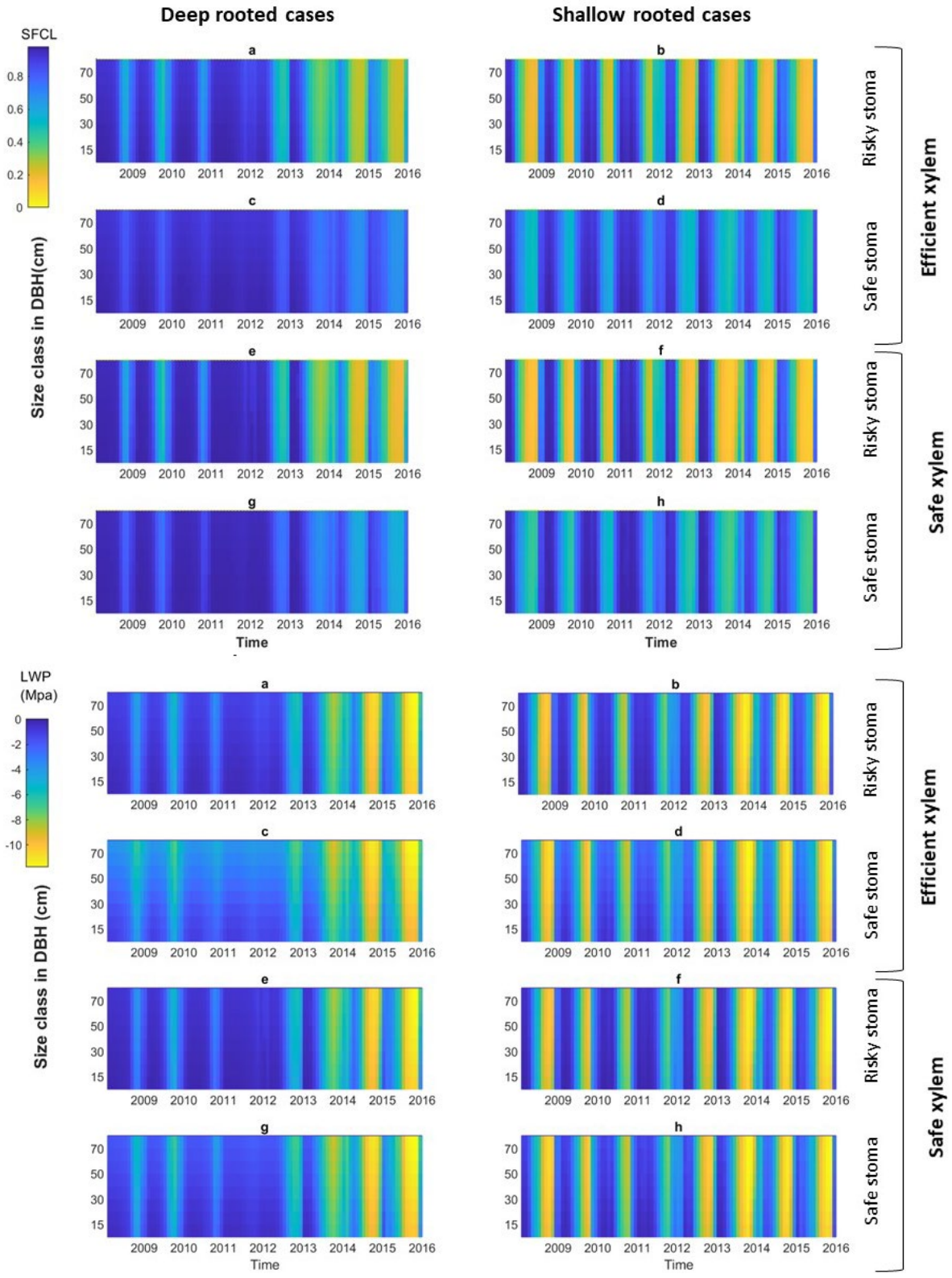


Figure S4 Seasonal variation of water content for selected layers

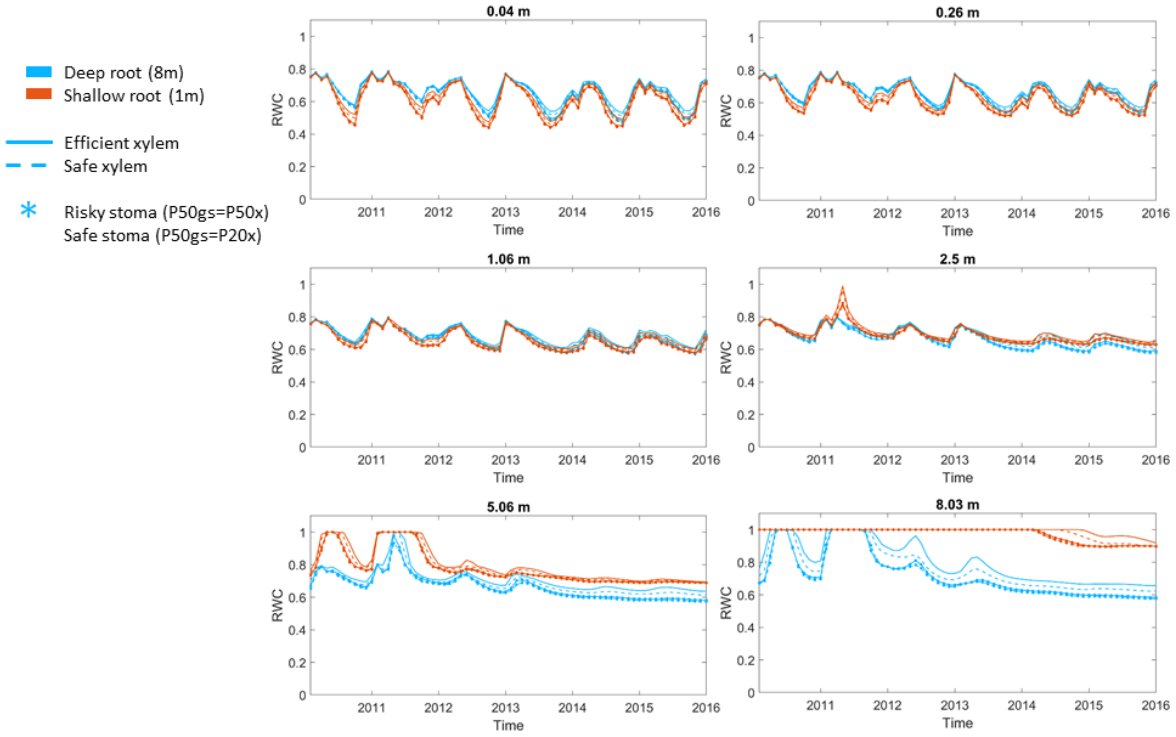


Figure S5. Relation between simulated day time leaf water potential (LWP) and absorbing root water potential (AWP)

