

Supplemental Information

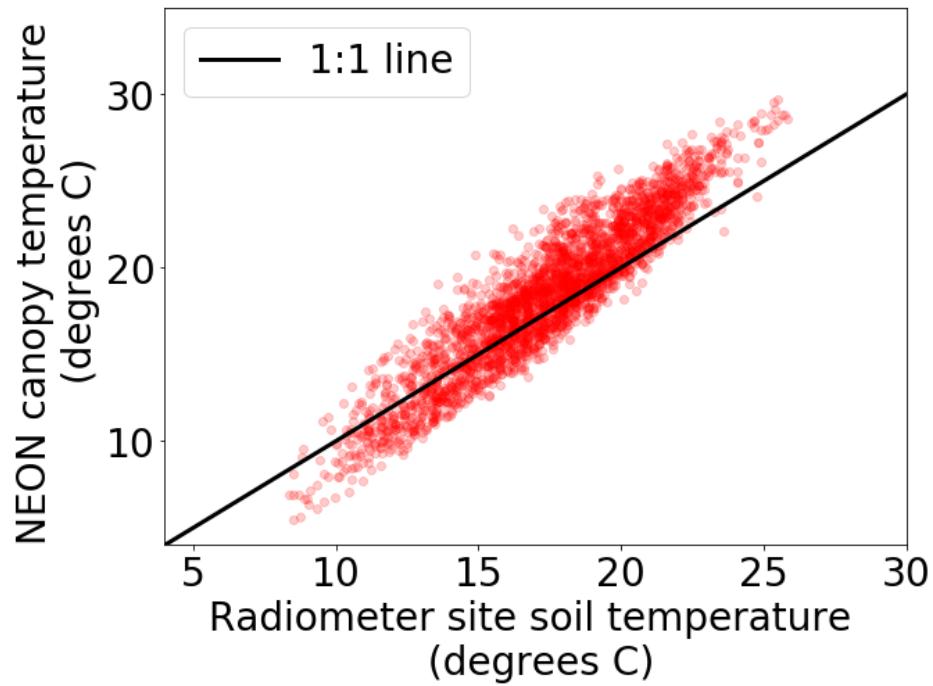
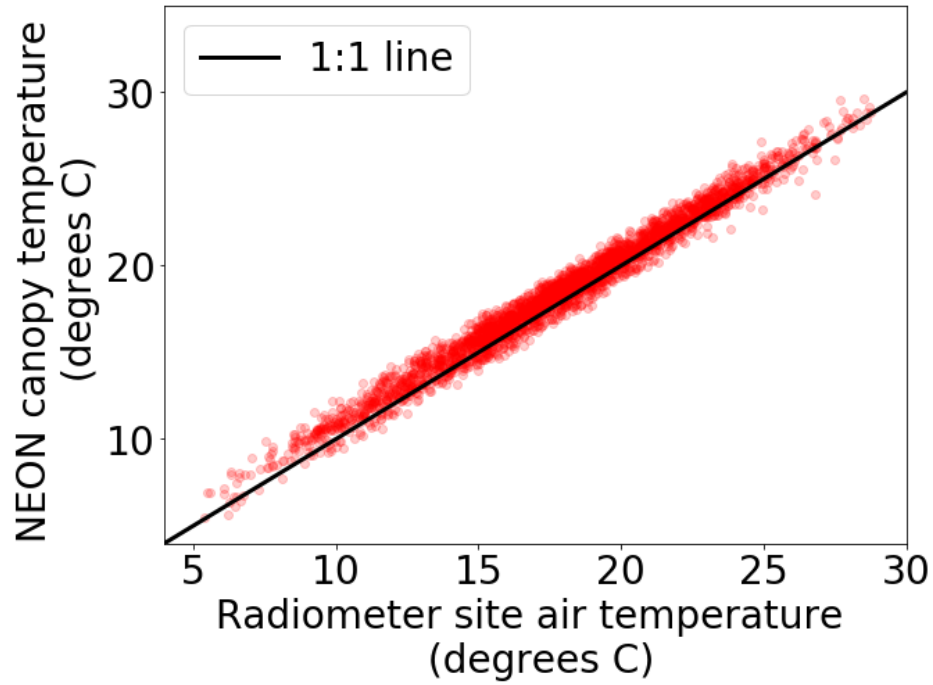
Allocation of water between vegetation components

