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List of Symbols

ROMAN ALPHABET

A_c	the rate of net photosynthesis of the canopy
c	atmospheric CO ₂ concentration
d	fluctuation in CO ₂ concentration
Ca	atmospheric CO ₂ concentration
Ca_{hi}	atmospheric CO ₂ concentration at 2 m
Ca_{lo}	atmospheric CO ₂ concentration at 0.25 m
C_i	intercellular CO ₂ concentration
C_p	the specific heat capacity of air at constant pressure
DI	the dryness index
E	the rate of evaporation
EF	evaporative fraction in the available energy
ET	evapotranspiration rate
f	the conversion factor for CO ₂ from ppm to g m ⁻³
F_c	the integrated net CO ₂ flux over the canopy
F_{c2000}	the integrated net CO ₂ flux over the canopy at PPFD = 2000 μ mol m ⁻² s ⁻¹
F_s	the vertical flux density of any scalar above the canopy
G	the heat flux density into and out of the soil
g_a	aerodynamic conductance
g_c	canopy surface conductance
g_s	stomatal conductance
g_L	stomatal conductance of leaf
H	sensible heat flux density
h_c	mean canopy height
k	von Karman's constant
L	the latent heat of vaporization
LE	latent heat flux density
LE_{EQ}	the equilibrium evapotranspiration rate
LE_{IM}	the imposed evapotranspiration rate
P	the energy consumption by photosynthesis
P_n	net photosynthesis rate
q	the specific humidity of air

q'	fluctuation in the specific humidity
Q_{10}	the temperature coefficient
Q_n	available energy
R_d	the hypothetical mean dark canopy respiration (soil plus plant)
R_D	the canopy respiration (soil plus plant) in the daytime
R_N	the canopy respiration (soil plus plant) at night
R_{N0}	the canopy respiration (soil plus plant) at night for a reference temperature T_0
R_n	net radiative flux density
S'	fluctuation in scalar concentration
T	temperature
T'	fluctuation in air temperature
T_0	a reference temperature
T_a	air temperature
T_L	leaf temperature
T_{len}	mean time length for net carbon gain
T_s	soil temperature
TR	transpiration rate
u	wind speed
u^*	friction velocity
w	vertical wind speed
w'	fluctuation in vertical wind speed
z_{oh}	the roughness parameter for transfer of sensible heat
z_{om}	the roughness parameter for transfer of momentum

GREEK ALPHABET

α	Priestley-Taylor parameter
β	Bowen ratio
γ	the psychrometric constant
Δ	the slope of the saturation water vapor pressure vs. temperature curve
ΔC	the amount of CO_2 stored in the canopy
ΔS	the net physical storage of energy
ρ	the air density
Ω	omega factor

List of Abbreviations

BOREAS	the Boreal Ecosystem Atmosphere Study
DOY	day of the year
EC	eddy correlation
EFEDA	the ECHIVAL Field Experiment in a Desertification-Threatened Area, the European field experiment in desertification-threatened areas
ERC	the Environmental Research Center
FACE	Free Air CO ₂ Enrichment
GAME	the GEWEX Asian Monsoon Experiment
GAME- HUBEX	GAME- the HUaihe River Basin EXperiment Processes
GAME-Thailand	
GAME-Siberia	
GAME-Tibet	
GEWEX	the Global Energy and Water Cycle Experiment
GCMs	General Circulation Models
HAPEX	the Hydrological-Atmospheric Pilot EXperiment
HAPEX-MOBILHY	the Hydrological-Atmospheric Pilot EXperiment-Modelisation du BILan Hydrique
HAPEX-SAHEL	the Hydrological-Atmospheric Pilot EXperiment-Sahel
HEIFE	the HEIhe River Basin Field Experiment on Land Surface Processes
HIFE	the ISLSCP Field Experiment
IGBP	the International Geosphere-Biosphere Program
ISLSCP	the First International Satellite Land Surface Climatology Project
IRGA	infra-red gas analyzer
JST	Japan Standard Time
LAI	leaf area index
LCP	canopy light compensation point
LCP _{am}	canopy light compensation point in the morning
LCP _{pm}	canopy light compensation point in the afternoon
MOM	micrometeorological observation mast
MOT	meteorological observation tower
NDVI	normalized difference vegetation index
NEE	net ecosystem CO ₂ exchange
NEE _D	net ecosystem CO ₂ exchange in the daytime
NEE _N	net ecosystem CO ₂ exchange at night
NOPEX	the Northern Hemisphere Climate-Processes Land-Surface Experiment

OTC	open top chamber
PFT	plant functional type
PAR	photosynthetically active radiation
PPFD	photosynthetically active photo flux density
SHA	vertical sensible heat advection
SiB	the Simple Biosphere model
SPAC	the soil-plant-atmosphere continuum
SWC	soil water content
TABLE92	the Tsukuba Atmospheric Boundary Layer Experiment 92
TDR	time-domain reflectometry
VPD	vapor pressure deficit
VPD _L	vapor pressure deficit at the leaf surface
WUE	water use efficiency