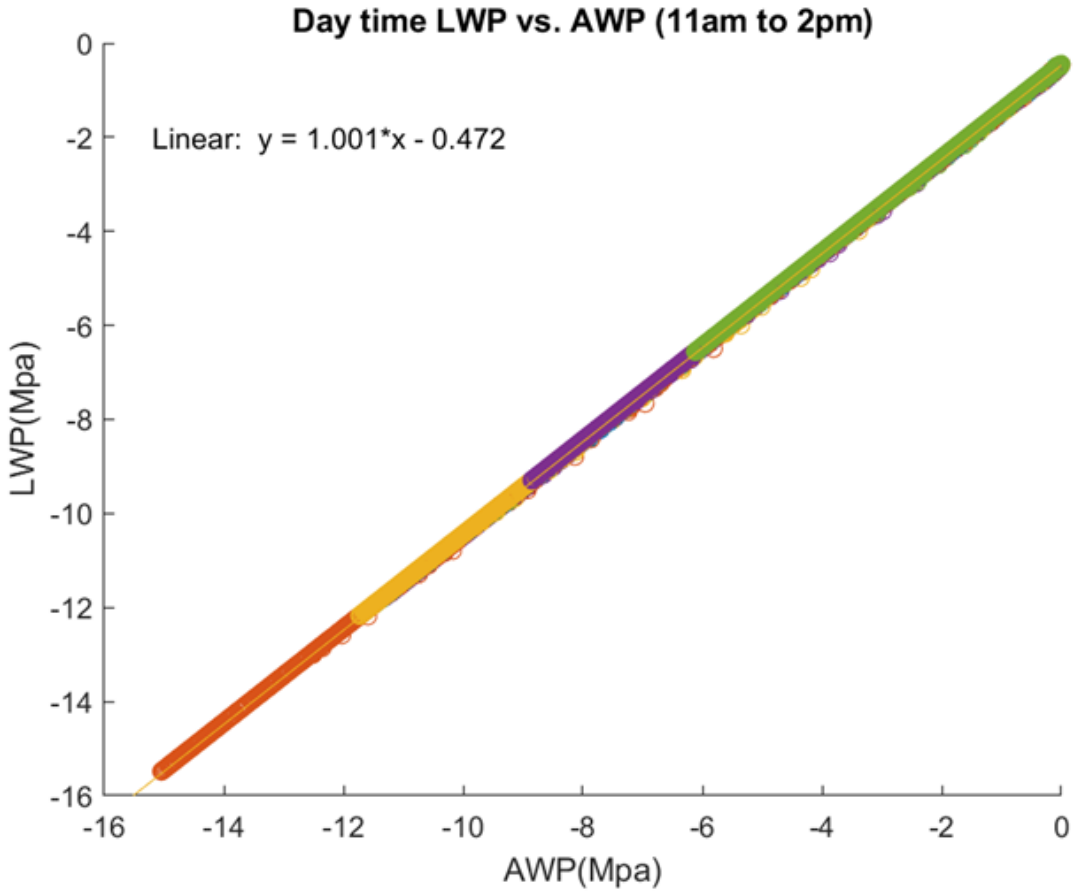


Figure S6. Vulnerability curves for two xylem strategies shown in both absolute units (K) as pressure-conductance curve (solid lines) and relative units (K/K_{max}) as pressure-fraction of conductance (dashed lines). The red dot indicates the intersection point of the absolute pressure-conductance curve. On the right side of the point, efficient xylem has higher conductance at any given pressure but a lower fraction of conductance as compared to the safe xylem.