The exact amount of water in each of the leaves, branches, and stems of the oak trees is not known, and is modulated by both the differing water content values of these different components, as well as plant allometry (e.g. biomass of leaves relative to branches relative to trunk). We used data from the TRY database (Kattge et al., 2011), the Biomass and Allometry Database (BAAD) (Falster et al., 2015), and individual studies of oak species to estimate several of these quantities, as detailed in the table below:

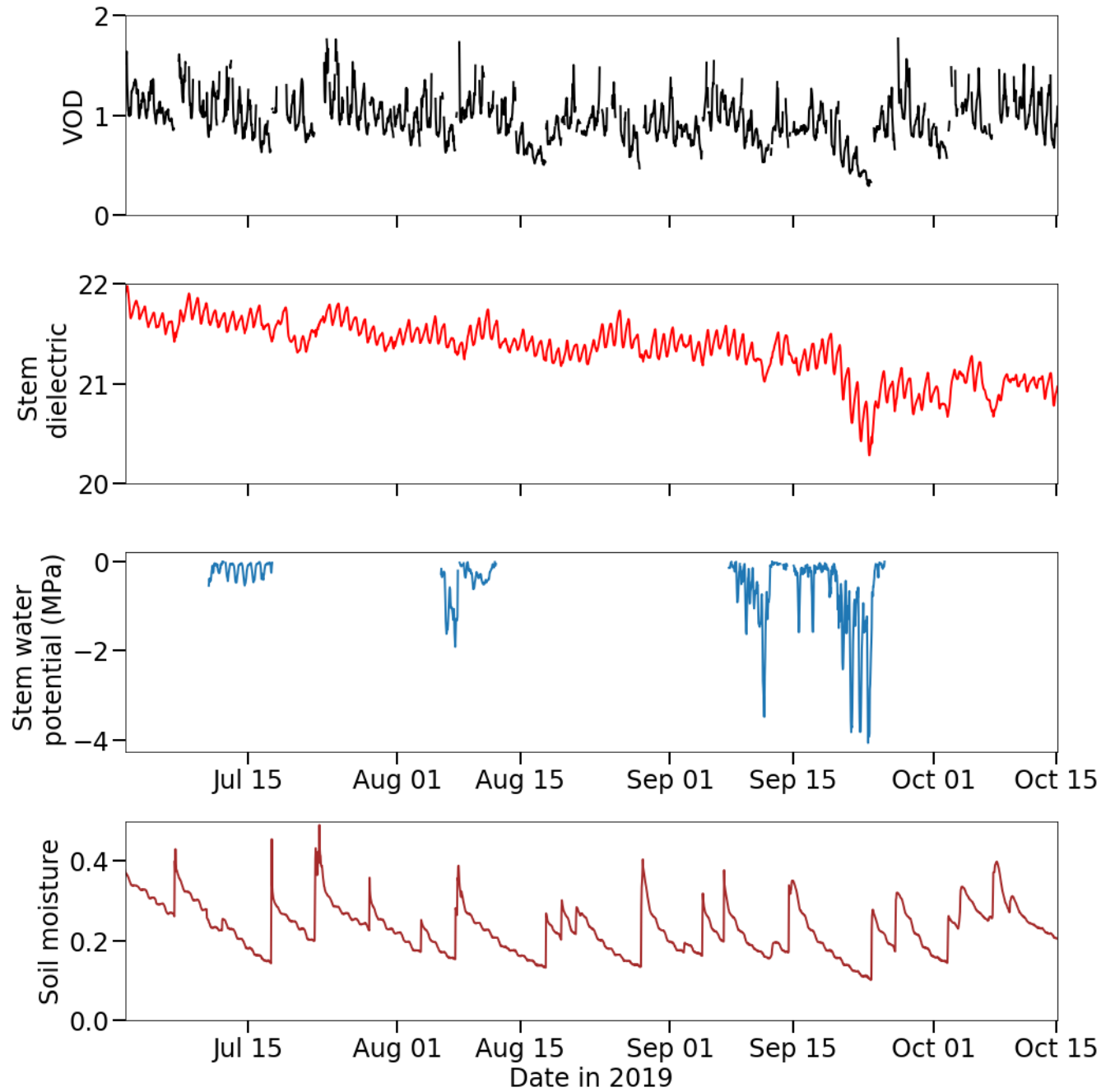
Quantity	Definition	Value	Source
LM:SM	dry leaf mass per total dry stem and branch mass	0.022	BAAD (average of 9 adult <i>Quercus rubra</i>)
BM:SM	dry branch mass per total dry stem and branch mass	0.17	BAAD (average from 12 temperate oak species)
LDMC	leaf dry matter content, or leaf dry mass per total leaf mass	0.31	TRY (average of 315 <i>Quercus rubra</i> values)
BDMC	branch dry matter content, or branch dry mass per total branch mass	0.51	(Palacio et al., 2008) (1 to 2-year-old branches, average from <i>Q. ilex</i> and <i>Q. faginea</i>)
SDMC	stem dry matter content, or stem dry mass per total stem mass	0.51	Assumed equal to BDMC

