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**Ecosystem-atmosphere exchange
of carbon dioxide and water vapour
in typical East-Asian croplands**

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Notations

Abbreviations

ASL	above sea level
DOY	day of the year: Jan. 1 = 1
EBC	energy balance closure
ET	evapotranspiration
EV	evaporation
GPP	gross primary productivity
IA	index of agreement
LAI	leaf area index
MAE	mean average error
NEE	net ecosystem exchange of carbon dioxide
NRMSE	normalized root mean square error
NSeff	Nash-Sutcliffe model efficiency coefficient
PM	Penman-Monteith
PPFD	photosynthetic photon flux density
PT	Priestley-Taylor
RH	relative humidity
RMSE	root mean square error
rSD	relative standard deviation
SD	standard deviation
SE	standard error
TR	transpiration
VPD	vapour pressure deficit

Symbols

Q_A	available energy flux, W m^{-2}
a_1, a_2, \dots, a_n	model coefficients (general)
Bo	Bowen ratio

NOTATIONS

c_p	specific heat of air, $\text{J kg}^{-1} \text{K}^{-1}$
D	vapour pressure deficit, hPa
Q_E	latent heat flux, W m^{-2}
E_{eq}	equilibrium evapotranspiration, W m^{-2}
E_0	temperature sensitivity of Lloyd-Taylor function, K
e_s	saturated vapour pressure, hPa
f	function (general)
Q_G	ground heat flux, W m^{-2}
g_s	surface conductance, mm s^{-1}
Q_H	sensible heat flux, W m^{-2}
k	light distinct coefficient
L	Obukhov length, m
R	correlation coefficient
R^2	coefficient of determination
R_{eco}	ecosystem respiratory efflux
R_{ref}	ecosystem respiratory efflux at a reference temperature
R_g	global radiation, W m^{-2}
R_n	net radiation, W m^{-2}
r_a	aerodynamic resistance, s mm^{-1}
r_s	surface resistance, s mm^{-1}
s_c	temperature dependence of specific humidity at saturation, $\text{kg kg}^{-1} \text{K}^{-1}$
T	temperature (general), $^{\circ}\text{C}$
u	wind speed, m s^{-1}
u^*	friction velocity, m s^{-1}
x	fetch, m
X	day after planting/transplanting
z	measurement height minus displacement height, m
α	initial slope of Michaelis-Menten function, $\mu\text{mol s}^{-1} \text{W}^{-1}$
α_{PT}	Priestley-Taylor coefficient
α'	initial slope of leaf-light response function, $\mu\text{mol s}^{-1} \text{W}^{-1}$
β	saturated carbon dioxide uptake rate, $\mu\text{mol m}^{-2} \text{s}^{-1}$
β'	specific saturated carbon dioxide uptake rate, $\mu\text{mol m}^{-2} \text{s}^{-1}$
γ	psychrometric constant, hPa K^{-1}
κ	Von-Kármán constant
ρ	air density, kg m^{-3}

ζ stability parameter

Summary

clearpage

Zusammenfassung

1 Introduction

2 Materials and Methods

3 Results and discussions

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Appendix

Acknowledgement

Eidesstattliche Erklärung

Hiermit erkläre ich eidesstattlich, dass ich die vorliegende Arbeit selbständig angefertigt habe. Die aus fremden Quellen direkt oder indirekt übernommenen Gedanken sind als solche kenntlich gemacht. Die Arbeit wurde bisher keiner anderen Prüfungsbehörde vorgelegt und auch nicht veröffentlicht. Ich bin mir bewusst, dass eine unwahre Erklärung rechtliche Folgen haben kann.

Bayreuth, den May 4, 2017

Peng Zhao _____