TITLE

CAMP_NorthEastThai_Nakhornrachasima_20021001_20030331.twr

CONTACT

Masatoshi AOKI
Tokyo University of Agriculture and Technology
3-8-1 Harumi-cho Fucuu-city Tokyo, Japan, 183-8538
Phone: +81-42-367-5727
Fax : +81-42-367-6078
Email: aoki.mas@cc.tuat.ac.jp

DATE OF THIS DOCUMENT

17 Sep. 2004
(Updated 3 July. 2006)

1. 0 DATASET OVERVIEW

1.1 Introduction

To clarify the energy and water cycle in the Thailand, it is important to understand the characteristics of the basic meteorological elements and surface fluxes.
The purpose of Nakhornratchasima-AWS (Automatic Weather Station) observation is to monitor these meteorological values and analysis the mechanisms of the energy and water cycle in the Cassava field in tropical Monsoon areas.

1.2 Time period covered by the data

Start: 1 October 2002, 00:00
End: 31 March 2003, 23:00

1.3 Temporal characteristics of the data

All parameters are recoded every hour.

1.4 Physical location of the measurement

Latitude : 14.466 N
Longitude : 102.379 E
Elevation : 311.0m a.s.l.
Landscape : Cassava Field
Canopy height : Cassava canopy height: 250cm (in dry season there is no vegetation).
From May to Oct. the height of the Cassava is change with the growing season, while the maximum height is around the 250cm.

Soil Characteristics: Uniform acrisols up to 7m depth

1.5 Data source

1.6 WWW address references

None

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

The sensors are mounted on several heights.

2.2 Description of the instrumentation

Parameter	Model	Manufacturer
Station Pressure	PTB220C	VAISALA
Air Temperature	TS-801(pt100)	Okazaki
Relative Humidity	HMP45D	VAISALA
Wind Speed	3 cup anemometer(VS-125) Propeller type(WS-D32)	Komatsu Komatsu
Wind Direction	WS-D32	Komatsu

2.3 Instrumentation specification

Station Pressure (0m) : Station Pressure at the 0 m height (hPa)
Air Temperature (9.5m) : Air Temperature at the 9.5m height (deg.C)
Air Temperature (Variable) : Air Temperature from 0 to 4m height (deg.C)
(Installation height was changed with the growth of vegetation.)
Relative Humidity (9.5m) : Specific Humidity at the 9.5m height (%)
Relative Humidity (Variable) : Specific Humidity from 0 to 4m height (%)
(Installation height was changed with the growth of vegetation.)
Wind Speed (10.5m) : Wind Speed at the 10.5m height (m/s)
Wind Direction (10.5m) : Wind Direction at the 10.5m height (deg.)
Wind Speed (9.5m) : Wind Speed at the 9.5m height (m/s)
Wind Speed (4.0m) : Wind Speed at the 4.0m height (m/s)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Observed Data are sent to the data manager everyday using E-mail tele-communication system established by Tokyo University of Agriculture and Technology.

3.2 Description of derived parameters and processing techniques used

Station Pressure is measured using a capacitive absolute pressure sensor, a kind of aneroid type barometer. When the pressure changes, the silicon diaphragm bend and changes the height of the vacuum gap in the sensor. This changes the capacitance of the sensor, which is measured and converted into a pressure reading.

Air temperature is measured using a Pt100 resistance thermometer.
Relative humidity is measured using a thin-film polymer sensor. The thin polymer film either absorbs or releases water vapor as the relative humidity of the ambient air rises or drops. The dielectric properties of the polymer film depend on the amount of water contained in it: as the relative humidity changes the dielectric properties of the film change and so the capacitance of the sensor changes. The electronics of the instrument measure the capacitance of the sensor and convert it into a humidity reading.
Wind speed and direction is measured by using Young wind sensor.

And the Four parameters indicated below were computed by using "CEOP Derived Parameter Equations: http://www.joss.ucar.edu/ghp/ceopdm/refdata_report/eqns.html". also put the data flag "I",

Dew Point Temperature is computed by using (Bolton 1980):

```
es = 6.112 * exp((17.67 * T)/(T + 243.5));
e = es * (RH/100.0);
Td = log(e/6.112)*243.5/(17.67-log(e/6.112));
```

where:

T = temperature in deg C;
es = saturation vapor pressure in mb;
e = vapor pressure in mb;
RH = Relative Humidity in percent;
Td = dew point in deg C

Specific Humidity is computed by using (Bolton 1980):

```
e = 6.112*exp((17.67*Td)/(Td + 243.5));
q = (0.622 * e)/(p - (0.378 * e));
```

where:

e = vapor pressure in mb;
Td = dew point in deg C;
p = surface pressure in mb;
q = specific humidity in kg/kg.

