☺to Data provider ··············· To prevent incorrect usages of your data, fill the blanks closely.
Delete unnecessary column(s) and line(s).

1. About the data set

Site name (three letter code)	Mase paddy flux site (MSE)
Period of registered data	From Jan. 1, 2006 to Dec. 31, 2006
This document file name	FxMT_MSE_2006_30m_01.pdf
Corresponding data file name	FxMT_MSE_206_30m_01.csv
Revision information	

Date	Details of revision	Renewed file name

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2. Site description

☺to Data provider ········· Please explain <u>the site condition during the period of this dataset.</u>
☻to DB user ··············· See also the general information file.

Hour line (Time difference from UTC)	Japan Standard Time (JST), 9 hours ahead of UTC
Vegetation Type	Cropland (Rice paddy field)
Dominant Species (Overstory)	Rice (Oryza sativa L.; cultivar Koshihikari)
Dominant Species (Understory)	
Canopy height	About 120 cm (maximum)
LAI	About 5.0 (maximum)
Other information	

3. Observation and calculation

☺to Data provider ··············· A list of references is shown in the last page. **Please fill-in the blanks as much as possible, or select the suitable option. If you are not sure what to write, leave it as a blank.**

3-1. Flux observation system and data acquisition

Type of sonic anemometer	DA-600, TR62AX (Kaijo)
Type of IRGA	open-path NDIA, LI-7500 (LI-COR, Physical path length=0.125 m
Sampling rate	10 Hz
Averaging time	30 min
Flux measurement height #1	Variable between 3.12 m and 3.26 m. Given as a variable EC_height
Flux measurement height #2	
Flux measurement height #3	
Zero-plane displacement	
Roughness length	
Calibration information	The open-path analyzer was calibrated approximately every one to two months with standard CO_2 gases and a dew point generator (LI610; LI-COR)
Other information	

3-2. Flux calculation

		Note/References
Flow attenuation [*4-6]	✓ Not applied	
Coordinate rotation [*1-3]	✓ Planar fit	
Lag removal [*2, 7, 8]	✓ Not applied	

3-3. Flux corrections

		Note/References
For sensible heat flux	✓ Cross wind correction ✓ Water vapor flux	
High frequency loss	• **u*, H, LE, Fc** ✓ Massman(2000; 2001)	
Low frequency loss [*16] (Detrending)	✓ Not applied	
WPL Correction[*17-21]	✓ For latent heat (LE) flux ✓ For CO_2 flux	
Others [*22-24]	✓ Temperature dependency for latent heat: L ✓ Temperature dependency for air density ✓ Pressure dependency for air density	

3-4. Quality control [*25-26]

		Note/References
Raw data test	✓ Applied	Vickers and Mahrt (1997)
Non steady state test	✓ Not applied	
Integral turbulence characteristics	✓ Not applied	
Correlation coefficient	✓ Not applied	
Wind direction	✓ Not applied	
Footprint test [*28, 29]	✓ Not applied	
Absolute thresholds	✓ YES	
Others	✓ Sampling error	Finkelstein, and Sims (2001)

3-5. Storage term

		Note/References
Storage term	Considered (CO_2 flux)	Estimated from concentration change at the eddy covariance measurement height

3-6. Other information

☺ to Data provider …………………… If your flux data were evaluated by gradient method, please explain the observation method here.

		Note/References

4. Registered Data

Observation items	Symbol	Unit	Height(s) Depth(s)	Instruments	Level of data processing
Year	Year	#### (YYYY)	****	****	
Date	DOY	1～365(6)	****	****	
Time	TIME	#### (HHMM)	****	****	
CO_2 flux	Fc	micoromol･m^{-2}･s^{-1}	EC_height	Sonic anemometer DA600/TR62AX (KAIJO), IRGA LI7500(LI-COR)	Quality-controlled
CO_2 storage in canopy air layer	Sc	micoromol･m^{-2}･s^{-1}	EC_height (See also section 3.1 and 6)	LI7500(LI-COR)	The CO_2 storage term is included in Fc in this version.
Sensible heat flux	H	W･m^{-2}	EC_height (See also section 3.1 and 6)	Sonic anemometer DA600/TR62AX (KAIJO), IRGA LI7500(LI-COR)	Quality-controlled. The storage term was not added.
Latent heat flux	LE	W･m^{-2}	EC_height (See also section 3.1 and 6)	Sonic anemometer DA600/TR62AX (KAIJO), IRGA LI7500(LI-COR)	Quality-controlled The storage term was not added.
Friction velocity	USt	m･s^{-1}	EC_height (See also section 3.1 and 6)	Sonic anemometer DA600/TR62AX (KAIJO)	Quality-controlled
Atmospheric stability parameter	ZL	-	EC_height (See also section 3.1 and 6)	Sonic anemometer DA600/TR62AX (KAIJO)	Quality-controlled
Global solar radiation (incoming)	Rg	W･m^{-2}	2.5 m	4 component net radiometer, CNR1 (Kipp&Zonen)	Gap-filled
Global solar radiation (outgoing)	Rg_out	W･m^{-2}	2.5 m	4 component net radiometer, CNR1 (Kipp&Zonen)	
Net Radiation	Rn	W･m^{-2}	2.5 m	4 component net radiometer, CNR1 (Kipp&Zonen)	
Diffuse Radiation	Rd	W･m-2	2.5 m	4 component net radiometer, CNR1 (Kipp&Zonen)	
Photosynthetic active photon flux density	PPFD	micoromol･m^{-2}･s^{-1}	2.6 m	Quantum sensor LI190 (LI-COR)	
Absorbed PAR	APAR	micoromol･m^{-2}･s^{-1}	0.12 m	Bar-type quantum	

