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ABBREVIATIONS AND SYMBOLS

a, b, c, d, f	Regression coefficients	
b_0, b_1, b_2	Regression coefficients	
c, C	CO ₂ concentration	ppm, mmol m ⁻³
C_p	Specific heat of air	J kg ⁻¹ K ⁻¹
CO ₂	Carbon dioxide	
D	Molecular diffusion	
D_a	CO ₂ diffusion coefficient in free air	m ² s ⁻¹
D_{a0}	Reference value of the CO ₂ diffusion coefficient in free air at 20 °C or 293.15 K	m ² s ⁻¹
D_s	CO ₂ diffusion coefficient in soil	m ² s ⁻¹
D_{sk}	Soil gas diffusion coefficient for the discrete layer k	m ² s ⁻¹
DOY	Day of year	
E	Ecosystem evapotranspiration	mmol H ₂ O m ⁻² s ⁻¹
EC	Eddy-covariance	
$EWUE$	Ecosystem water use efficiency	μmol CO ₂ mmol H ₂ O ⁻¹
F	Vertical flux density	
F_c	vertical flux densities of CO ₂	
F_s	Soil CO ₂ efflux or soil respiration	μmol m ⁻² s ⁻¹

$F_{s,E}$	The temperature-normalized efflux	
F_z	Soil CO ₂ efflux at depth z	$\mu\text{mol m}^{-2} \text{s}^{-1}$
g_a	Air conductance	m s^{-1}
g_s	Surface conductance	m s^{-1}
GPP	Gross primary production	$\mu\text{mol m}^{-2} \text{s}^{-1}$
H	Sensible heat flux	W m^{-2}
H ₂ O	Water	
i	Index variable	
I	Regression intercept	
IPCC	Intergovernmental Panel on Climate Change	
k	Soil layer	
LAI	Leaf area index	$\text{m}^2 \text{m}^{-2}$
m	Constant values	
n	Number of layers within the entire soil profile	
N, N_i	Number of values	
NEE	Net ecosystem carbon exchange or CO ₂ flux	$\mu\text{mol m}^{-2} \text{s}^{-1}$
NEE_{sat}	Saturation value of NEE at an infinite light level not significant	$\mu\text{mol CO}_2 \text{m}^{-2} \text{s}^{-1}$
NEP	Net ecosystem productivity	$\mu\text{mol m}^{-2} \text{s}^{-1}$
P	Air pressure	Pa
P_0	Reference value of air pressure	Pa
PAR	Photosynthetically active radiation	$\mu\text{mol photons m}^{-2} \text{s}^{-1}$

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POM	Polyoxymethylene	
PTFE	Polytetrafluoroethylene	
<i>PTT</i>	Precipitation	mm
<i>q</i>	Water vapor density	kg m ⁻³
<i>Q₁₀</i>	Temperature sensitivity of soil CO ₂ efflux or magnitude of change in respiration rate for a 10 K change in temperature	
<i>R_e</i>	Ecosystem respiration	μmol m ⁻² s ⁻¹
<i>R_n</i>	Net radiation	W m ⁻²
<i>R_g</i>	Solar radiation	W m ⁻²
<i>S</i>	Percentage of mineral soil with particle size > 2 μm	
<i>S</i>	Regression slope	
<i>S</i>	Source or sink	
<i>SWC</i>	Soil water content	m ³ m ⁻³
<i>SWC_k</i>	Soil water content at soil layer <i>k</i>	m ³ m ⁻³
<i>t</i>	time	s
<i>Δt</i>	Time period	s
<i>T</i>	Temperature	°C, K
<i>T₀</i>	Reference value of temperature	°C, K
<i>T_a</i>	Air temperature	°C
<i>T_s</i>	Soil temperature	°C
<i>u</i>	Longitudinal wind component	m s ⁻¹

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u	Mean wind speed	m s^{-1}
u^*	Friction velocity	m s^{-1}
UNFCCC	United Nations Framework Convention on Climate Change	
v	Lateral wind component	m s^{-1}
VPD	Vapor pressure deficit	hPa
w	Vertical wind component	m s^{-1}
x	Any property of interest	
x	Distance in longitudinal wind direction	m
X_t	Instantaneous mean	
y	Any property of interest	
y	Distance in lateral wind direction	m
z	Height above ground or depth	m
z_m	Measurement height	m
Δ	The rate of change of saturation vapor pressure with temperature	kPa K^{-1}
Ω	decoupling coefficient	
α	The apparent quantum yield or the initial slope of the light response curve	$\mu\text{mol CO}_2 \mu\text{mol}^{-1} \text{ photons}$
α	Rotation angle for planar fit	$^\circ$
β	Bowen ratio	
β	Roll angle for planar fit	$^\circ$
γ	Pyschrometric constant	

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γ	Yaw angle for planar fit	$^{\circ}$
ε	Soil air-filled porosity	$\text{m}^3 \text{m}^{-3}$
λ	Latent heat of vaporization	J kg^{-1}
λE	Latent heat flux	W m^{-2}
μ	The ratio of molecular weights of dry air and water vapor	
ξ	Gas tortuosity factor or the relative gas diffusion coefficient	
ρ	Density of moist air	kg m^{-3}
ρ_a	Density of dry air	kg m^{-3}
ρ_b	Soil bulk density	g cm^{-3}
ρ_c	Density of CO_2	kg m^{-3}
ρ_m	Particle density of mineral soil	g cm^{-3}
ρ_s	Scalar density	
ρ_v	Density of water vapor	kg m^{-3}
σ	The ratio of water vapor and dry air densities	
φ	Soil total porosity	$\text{m}^3 \text{m}^{-3}$