U,V Components were computed by using (GEMPAK):

```
U = -sin(direction) * wind_speed;
V = -cos(direction) * wind_speed;
```

NET radiation (GEMPAK):

NET_radiation = down (in) short + down (in) long - up (out) short - up (out) long;

3.3 Format description

http://www.eol.ucar.edu/projects/ceop/dm/documents/refdata_report/ceop_met_tower_format.html

4.0 QUALITY CONTROL PROCEDURES

For all parameters, the data has been visually checked, looking for extremely and unusual low/high values and/or periods with constant values thorough the CAMP Quality Control Web Interface.
The quality control flags follow the CEOP data flag definition document.

5.0 GAP FILLING PROCEDURES

No gap filling procedure was applied.

6.0 DATA REMARKS

6.1 PI's assessment of the data

6.1.1 Instruments problems

None.

6.1.2 Quality issues

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided by the Coordinated Enhanced Observation Period (CEOP) Asian Monsoon Project (CAMP) supported by Japan Science and Technology Agency (JST) under the framework of GEWEX Asian Monsoon Experiment Tropics (GAME-T).

8.0 REFERENCES

None

9.0 Missing Data Periods

File Name : CAMP_NorthEastThai_Nakhonrachasima_20021001_20030331.twr
Data Period : 2002/10/01 00:00 - 2003/03/31 23:00

Station Pressure (4.00m)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Station Pressure (9.50m)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Station Pressure (10.50m)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Air Temperature (4.00m)
2002/10/24 09:00 - 2002/10/25 03:00 (19)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

Air Temperature (9.50m)
2002/10/24 09:00 - 2002/10/25 03:00 (19)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

Air Temperature (10.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

Dew Point Temperature (4.00m)
2002/10/24 09:00 - 2002/10/25 03:00 (19)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Dew Point Temperature (9.50m)
2002/10/24 09:00 - 2002/10/25 03:00 (19)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

Dew Point Temperature (10.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

Relative Humidity (4.00m)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Relative Humidity (9.50m)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

Relative Humidity (10.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

Specific Humidity (4.00m)
2002/10/24 09:00 - 2002/10/25 03:00 (19)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Specific Humidity (9.50m)
2002/10/24 09:00 - 2002/10/25 03:00 (19)
2003/03/01 06:00 - 2003/03/01 16:00 (11)
2003/03/03 14:00

Specific Humidity (10.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

Wind Speed (4.00m)
2003/03/01 07:00 - 2003/03/01 17:00 (11)

Wind Speed (9.50m)

2003/03/01 06:00 - 2003/03/01 16:00 (11)

Wind Speed (10.50m)
2002/10/24 10:00
2003/03/01 06:00 - 2003/03/01 16:00 (11)

Wind Direction (4.00m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

Wind Direction (9.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

Wind Direction (10.50m)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

U Wind Component (4.00m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

U Wind Component (9.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

U Wind Component (10.50m)
2002/10/24 09:00 - 2002/10/25 04:00 (20)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

V Wind Component (4.00m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

V Wind Component (9.50m)
2002/10/01 00:00 - 2003/03/31 23:00 (ALL)

V Wind Component (10.50m)
2002/10/24 09:00 - 2002/10/25 04:00 (20)
2003/03/01 06:00 - 2003/03/01 16:00 (11)

TITLE

CAMP_NorthEastThai_Nakhonrachasima_20030401_20030930.twr

CONTACT

Masatoshi AOKI
Tokyo University of Agriculture and Technology
3-8-1 Harumi-cho Fucuu-city Tokyo, Japan, 183-8538
Phone: +81-42-367-5727
Fax : +81-42-367-6078
Email: aoki.mas@cc.tuat.ac.jp

DATE OF THIS DOCUMENT

29 May 2006

1. 0 DATASET OVERVIEW

1.7 Introduction

To clarify the energy and water cycle in the Thailand, it is important to understand the characteristics of the basic meteorological elements and surface fluxes.
The purpose of Nakhorn-ratchasima-AWS (Automatic Weather Station) observation is to monitor these meteorological values and analyse the mechanisms of the energy and water cycle in the Cassava field in tropical Monsoon areas.

1.8 Time period covered by the data

Start: 1 April 2003, 00:00
End: 30 September 2003, 23:00

1.9 Temporal characteristics of the data

All parameters are recoded every hour.

