TITLE:
CEOP_Tsukuba_NIAES-MASE_20090701_20091231.stm

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1. 0 DATASET OVERVIEW:

1.1 Introduction:
Mase paddy flux site was established in 1999 to monitor greenhouse gas exchange between paddy fields and the atmosphere, and since then, Mase site is operated as one of the key study sites of AsiaFlux (http://www.asiaflux.net/). Details of the study site and instrumentation are given in some references (Saito *et al*., 2005; Miyata *et al*., 2005; Han *et al*., 2007; Saito *et al*., 2007).

1.2 Time period covered by the data:
Start: 1 July 2009, 00:00 (UTC)
End: 31 December 2009, 23:30 (UTC)

1.3 Physical location of the measurement:
Latitude: 36° 03' 14.3" N
Longitude: 140° 01' 36.9" E
Elevation: 11 m a.s.l.
Landscape: Agricultural fields (paddy fields)
Soil characteristics: Soil type is Eutric Fluvisols. The site is flooded most of rice growing season (from the beginning of May to mid-September).

1.4 Data source:
Original data.

1.5 WWW address references:
http://www.asiaflux.net/network/007MSE_1.html
http://ecomdb.niaes.affrc.go.jp/e_level_page.php?select_area=1045&select_site=1121

2.0 INSTRUMENTATION DESCRIPTION:

2.1 Platform:
Sensors are set around a 6-m tall mast on which meteorological sensors are mounted.

2.2 Description of the instrumentation:

Parameter	Model	Manufacturer
Soil Temperature	-	Home-made
Soil Temperature	-	Home-made
Soil Temperature	-	Home-made
Soil Temperature	-	Home-made
Soil Temperature	-	Home-made
Soil Temperature	-	Home-made
Soil Moisture	TDR100	Campbell, Logan, UT, USA
Soil Moisture	TDR100	Campbell, Logan, UT, USA
Soil Moisture	TDR100	Campbell, Logan, UT, USA
Soil Moisture	TDR100	Campbell, Logan, UT, USA
Soil Moisture	TDR100	Campbell, Logan, UT, USA

2.3 Instrumentation specification:

Parameter	Sensor Type	Depth of sensor (m)	Accuracy	Resolution
Soil Temperature	T-type thermocouple	0.01	-	-
Soil Temperature	T-type thermocouple	0.02 (0.025)		
Soil Temperature	T-type thermocouple	0.05	-	-
Soil Temperature	T-type thermocouple	0.10	-	-
Soil Temperature	T-type thermocouple	0.20	-	-
Soil Temperature	T-type thermocouple	0.40	-	-
Soil Moisture	Time domain reflectometry	0.02 (0.025) [1]	-	-
Soil Moisture	Time domain reflectometry	0.03 (from surface to 0.05) [2]	-	-
Soil Moisture	Time domain reflectometry	0.05 (from surface to 0.08) [2]	-	-
Soil Moisture	Time domain reflectometry	0.10 (from surface to 0.20) [2]	-	-
Soil Moisture	Time domain reflectometry	0.15 (from surface to 0.30) [2]	-	-

[1] The sensor was set horizontally in the soil at 2.5 cm depth.
[2] The sensor was set obliquely in the soil.

3.0 DATA COLLECTION AND PROCESSING:

3.1 Description of data collection:
Data are retrieved weekly.

3.2 Description of derived parameters and processing techniques used:
1) Soil temperature data were sampled every 5 seconds and their 30-minute averages were stored.
2) Soil moisture data were sampled every 5 minutes and their 30-minute averages were stored.
3) Soil moisture at 0.02 m was the average of output values from two sensors set horizontally in the soil at 2.5 cm depth.

4.0 QUALITY CONTROL PROCEDURES:
At this stage of data processing, only apparently erroneous data were removed. Further quality control the data will be done later.

5.0 GAP FILLING PROCEDURES:
At this stage of data processing, no gap filling procedure was applied. Gap filling will be done later.

6.0 DATA REMARKS:

6.1 PI's assessment of the data:

6.1.1 Instruments problems

Instruments for measuring soil moisture malfunctioned from 2009/11/21 07:00 to 2009/11/26 23:30 (UTC).

6.1.2 Quality issues

1) Soil moisture sensors were removed temporarily and set again at harvest of rice and plowing of soil after the harvest. These events caused abrupt changes in soil moisture data at 2009/09/17 07:00 (UTC) and 2009/10/1 03:30 (UTC), respectively.