These quantities were combined to calculate the average units of leaf water content (2.2 units), branch water content (7.4), and stem water content (36) per unit of dry leaf mass, respectively. These numbers also determine the relative fractions of the total aboveground water content in the leaves, branches, and stems, respectively - approximately 5% of an oak tree's water is expected to be in its leaves, 16% in its branches, and 79% in its trunk.

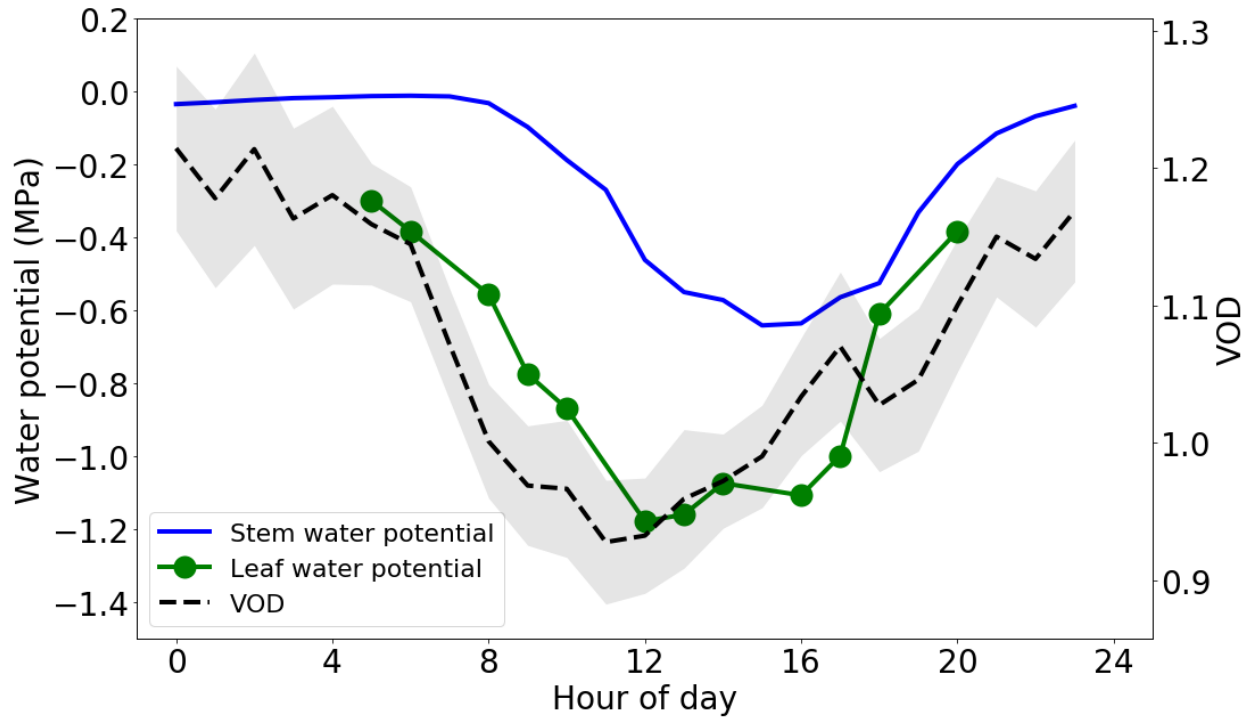
Thus approximately 21% of the total tree water is in the leaves and branches.