1.10 Physical location of the measurement

Latitude : 14.466 N
Longitude : 102.379 E
Elevation : 311.0m a.s.l.
Landscape : Cassava Field
Canopy height : Cassava canopy height: 250cm (in dry season there is no vegetation).
From May to Oct. the height of the Cassava is change with the growing season, while the maximum height is around the 250cm.
Soil Characteristics: Uniform acrisols up to 7m depth

1.11 Data source

1.12 WWW address references

None

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

The sensors are mounted on several heights.

2.2 Description of the instrumentation

Parameter	Model	Manufacturer
Station Pressure	PTB220C	VAISALA
Air Temperature	TS-801(pt100)	Okazaki
Relative Humidity	HMP45D	VAISALA
Wind Speed	3 cup anemometer(VS-125) Propeller type(WS-D32)	Komatsu Komatsu
Wind Direction	WS-D32	Komatsu

2.4 Instrumentation specification

Station Pressure (0m) : Station Pressure at the 0 m height (hPa)
Air Temperature (9.5m) : Air Temperature at the 9.5m height (deg.C)
Air Temperature (Variable) : Air Temperature from 0 to 4m height (deg.C)
(Installation height was changed with the growth of vegetation.)
Relative Humidity (9.5m) : Relative Humidity at the 9.5m height (%)
Relative Humidity (Variable) : Relative Humidity from 0 to 4m height (%)
(Installation height was changed with the growth of vegetation.)
Wind Speed (10.5m) : Wind Speed at the 10.5m height (m/s)
Wind Direction (10.5m) : Wind Direction at the 10.5m height (deg.)
Wind Speed (9.5m) : Wind Speed at the 9.5m height (m/s)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Observed Data are sent to the data manager everyday using E-mail tele-communication system established by Tokyo University of Agriculture and Technology.

3.2 Description of derived parameters and processing techniques used

Station Pressure is measured using a capacitive absolute pressure sensor, a kind of aneroid type barometer. When the pressure changes, the silicon diaphragm bend and changes the height of the vacuum gap in the sensor. This changes the capacitance of the sensor, which is measured and converted into a pressure reading.
Air temperature is measured using a Pt100 resistance thermometer.
Relative humidity is measured using a thin-film polymer sensor. The thin polymer film either absorbs or releases water vapor as the relative humidity of the ambient air rises or

drops. The dielectric properties of the polymer film depend on the amount of water contained in it: as the relative humidity changes the dielectric properties of the film change and so the capacitance of the sensor changes. The electronics of the instrument measure the capacitance of the sensor and convert it into a humidity reading.
Wind speed and direction is measured by using Young wind sensor.

And the Three parameters indicated below were computed by using “CEOP Derived Parameter Equations: http://www.joss.ucar.edu/ghp/ceopdm/refdata_report/eqns.html”. Also put the data flag “I”,

Dew Point Temperature is computed by using (Bolton 1980):

```
es = 6.112 * exp((17.67 * T)/(T + 243.5));
e = es * (RH/100.0);
Td = log(e/6.112)*243.5/(17.67-log(e/6.112));
```

where:

T = temperature in deg C;
es = saturation vapor pressure in mb;
e = vapor pressure in mb;
RH = Relative Humidity in percent;
Td = dew point in deg C

Specific Humidity is computed by using (Bolton 1980):

```
e = 6.112*exp((17.67*Td)/(Td + 243.5));
q = (0.622 * e)/(p - (0.378 * e));
```

where:

e = vapor pressure in mb;
Td = dew point in deg C;
p = surface pressure in mb;
q = specific humidity in kg/kg.

U,V Components were computed by using (GEMPAK):

```
U = -sin (direction) * wind_speed;
V = -cos (direction) * wind_speed;
```

4.0 QUALITY CONTROL PROCEDURES

For all parameters, the data has been visually checked, looking for extremely and unusual low/high values and/or periods with constant values thorough the CAMP Quality Control Web Interface.
The quality control flags follow the CEOP data flag definition document.

5.0 GAP FILLING PROCEDURES

No gap filling procedure was applied.

6.0 DATA REMARKS

6.1 PI's assessment of the data

6.1.1 Instruments problems

None.

6.1.2 Quality issues

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided by the Coordinated Enhanced Observation Period (CEOP) Asian Monsoon Project (CAMP) supported by Japan Science and Technology Agency (JST).

