

**Supporting Information.** Guo, Y., C. Schöb, W. Ma, A. Mohammat, H. Liu, S. Yu, Y. Jiang, B. Schmid, and Z. Tang. 2019. Increasing water availability and facilitation weaken biodiversity–biomass relationships in shrublands. *Ecology*.

### Appendix S1. Calculation of growing season evapotranspiration (GPE).

First, for each month from May to October, the calculation of unjustified potential evapotranspiration ( $uPE$ ) differed according to mean monthly temperature ( $t$ ):

$$I = \sum_{n=1}^{12} \left(\frac{t}{5}\right)^{1.514} \quad (\text{Eq. S1})$$

$$a = (0.675 \times I^3 - 77.1 \times I^2 + 17920 \times I + 492390) \times 10^{-6} \quad (\text{Eq. S2})$$

$$\begin{cases} uPE = 188 \times (1 - e^{-0.0000061 \times t^{3.734}}), t > 26.5 \\ uPE = 16 \times (10 \times t/I)^a, 0 < t < 26.5 \\ uPE = 0, t \leq 0 \end{cases} \quad (\text{Eq. S3})$$

Second, we calculated adjusted potential evapotranspiration ( $PE$ ) based on  $uPE$  and site latitude ( $L$ ):

$$PE_{\text{May}} = uPE \times (-0.0098 \times L + 0.8609)^{-\frac{1}{3.5}} \quad (\text{Eq. S4})$$

$$PE_{\text{Jun}} = uPE \times (-0.0101 \times L + 0.9739)^{-\frac{1}{2.5}} \quad (\text{Eq. S5})$$

$$PE_{\text{Jul}} = uPE \times (-0.0088 \times L + 0.9024)^{-\frac{1}{2.5}} \quad (\text{Eq. S6})$$

$$PE_{\text{Aug}} = uPE \times (-0.0089 \times L + 0.8481)^{-\frac{1}{4.2}} \quad (\text{Eq. S7})$$

$$PE_{\text{Sep}} = uPE \times (-0.0104 \times L + 0.5984)^{-\frac{1}{48}} \quad (\text{Eq. S8})$$

$$PE_{\text{Oct}} = uPE \times (-0.016 \times L + 1.3396)^{\frac{1}{8}} \quad (\text{Eq. S9})$$

Finally, GPE is the sum of the  $PE$ s of these six months.