6.2 Missing data periods:

Missing periods longer than 1 hour are listed below.

from 2009/07/01 00:00 to 2009/07/07 09:00 (UTC) (Soil Temperature 0.02m)
from 2009/07/07 10:00 to 2009/07/10 10:30 (UTC) (Soil Temperature 0.02m)
from 2009/07/26 23:30 to 2009/07/27 07:00 (UTC) (Soil Temperature all depth)
from 2009/07/28 00:30 to 2009/07/28 11:00 (UTC) (Soil Temperature all depth)
from 2009/09/14 07:30 to 2009/09/17 01:00 (UTC) (Soil Temperature all depth)
from 2009/09/17 01:30 to 2009/09/17 06:30 (UTC) (Soil Temperature all depth, Soil Moisture all depth)
from 2009/09/17 07:00 to 2009/09/19 04:00 (UTC) (Soil Temperature all depth)
from 2009/09/20 07:30 to 2009/09/23 00:00 (UTC) (Soil Temperature 0.02m)
from 2009/09/23 06:00 to 2009/09/23 23:30 (UTC) (Soil Temperature 0.02m)
from 2009/09/24 05:30 to 2009/09/24 21:30 (UTC) (Soil Temperature 0.02m)
from 2009/10/01 00:30 to 2009/10/01 03:30 (UTC) (Soil Temperature 0.02m, Soil Moisture all depth)
from 2009/10/17 09:00 to 2009/10/17 23:00 (UTC) (Soil Temperature 0.02m)
from 2009/10/19 06:00 to 2009/10/27 21:30 (UTC) (Soil Temperature all depth)
from 2009/10/27 22:00 to 2009/11/03 05:00 (UTC) (Soil Temperature 0.02m)
from 2009/11/03 05:30 to 2009/11/03 08:00 (UTC) (Soil Temperature 0.02m, 0.1m)
from 2009/11/03 09:00 to 2009/11/03 10:30 (UTC) (Soil Temperature 0.02m, 0.1m)
from 2009/11/03 11:00 to 2009/11/04 06:00 (UTC) (Soil Temperature 0.02m)
from 2009/11/04 09:00 to 2009/11/04 10:00 (UTC) (Soil Temperature 0.02m, 0.1m)
from 2009/11/04 11:30 to 2009/11/04 12:30 (UTC) (Soil Temperature 0.02m, 0.1m)
from 2009/11/04 13:00 to 2009/11/04 19:00 (UTC) (Soil Temperature 0.1m)
from 2009/11/04 19:30 to 2009/11/04 20:30 (UTC) (Soil Temperature 0.02m, 0.1m)
from 2009/11/04 22:30 to 2009/11/05 01:30 (UTC) (Soil Temperature 0.1m)
from 2009/11/14 01:00 to 2009/11/14 04:30 (UTC) (Soil Temperature 0.1m)
from 2009/11/15 08:00 to 2009/11/21 06:30 (UTC) (Soil Temperature 0.1m)
from 2009/11/21 07:00 to 2009/11/26 23:30 (UTC) (Soil Moisture all depth)
from 2009/11/27 00:00 to 2009/11/28 05:30 (UTC) (Soil Temperature all depth)
from 2009/11/28 06:00 to 2009/12/06 16:30 (UTC) (Soil Temperature 0.1m)
from 2009/12/06 17:00 to 2009/12/07 20:00 (UTC) (Soil Temperature 0.1m)
from 2009/12/08 08:00 to 2009/12/08 09:00 (UTC) (Soil Temperature 0.1m)
from 2009/12/11 10:30 to 2009/12/12 01:30 (UTC) (Soil Temperature 0.1m)
from 2009/12/19 20:00 to 2009/12/21 23:30 (UTC) (Soil Temperature 0.1m)
from 2009/12/22 00:00 to 2009/12/22 01:00 (UTC) (Soil Temperature 0.02m, 0.1m)

from 2009/12/22 01:30 to 2009/12/27 04:30 (UTC) (Soil Temperature 0.1m)
from 2009/12/27 05:00 to 2009/12/29 00:30 (UTC) (Soil Temperature 0.02m, 0.1m)
from 2009/12/29 01:00 to 2009/12/31 19:30 (UTC) (Soil Temperature 0.1m)

6.3 Data intercomparisons:

7.0 REFERENCE REQUIREMENTS:

Original data were collected in the framework of Research Project for Global Warming Monitoring by NIAES. The project is funded by Ministry of Agriculture, Forestry and Fisheries, Ministry of Environment and NIAES.

8.0 REFERENCES

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