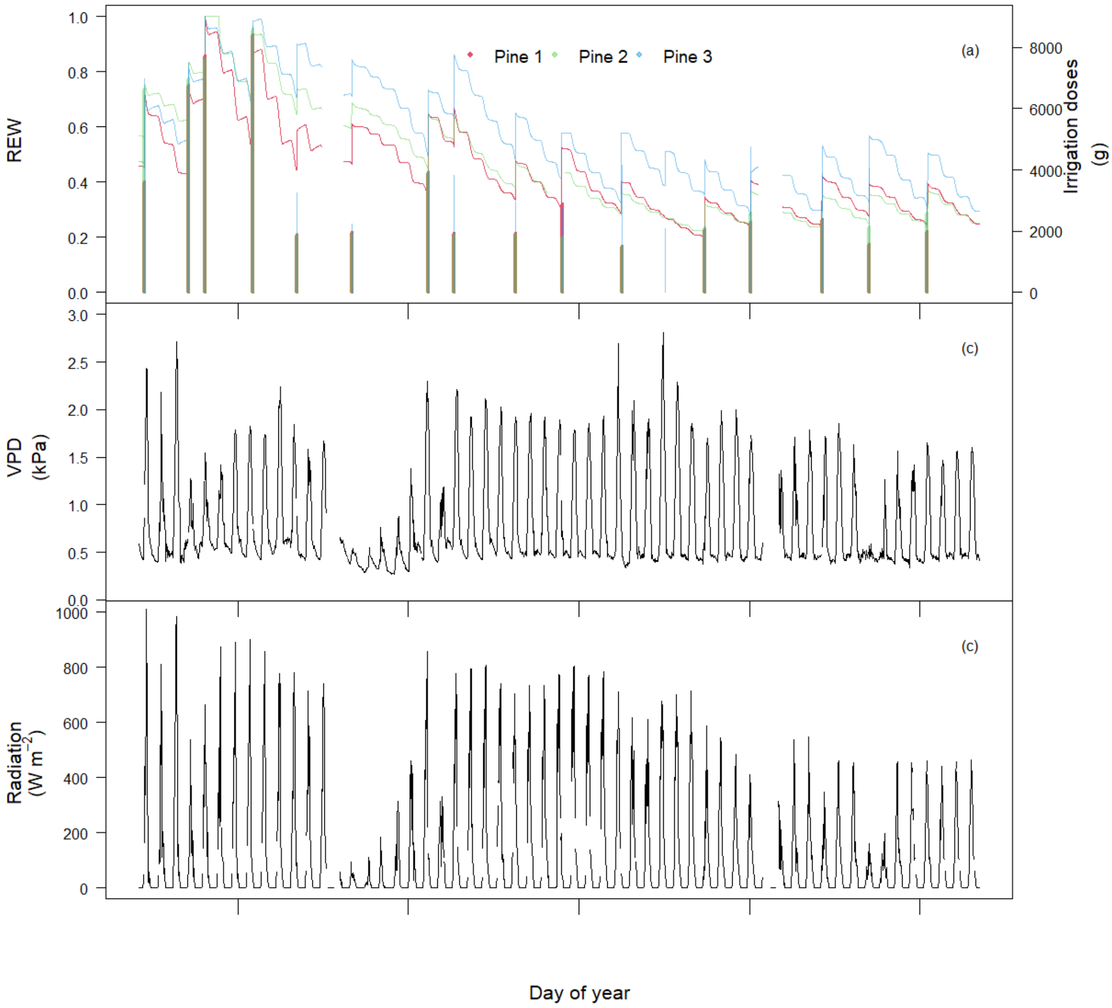

Figure C1. Representation of the transpiration and environmental conditions throughout the study period. Abbreviations: REW: relative extractable water; VPD: vapour pressure deficit.