8.0 REFERENCES

None

9.0 Missing Data Periods

File Name : CAMP_NorthEastThai_Nakhonrachasima_20030401_20030930.twr
Data Period : 2003/04/01 00:00 - 2003/09/30 23:00

Station Pressure (4.00m)
2003/09/03 06:00 - 2003/09/04 08:00 (27)

Station Pressure (9.50m)
2003/09/03 06:00 - 2003/09/04 08:00 (27)

Station Pressure (10.50m)
2003/09/03 06:00 - 2003/09/04 08:00 (27)

Air Temperature (4.00m)
2003/07/21 18:00
2003/07/21 20:00
2003/07/23 22:00
2003/07/26 14:00
2003/07/26 19:00
2003/09/03 06:00 - 2003/09/04 07:00 (26)

Air Temperature (9.50m)
2003/07/21 18:00
2003/07/21 20:00
2003/07/23 22:00
2003/07/26 19:00
2003/08/14 16:00
2003/08/18 23:00
2003/08/19 23:00 - 2003/09/04 08:00 (370)

Air Temperature (10.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Dew Point Temperature (4.00m)
2003/04/27 07:00 - 2003/05/01 08:00 (98)
2003/07/21 18:00
2003/07/21 20:00
2003/07/23 22:00
2003/07/26 14:00
2003/07/26 19:00
2003/09/03 06:00 - 2003/09/04 09:00 (28)

Dew Point Temperature (9.50m)
2003/04/27 07:00 - 2003/05/01 03:00 (93)
2003/07/21 18:00
2003/07/21 20:00
2003/07/23 22:00
2003/07/26 19:00
2003/08/14 16:00
2003/08/18 23:00
2003/08/19 17:00 - 2003/08/19 20:00 (4)
2003/08/19 23:00 - 2003/09/04 08:00 (370)

Dew Point Temperature (10.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Relative Humidity (4.00m)
2003/04/27 07:00 - 2003/05/01 08:00 (98)
2003/09/03 06:00 - 2003/09/04 08:00 (27)

Relative Humidity (9.50m)
2003/04/27 07:00 - 2003/05/01 03:00 (93)
2003/08/20 00:00 - 2003/09/04 08:00 (369)

Relative Humidity (10.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Specific Humidity (4.00m)
2003/04/27 07:00 - 2003/05/01 08:00 (98)
2003/07/21 18:00
2003/07/21 20:00
2003/07/23 22:00
2003/07/26 14:00
2003/07/26 19:00
2003/09/03 06:00 - 2003/09/04 23:00 (42)

Specific Humidity (9.50m)
2003/04/27 07:00 - 2003/05/01 03:00 (93)
2003/07/21 18:00
2003/07/21 20:00
2003/07/23 22:00
2003/07/26 19:00
2003/08/14 16:00

2003/08/18 23:00
2003/08/19 17:00 - 2003/08/19 20:00 (4)
2003/08/19 23:00 - 2003/09/04 23:00 (385)

Specific Humidity (10.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Wind Speed (4.00m)
2003/09/03 07:00 - 2003/09/04 08:00 (26)

Wind Speed (9.50m)
2003/09/03 06:00 - 2003/09/04 07:00 (26)

Wind Speed (10.50m)
2003/09/03 06:00 - 2003/09/04 07:00 (26)

Wind Direction (4.00m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Wind Direction (9.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Wind Direction (10.50m)
2003/09/03 06:00 - 2003/09/04 07:00 (26)

U Wind Component (4.00m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

U Wind Component (9.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

U Wind Component (10.50m)
2003/09/03 06:00 - 2003/09/04 07:00 (26)

V Wind Component (4.00m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

V Wind Component (9.50m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

V Wind Component (10.50m)
2003/09/03 06:00 - 2003/09/04 07:00 (26)

TITLE

CAMP_NorthEastThai_Nakhonrachasima_20031001_20041231.twr

CONTACT

Masatoshi AOKI
Tokyo University of Agriculture and Technology
3-8-1 Harumi-cho Fucuu-city Tokyo, Japan, 183-8538
Phone: +81-42-367-5727
Fax : +81-42-367-6078
Email: aoki.mas@cc.tuat.ac.jp

DATE OF THIS DOCUMENT

29 Nov. 2006

1. 0 DATASET OVERVIEW

1.13 Introduction

To clarify the energy and water cycle in the Thailand, it is important to understand the characteristics of the basic meteorological elements and surface fluxes.
The purpose of Nakhorn-ratchasima-AWS (Automatic Weather Station) observation is to monitor these meteorological values and analyse the mechanisms of the energy and water cycle in the Cassava field in tropical Monsoon areas.

