Supplementary material

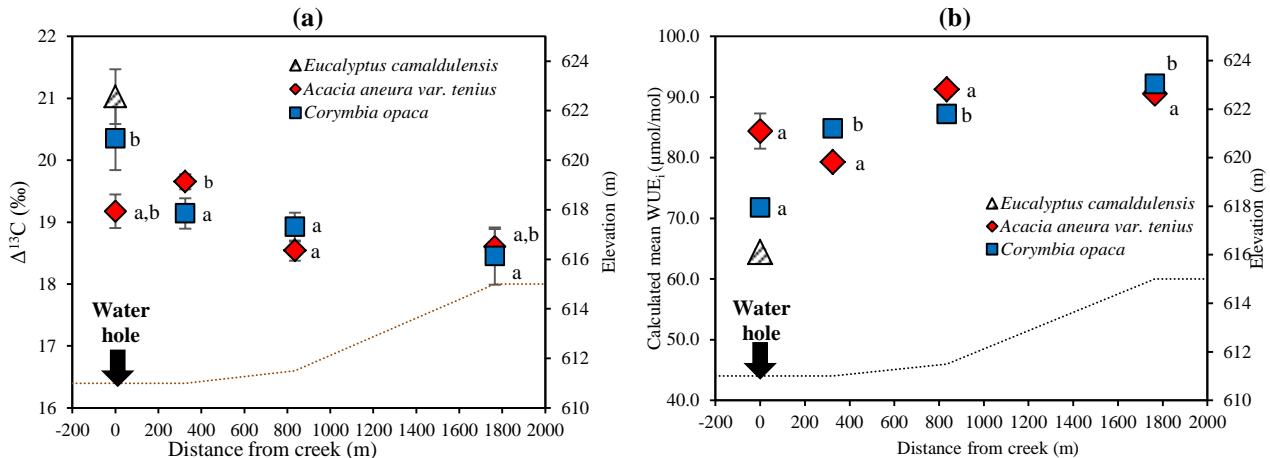
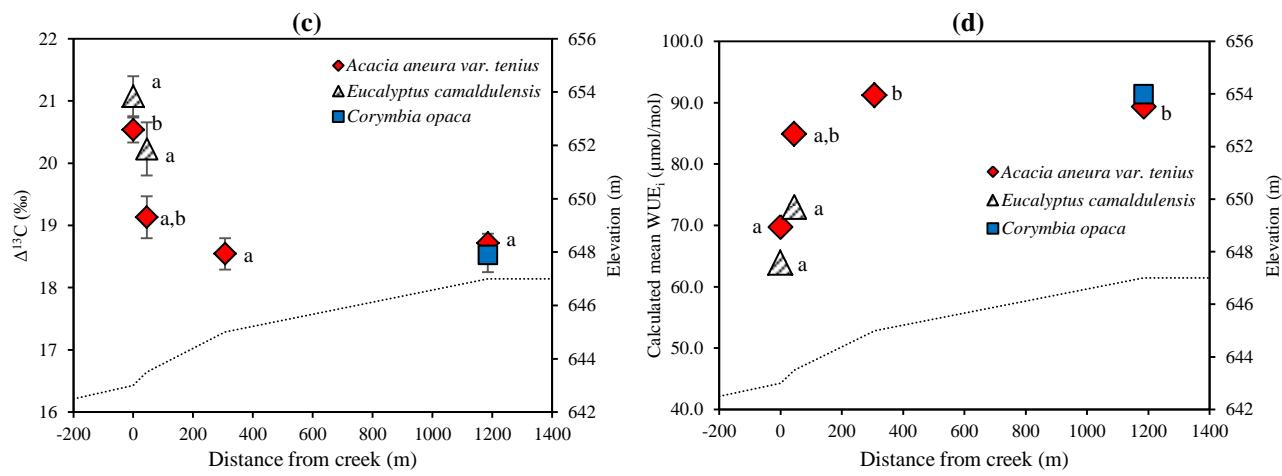



Table S1: **Site Characteristics**
Name, latitude, longitude, mean annual precipitation, mean annual temperature and biome descriptions for SuperSites studied across the continent. Long-term average climate data were obtained from the WorldClim database.

Site / Abbreviation	Lat °	Long °	MAP (mm)	MAT (°C)	Biome / Abbreviation
Calperum Mallee /CM	-34.0373	140.6738	255	17.3	Semi-arid woodland / SW
Great Western Woodlands / GWW	-30.2640	120.6917	273	18.5	Temperate woodland /TW
Alice Mulga	-22.2828	133.2493	321	22.4	Semi-arid tropical savanna / STS
Cumberland Plain	-33.6190	150.7382	900	17.7	Temperate woodland / TW
Warra Tall Eucalypt	-43.0888	146.6512	1474	10.1	Temperate wet forest / TWF
Litchfield Savanna*	-12.4853	131.1461	1714	27.8	High rainfall tropical savanna / HTS
FNQ - Cape Tribulation[†]	-16.1000	145.4500	2087	25.2	Lowland wet tropical rainforest / LTR
FNQ - Robson Creek[†]	-17.1195	145.6323	2140	21.0	Upland wet tropical rainforest /UTR

*Data from Cernusak *et al.* (2011) for Howard Springs is used as a representative of Litchfield Savanna site. [†]Data are collected from two nodes for the Far North Queensland (FNQ) rainforests SuperSites.

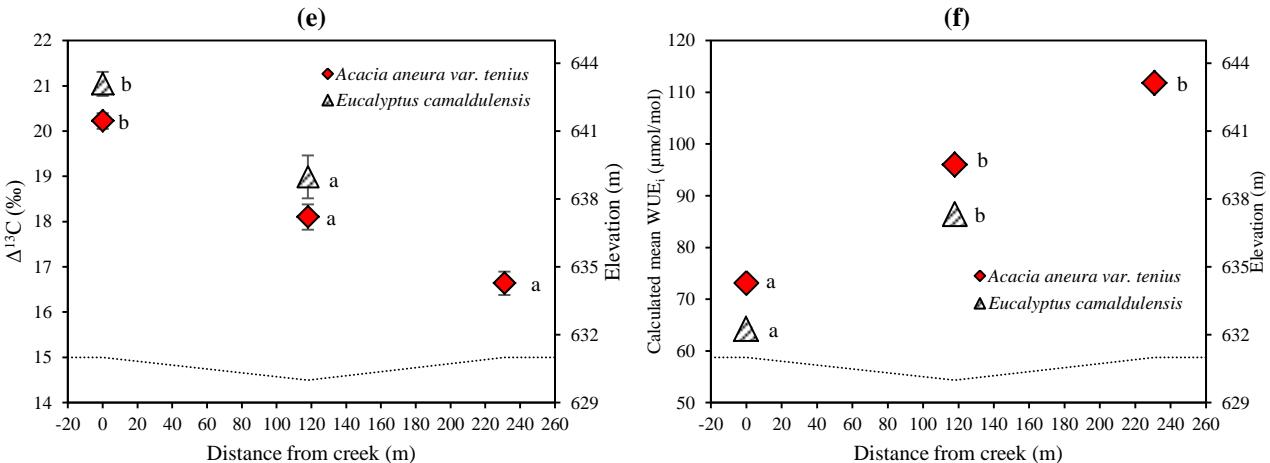



Figure S1: Cross sections (dotted lines) of the riparian zone for three transects sampled at Allungra Creek (March 2015). $\Delta^{13}C$ (left panels) and WUE_i (right panels) values for the dominant species sampled as a function of distance from the creek. Species at a given distance having the same letter indicates non-significant differences between species means (Tukey HSD, confidence level of 0.05).