☺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)	IRRI Flux Research Site (IRI)
Period of registered data	1 January 2013 – 31 December 2013
This document file name	FxMt_IRI-FL_2013_30m_01.pdf
Corresponding data file name	FxMt_IRI-FL_2013_30m_01.csv

Revision information

Date	Details of revision	Renewed file name
1 April 2016	First registration	SiIn_IRI_2012_01.pdf FxMt_IRI-FL_2013_30m_01.pdf FxMt_IRI-FL_2013_30m_01.csv FxMt_IRI-FL_2013_not_01.csv
Contact person#1	Maricar Alberto (M.Alberto@irri.org)	

2. Site description

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

Hour line (Time difference from UTC)	8 hours ahead of UTC
Vegetation Type	Flooded rice
Canopy height	About 1 m
LAI	Average 7.2 m^2m^{-2} (max)

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	CSAT3 sonic anemometer
Type of IRGA	LI7500A open path CO_2/H_2O gas analyzer
Sampling rate	10 Hz
Averaging time	30 min
Flux measurement height #1	2.12 m
Calibration information	Open-path CO_2/H_2O analyzer was calibrated every year with standard CO_2 gases and a dew point generator (LI610, LI-COR,USA)

3-2. Flux calculation

		Note/References
Coordinate rotation [*1-3]	✓ Double (2D) rotation	EddyPro Express Mode
Lag removal [*2, 7, 8]	✓ Automatic time lag optimization (optionally as a function of RH for H2O) ✓ Maximum covariance with default (circular correlation)	EddyPro Express Mode

3-3. Flux corrections

		Note/References
For sensible heat flux	✓ Cross wind correction [*9, 10] ✓ Water vapor correction [*11]	Information from LI-COR
Low frequency loss [*16] (Detrending)	✓ Block averaging	EddyPro Express Mode
WPL Correction[*17-21]	✓ For latent heat (LE) flux ✓ For CO_2 flux	EddyPro Express Mode
Others [*22-24]	✓ Temperature dependency for latent heat: L ✓ Humidity dependency for specific heat: Cp ✓ Temperature dependency for air density ✓ Pressure dependency for air density	Information from LI-COR

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

		Note/References

Statistical tests for raw time series data	✓ Spike count/removal ✓ Amplitude resolution ✓ Dropouts ✓ Absolute limits ✓ Skewness and kurtosis	EddyPro Express Mode
Correction for frequency response (attenuation)	✓ Analytic high-pass filtering correction	EddyPro Express Mode
Quality control tests for fluxes according to Foken et al. (2004)	✓ Flagging according to Carbo Europe standard (Mauder and Foken, 2004)	EddyPro Express Mode
Footprint test *28, 29	✓ Kljun et al. (2004)	EddyPro Express Mode
Other options	✓ Sonic temperature correction for humidity following van Dijk et al. (2004) ✓ Spectroscopic correction for LI-7700 following McDermitt et al. (2011)	EddyPro Express Mode

