



Supplementary data:



Fig. S1: Placement of paired psychrometer and Optical Dendrometer on example *Eucalyptus crebra* stem/branch.

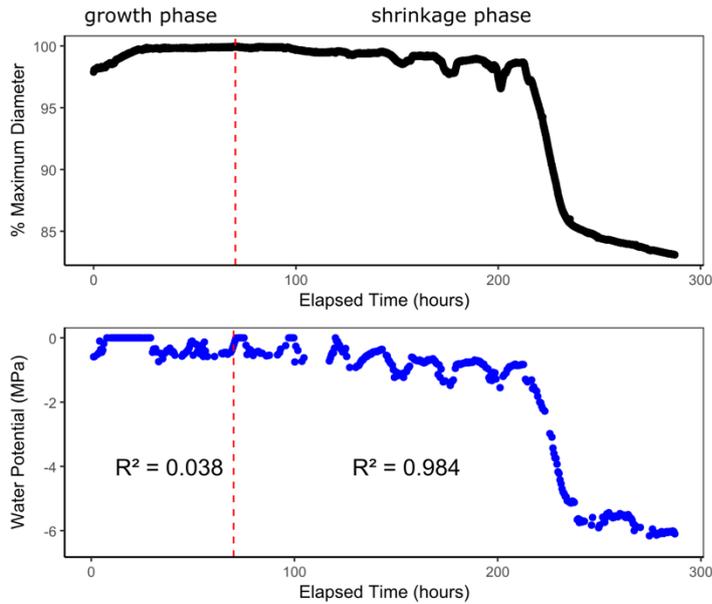


Fig. S2 Continuous Optical Dendrometry signal and psychrometer water potential relationship in example plant showing the initial growth phase of plant 3 for ~70 hours, immediately followed by the distinct shrinkage phase. Phases delineated by red dashed line. During the shrinkage phase, time 0 is taken as time at which branch diameter reaches maximum (end of growth phase). R^2 relationship is poorly correlated between branch diameter and water potential during the growth phase ($R^2 = 0.038$) but becomes closely correlated during dehydration ($R^2 = 0.984$).

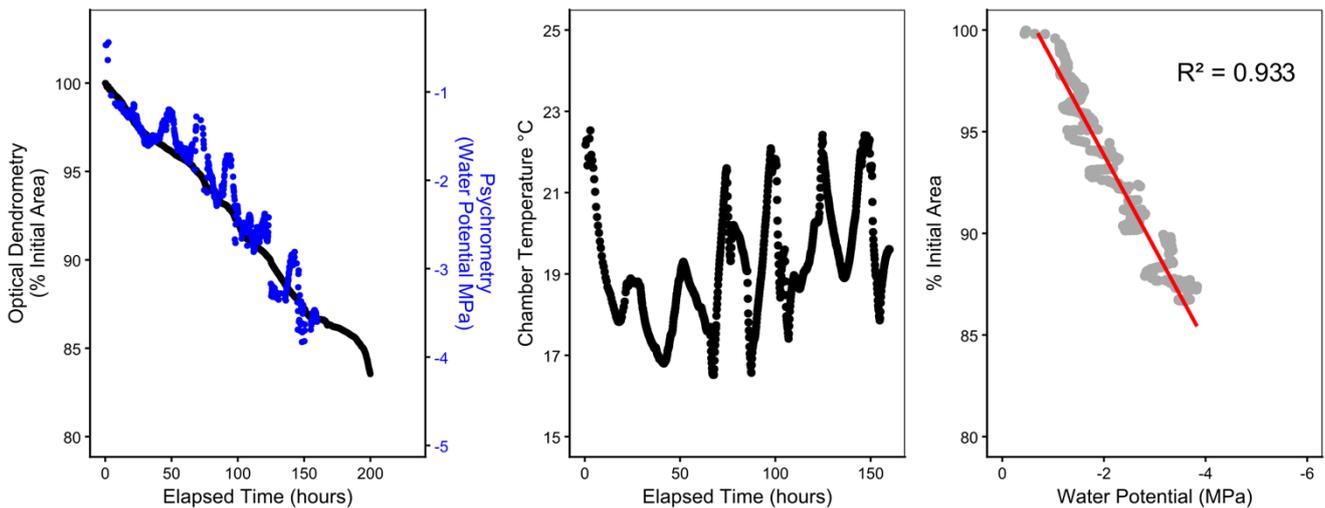


Fig. S3: Optical Dendrometry signal and psychrometer water potential relationship in example plant showing psychrometer error due to imperfect installation and temperature fluctuation. Linear relationship (facet 3) remains closely correlated but psychrometer instrument error is clear in comparison to Optical Dendrometry signal even under controlled lab conditions.