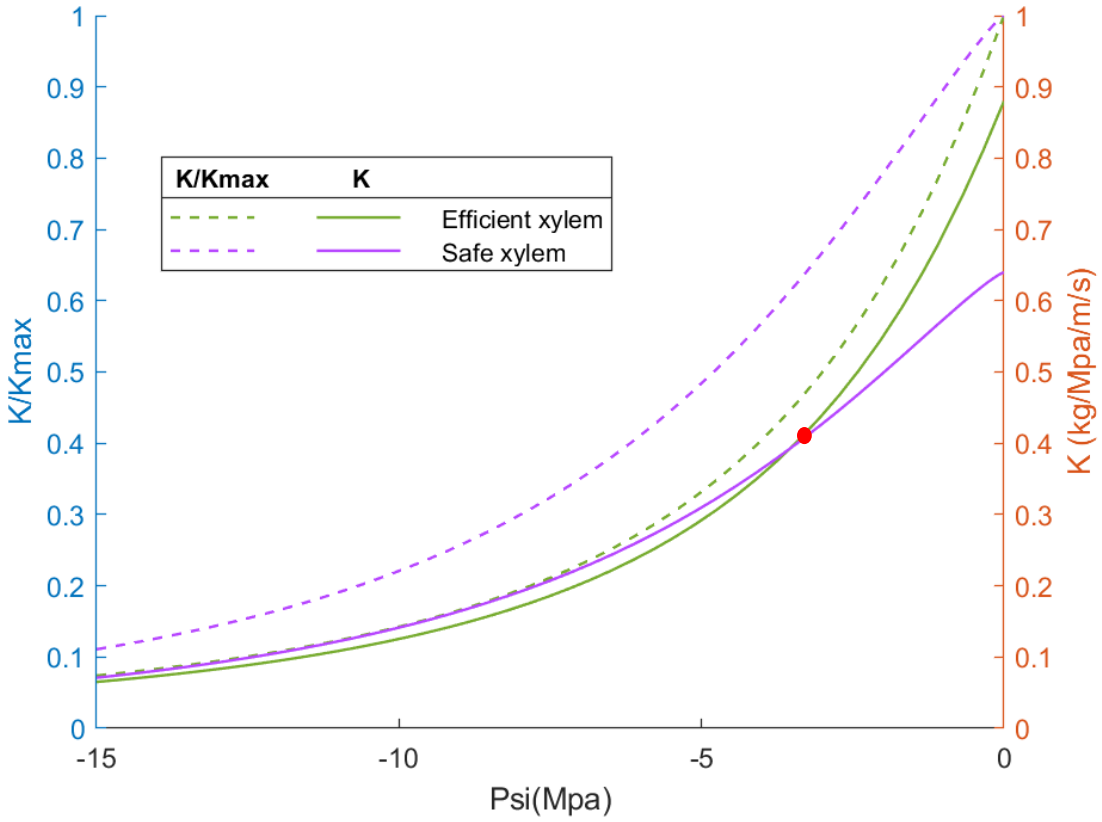


Figure S7. Estimated vulnerability curve of pine based on xylem vulnerability traits (P12, P50,P88) from TRY database

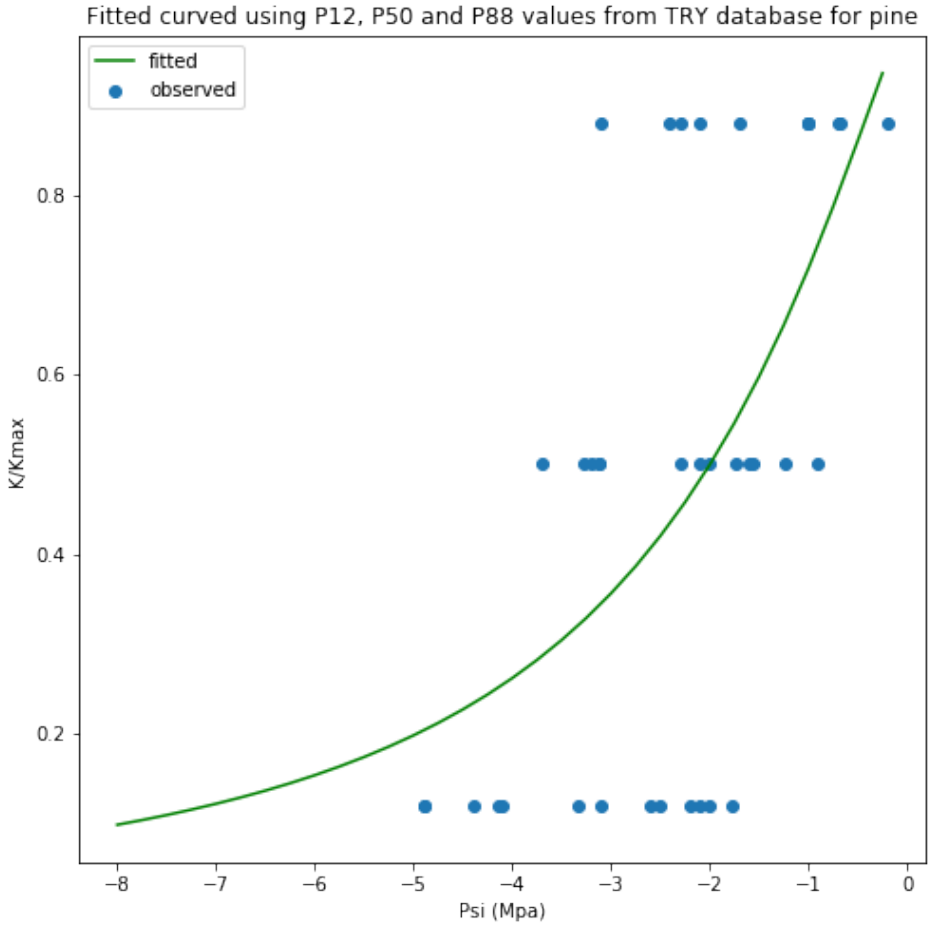


Fig. S8 Comparison of MACA and flux tower meteorology data: monthly mean of a) precipitation, b) relative humidity c), air temperature, and d) incident solar radiation