				sensor, LI191 (LI-COR)	
Wind direction	WD	degrees	EC_height	Sonic anemometer DA600/TR62AX (KAIJO)	
Wind speed	WS	$m \cdot s^{-1}$	EC_height	Sonic anemometer DA600/TR62AX (KAIJO)	
Barometric pressure	Pa	kPa	1.5 m	Capacitive pressure transducer, PTA427 (Vaisala)	Gap-filled
Air temperature	Ta	degrees C	Ta_height	PRT, HMP45A (Aaisala)	Gap-filled
Relative humidity	Rh	%	Ta_height	Capacitive moisture sensor, HMP45A (Vaisala)	Gap-filled
Vapor pressure deficit	VPD	kPa	Ta_height	Capacitive moisture sensor, HMP45A (Vaisala)	Gap-filled
H_2O concentration	Ho	$mmol \cdot mol^{-1}$	EC_height	Open-path IRGA (LI-7500, LICOR)	Not quality-controlled.
Precipitation	PPT	mm	1.7 m	Tipping-bucket rain gauge (TRP525-M, Texas Electronics)	Gap-filled
CO_2 concentration	Co	ppm	EC_height	Open-path IRGA (LI-7500, LICOR)	Not quality-controlled
Soil temperature	Ts_1	degrees C	1cm	T-type thermocouple (home-made)	
Soil temperature	Ts_2	degrees C	5cm,	T-type thermocouple (home-made)	
Soil temperature	Ts_3	degrees C	10cm	T-type thermocouple (home-made)	
Soil temperature	Ts_4	degrees C	20cm	T-type thermocouple (home-made)	
Soil temperature	Ts_5	degrees C	40cm	T-type thermocouple (home-made)	
Ground heat flux	G	$W \cdot m^{-2}$	2 cm	Heat flux plate (MF81, Eko)	
water level	WL	mm	-	Sonic-type (UD310, Keyence)	
Soil water content	SWC_1	$m^3\ m^{-3}$	0-5cm	Time-domain reflectometer (TDR100, Campbell)	
Soil water content	SWC_2	$m^3\ m^{-3}$	0-10cm	Time-domain reflectometer	

				(TDR100, Campbell)	
Soil water content	SWC_3	$m^3\ m^{-3}$	0-10cm,	Time-domain reflectometer (TDR100, Campbell)	
Canopy height (Vegetation height)	HEIGHTC (HEIGHTV)	m	-	-	
Eddy Covariance Measurement height	EC_height	m	-	-	
Air Temperature Measurement height	Ta_height	m	-	-	

5. Note for data users

☺to Data provider ················ If you use some tags (flags/identifiers) to identify the levels of data processing, please explain the meanings of the tags.

Data quality of H_2O concentration measured with open-path IRGA (LI7500) is worse than water vapor pressure measured with Vaisala sensor (HMP45A). It is recommended to use the latter.

6. Important events

☺to Data provider················· Please list noteworthy events during the observation period. For example, relocation of the instruments, reasons for missing observation, dates of sowing and harvesting at agricultural site should be listed in the table by date.

Date	Events
DOY122	rice was transplanted
DOY263	rice was harvested

References

Flux calculation

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Flux correction

*9 Schotanus, P. et al., 1983. Boundary-Layer Meteorology, 26: 81-93.
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*21 Massman, W. 2004. Concerning the measurement of atmospheric tarce gas fluxes with open- and closed-path eddy covariance system: The WPL terms and spectral attenuation. In: X. Lee (Editor), Handbook of Micrometeorology: A guide for surface Flux Measurements. Kluwer, Dirdrecht, pp. 133-160.
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*24 Cohen, E. R. and Taylor, B. N., 1986. The 1986 adjustment of the fundamental physical constants. Internatinal Counsil of Scientific Unions (ICSU), Committee on Data for Science and Technology (CODATA). CODATA-Bulletin, No. 63: 36pp.

Quality control

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