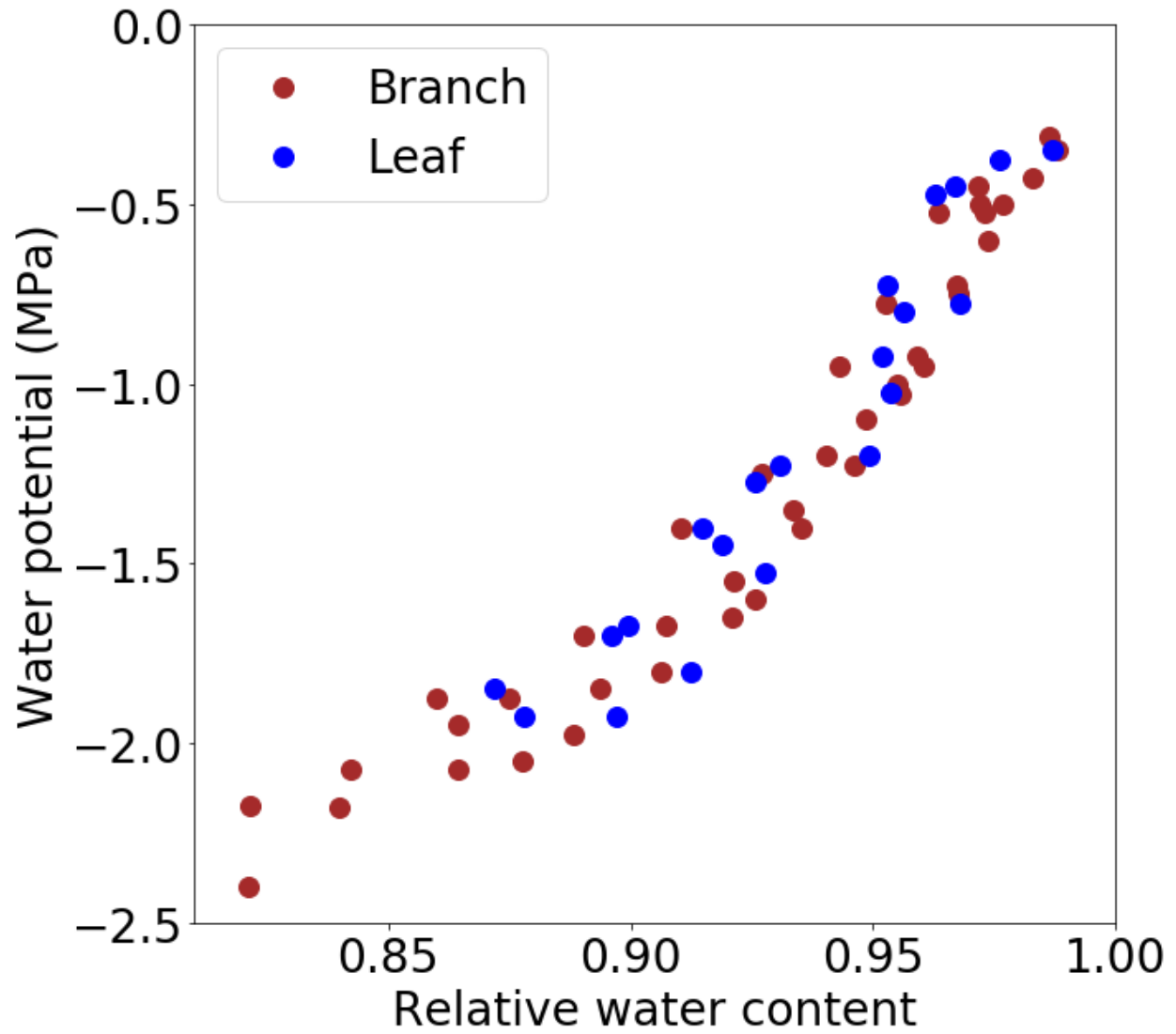
Supplemental Figure 1. Scatter plots comparing the soil and air temperature at the radiometer site with infrared canopy temperatures from the nearby NEON site, over June through September 2019



Supplemental Figure 2. Time series of retrieved VOD, stem xylem dielectric constant at 70 MHz, stem xylem water potential, and soil moisture at Harvard Forest site.



Supplemental Figure 3. Average diurnal cycles of VOD and plant water potential, as in Figure 2, but with VOD limited to the period July 9-17. Leaves were observed over July 9-12 and stem xylem over July 9-17. Shaded area is a range of 1 standard error for VOD.



Supplemental Figure 4. Pressure-volume curve from 3 leaves and 3 small branches collected from Harvard Forest site.

Supplemental References

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