3-5. Storage term

		Note/References
Storage term	✓ Applied	EddyPro Express Mode

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	2013 (YYYY)	****	****	
Date	DOY	1～365	****	****	
Time	TIME	0030 (HHMM)	****	****	
Net ecosystem carbon exchange	NEE	micromol・m^{-2}・s^{-1}	2.12 m	CSAT3 & LI7500A	Quality-controlled
CH_4 flux	CH_4	micromol・m^{-2}・s^{-1}	2.21 m	CSAT3 & LI7700	Quality-controlled
Sensible heat flux	H	W・m^{-2}	2.12 m	CSAT3 & LI7500A	Quality-controlled
Latent heat flux	LE	W・m^{-2}	2.12 m	CSAT3 & LI7500A	Quality-controlled
Ground heat flux	G	W・m^{-2}	Soil heat flux at 5 cm depth	HFP01 (Heat flux plates)	Quality-controlled
Net radiation	Rn	W・m^{-2}	2.79 m	NR01 (Net radiometer)	Quality-controlled
Global solar radiation (incoming)	Rg	W・m^{-2}	2.79 m	NR01 (Net radiometer)	Quality-controlled
Global solar radiation (outgoing)	Rg_out	W・m^{-2}	2.79 m	NR01 (Net radiometer)	Quality-controlled
Long-wave radiation (incoming)	Rgl	W・m^{-2}	2.79 m	NR01 (Net radiometer)	Quality-controlled
Long-wave radiation (outgoing)	Rgl_out	W・m^{-2}	2.79 m	NR01 (Net radiometer)	Quality-controlled
Photosynthetic active photon flux density	PPFD	micoromol・m^{-2}・s^{-1}	2.79 m	LI-190S (Quantum sensor)	Quality-controlled
Wind speed	WS	m・s^{-1}	2.17 m	CSAT3	Quality-controlled
Friction velocity	USt	m・s^{-1}	2.17 m	CSAT3	Quality-controlled
Air temperature	Ta	degrees C	2.05 m	HMP45C (Vaisala)	Quality-controlled
Relative humidity	Rh	%	2.05 m	HMP45C (Vaisala)	Quality-controlled
Soil temperature	Ts	degrees C	5 cm (below the soil)	Type T thermocouple	Quality-controlled
Water temperature	Tw	degrees C	2.5 cm (above the soil)	Type T thermocouple	Quality-controlled
Soil water content	SWC	m^3 m^{-3}	0-25 cm	CS616	Quality-controlled
Leaf area index	LAI	m^2 m^{-2}	Green leaves	LI-3100C (Leaf area meter)	Quality-controlled
Canopy height	HEIGHTC	m	Plant height	Steel rule	Quality-controlled

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.

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
1-2 April 2013	Combine harvesting of 2013 dry season rice crop
28 May 2013	Land preparation for 2013 wet season rice crop
27-28 June 2013	Mechanical transplanting of 2013 wet season rice crop
21-22 October 2013	Combine harvesting of 2013 wet season rice crop
29 October 2013	Land preparation for 2014 dry season rice crop
2 December 2013	Mechanical transplanting of 2014 dry season rice crop

References

Flux calculation

*1 McMillen, R.T., 1988. Boundary-Layer Meteorology, 43: 231-245.

*2 Aubinet M. et al.,2000. Advances in Ecological Research, 30: 113-175.

*3 Wilczak. J.M., Oncley, S.P. and Stage, S.A., 2001. Boundary-Layer Meteorology, 99: 127-150.

*4 Wyngaard, J. C. and Zhang, S. F., 1985. J. Atmos. Oceanic Tech., 2: 548-558.

*5 Kaimal, J.C. et al., 1990. Boundary-Layer Meteorol., 53: 103-115.

*6 Shimizu, T. et al., 1999. Boundary-Layer Meteorol., 64: 227–236.

*7 Leuning, R. and Judd M.J., 1996.Global Change Biology, 2: 241-254.

*8 Information from Li-Cor

Flux correction

*9 Schotanus, P. et al., 1983. Boundary-Layer Meteorology, 26: 81-93.

*10 Liu, H., Peters, G. and Foken, T., 2001. Boundary-Layer Meteorology, 100: 459-468.

*11 Kaimal J.C. and Gaynor, J.E., 1991. Boundary-Layer Meteorology, 56: 401-410.

*12 Watanabe et al., 2000. Boundary-Layer meteorol. 96, 743-491.

*13 Massman, W. J., 2000. Agric. For. Meteorol. 104, 185-198

*14 Massman, W. J., 2001. Agric. For. Meteorol. 107, 247-251

*15 Moore, C.J., 1986. Boundary-Layer Meteorology, 37: 17-35.

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*17 Webb, E. K., Pearman, G.I. and Leuning, R., 1980. Quarterly Journal of the Royal Meteorological Society, 106: 85-100.

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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.

*22 Fischer, G (Editor), 1988. Landolt-Börnstein, Numerical data and functional relationships in science and technology, Group V: Geophysics and space research, Volume 4: Meteorology Subvolume b: Physical and chemical properties of the air. Springer, Berlin, Heidelberg, 570pp.

*23 Stull, R.B., 1988. An Introduction to Boundary Layer meteorology. Kluwer Acad. Publ., Dordrecht, Boston, London, 666pp.

*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

*25 Vickers, D. and Mahrt, L., 1997. Journal of Atmospheric and Oceanic Technology, 14: 512-526.

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*27 Hojstrup, J., 1993. Measuring Science Technology, 4: 153-157.

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