

Table S1. A glossary of terms used in the text

Term	Definition
Fluxes of Carbon Dioxide ( $F_c$ )	The amount of carbon dioxide that passes through a certain area in a certain period of time.
Latent Heat Flux ( $\lambda E$ )	Heat exchange per unit area at constant temperature.
Evapotranspiration ( $E$ )	Total water consumption from soil evaporation and plant transpiration.
Sensible Heat ( $H$ )	Turbulent heat exchange between the atmosphere and the underlying surface due to temperature changes.
Soil Heat Flux ( $G$ )	Soil heat exchange per unit time and unit area
Bowen Ratio ( $\beta$ )	Ratio of sensible heat flux to latent heat flux ( $H/\lambda E$ ).
Vertical Velocity on Rotated Coordination ( $w$ )	Vertical velocity on rotated coordination.
CO <sub>2</sub> Concentration ( $c$ )	Carbon dioxide concentration.
Latent Heat of Vaporization ( $\lambda$ )	The amount of heat required to change a substance from a liquid to a gas at a constant temperature.
Absolute Humidity ( $q$ )	The mass of water vapor contained in a cubic meter of humid air.
Air Density ( $\rho$ )	The mass of a unit volume of air at a certain temperature and pressure.
Specific Heat of the Air at a Constant Pressure ( $C_p$ )	Specific heat of the air at a constant pressure
Air Temperature ( $T$ )	How hot or cold the air is.
Psychrometer Constant ( $\gamma$ )	Psychrometer humidity coefficient.
Water Vapor Pressure at the Ecosystem Surface ( $e_i$ )	Water vapor pressure at the ecosystem surface.
Water Vapor Pressure in the Air at the Reference Height ( $e_a$ )	Water vapor pressure in the air at the reference height.
Surface Conductance ( $g_s$ )	The conductivity of carbon dioxide, water vapor, or heat between the plant canopy and the atmosphere.
Aerodynamic Conductance ( $g_a$ )	When water vapor passes through the turbulent boundary layer above the canopy, it is resisted by the turbulent motion that hinders the evaporation of gas from the canopy-atmosphere interface.
Air Water Vapor Deficit ( $D$ )	The difference between the saturated water vapor pressure and the actual water vapor pressure in air at a certain temperature.
Slope of the Saturated Vapor Pressure Versus Temperature Curve ( $\Delta$ )	The slope of the saturated vapor pressure versus temperature curve
Mean Wind Speed ( $u$ )	At a certain point in space, the sum of the wind speeds of each observation in a given period of time is divided by the number of observations.
Friction Velocity ( $u^*$ )	The square root of the ratio of turbulent shear stress to air density.

Karman Constant ( $\kappa$ )	Empirical coefficients introduced by von Karman's assumptions about the relationship between mixing length and velocity profile.
Roughness Lengths for Momentum ( $Z_{0M}$ )	The roughness lengths for momentum.
Roughness Lengths for Heat Transfer ( $Z_{0H}$ )	The roughness lengths for heat transfer.
Diabatic Stability Correction Functions for Momentum ( $\Psi_M$ )	The diabatic stability correction functions for momentum.
Diabatic Stability Correction Functions for Heat ( $\Psi_H$ )	The diabatic stability correction functions for heat.
Vertical Space Coordinate ( $z$ )	Vertical space coordinate.
Jarvis Omega ( $\Omega$ )	The sensitivity of evapotranspiration to stomatal control and the degree of aerodynamic coupling between vegetation and the atmosphere.
Priestley–Taylor Alpha ( $\alpha$ )	Indicates the degree of evapotranspiration under the limited condition of soil water supply.
Net Photosynthetic Rate ( $P_n$ )	Organic matter accumulated by plants through photosynthesis.
Apparent Quantum Yield (AQY)	Light use efficiency of ecosystems at low light intensities.
Maximum Light Net Photosynthetic Rate ( $P_{max}$ )	Maximum photosynthetic capacity under saturated light intensity.
Dark Respiration Rate ( $R_d$ )	When the light intensity of plant leaves is zero, the amount of oxygen consumed by respiration and the amount of carbon dioxide produced by organic matter per unit time and unit leaf area.
Radiation Intensity ( $I$ )	The physical quantity of radiation intensity.
Curvature of the Curve ( $\theta$ )	The curvature of the curve.
Light Saturation Point ( $I_{sat}$ )	The light intensity value at which the photosynthetic rate no longer increases.
Temperature Sensitivity Index ( $Q_{10}$ )	Temperature sensitivity of vegetation ecosystem respiration.
Active Photosynthetic Radiation (PAR)	Spectral components effective for photosynthesis.
Net Ecosystem Exchange (NEE)	The difference between the amount of carbon dioxide absorbed and released by an ecosystem.

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