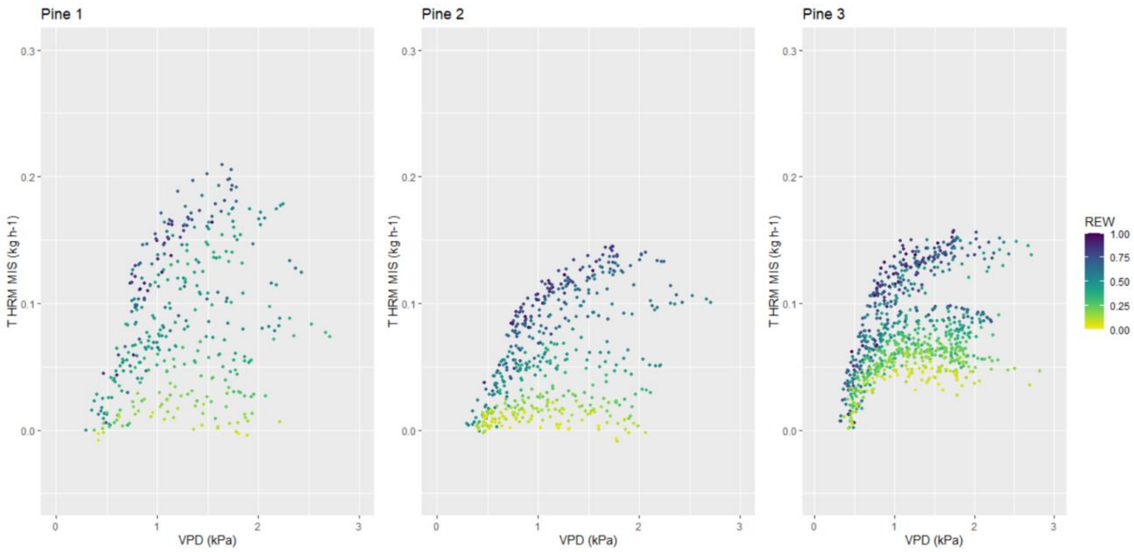

Figure D2. Representation of the response of the transpiration rate measured by the heat ratio method probes and corrected by Larsen's misalignment probe corrections (THRM MIS) to the environmental variables interaction (VPDxREW, vapour pressure deficit x relative extractable water) along the three Aleppo pines. REW is represented as a gradient scale colour, where purple depicts wet conditions and yellow dry conditions. The figure is a graphical explanation of the models in Table D2.

Appendix B. Equations applied in the HRM transpiration estimations

Burgess et al. (2001) - Equation (2). Heat pulse velocity (V_h, cm h^{-1}).

$$Vh = \frac{k}{x} \ln (HR)3600 \quad \text{(B1)}$$

k: Thermal diffusivity: 0.0025 cm^2 s^{-1}

x: Distance between the heater and either probe: 0.6 cm

HR: ratio of increases in temperature (from initial temperatures) at equidistant downstream and upstream points

3600: Time (s)

Burgess et al. (2001) - Equation (6). Heat pulse velocity corrected by wounding (V_c, cm h^{-1})

$$V_c = bV_h + cV_h{}^2 + dV_h{}^3 \quad \text{(B2)}$$

a (1.6565), b (-0.0014), and c (0.0002) are three coefficients for varying wound widths.

Burgess et al. (2001) - Equation (7). Sap velocity (cm h^{-1})

$$V_s = \frac{V_c \, pb \, (cw+mc \, cs)}{ps \, cs} \quad \text{(B3)}$$

pb: Basic density of wood (dry weight/green volume, kg m^{-3}) (Table 1).

cw: Specific heat capacity of the wood matrix: 1200 J kg^{-1} $°C^{-1}$ at 20 ºC.

mc: Water content of sapwood (dimensionless) (Table 1).

cs: Specific heat capacity of sap: 4182 0.46 J kg^{-1} $°C^{-1}$ at 20 ºC.

ps: Water density: 1 kg L^{-1}.

Converting sap velocity into transpiration (dm^3 h^{-1}), (cm cm^2 sapwood h^{-1})

$$T_{HRM} = Vs \text{ x } A$$

$$T_{HRM\ MIS} = \overline{Vs} \text{ x } A \quad \text{(B4)}$$

A: cross-sectional area of conducting sapwood (Table 1).

Larsen et al. (2020) - Equation (6). Placing probes

$$X_2 = \sqrt{(4 \, k \, t \ln(HR) + X_1^2} \quad \text{(B5)}$$

X_1: distance between the heater and the downstream temperature probe

X_2: distance between the heater and upstream temperature probe

The calculation is repeated twice (i) by assuming that X_1 is correct when estimating placement X_2 (as the equation), and (ii) vice versa.

Larsen et al. (2020) - Equation (8). Sap velocity (V_h, cm h^{-1})

$$V_{h1} = \frac{4\,k\,t\ln(HR) + X_1^2 - (-0.6^2)}{2\,t\,(X_1 - (-0.6))}$$

$$V_{h2} = \frac{4\,k\,t\ln(HR) + 0.6^2 - ({X_2}^2)}{2\,t\,(0.6 - (X_2))}$$

$$\overline{V}_h = \frac{(V_{h1} + V_{h2})}{2} \qquad \text{(B6)}$$