1.14 Time period covered by the data

Start: 1 October 2003, 00:00
End: 31 December 2004, 23:00

1.15 Temporal characteristics of the data

All parameters are recoded every hour.

1.16 Physical location of the measurement

Latitude : 14.466 N
Longitude : 102.379 E
Elevation : 311.0m a.s.l.
Landscape : Cassava Field
Canopy height : Cassava canopy height: 250cm (in dry season there is no vegetation).
From May to Oct. the height of the Cassava is change with the growing season, while the maximum height is around the 250cm.
Soil Characteristics: Uniform acrisols up to 7m depth

1.17 Data source

1.18 WWW address references

None

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

The sensors are mounted on several heights.

2.2 Description of the instrumentation

Parameter	Model	Manufacturer
Station Pressure	PTB220C	VAISALA
Air Temperature	TS-801(pt100)	Okazaki
Relative Humidity	HMP45D	VAISALA
Wind Speed	3 cup anemometer(VS-125) Propeller type(WS-D32)	Komatsu Komatsu
Wind Direction	WS-D32	Komatsu

2.5 Instrumentation specification

Station Pressure (0m) : Station Pressure at the 0 m height (hPa)
Air Temperature (9.5m) : Air Temperature at the 9.5m height (deg.C)
Air Temperature (Variable) : Air Temperature from 0 to 4m height (deg.C)
(Installation height was changed with the growth of vegetation.)
Relative Humidity (9.5m) : Relative Humidity at the 9.5m height (%)
Relative Humidity (Variable) : Relative Humidity from 0 to 4m height (%)
(Installation height was changed with the growth of vegetation.)
Wind Speed (10.5m) : Wind Speed at the 10.5m height (m/s)
Wind Direction (10.5m) : Wind Direction at the 10.5m height (deg.)
Wind Speed (9.5m) : Wind Speed at the 9.5m height (m/s)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Observed Data are sent to the data manager everyday using E-mail tele-communication system established by Tokyo University of Agriculture and Technology.

3.2 Description of derived parameters and processing techniques used

Station Pressure is measured using a capacitive absolute pressure sensor, a kind of aneroid type barometer. When the pressure changes, the silicon diaphragm bend and changes the height of the vacuum gap in the sensor. This changes the capacitance of the sensor, which is measured and converted into a pressure reading.
Air temperature is measured using a Pt100 resistance thermometer.
Relative humidity is measured using a thin-film polymer sensor. The thin polymer film either absorbs or releases water vapor as the relative humidity of the ambient air rises or

drops. The dielectric properties of the polymer film depend on the amount of water contained in it: as the relative humidity changes the dielectric properties of the film change and so the capacitance of the sensor changes. The electronics of the instrument measure the capacitance of the sensor and convert it into a humidity reading.
Wind speed and direction is measured by using Young wind sensor.

And the Three parameters indicated below were computed by using “CEOP Derived Parameter Equations: http://www.joss.ucar.edu/ghp/ceopdm/refdata_report/eqns.html”. Also put the data flag “I”,

Dew Point Temperature is computed by using (Bolton 1980):

```
es = 6.112 * exp((17.67 * T)/(T + 243.5));
e = es * (RH/100.0);
Td = log(e/6.112)*243.5/(17.67-log(e/6.112));
```

where:

T = temperature in deg C;
es = saturation vapor pressure in mb;
e = vapor pressure in mb;
RH = Relative Humidity in percent;
Td = dew point in deg C

Specific Humidity is computed by using (Bolton 1980):

```
e = 6.112*exp((17.67*Td)/(Td + 243.5));
q = (0.622 * e)/(p - (0.378 * e));
```

where:

e = vapor pressure in mb;
Td = dew point in deg C;
p = surface pressure in mb;
q = specific humidity in kg/kg.

U,V Components were computed by using (GEMPAK):

```
U = -sin (direction) * wind_speed;
V = -cos (direction) * wind_speed;
```

4.0 QUALITY CONTROL PROCEDURES

For all parameters, the data has been visually checked, looking for extremely and unusual low/high values and/or periods with constant values thorough the CAMP Quality Control Web Interface.
The quality control flags follow the CEOP data flag definition document.

5.0 GAP FILLING PROCEDURES

No gap filling procedure was applied.

6.0 DATA REMARKS

6.1 PI's assessment of the data

6.1.1 Instruments problems

None.

6.1.2 Quality issues

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided by the Coordinated Enhanced Observation Period (CEOP) Asian Monsoon Project (CAMP) supported by Japan Science and Technology Agency (JST).

8.0 REFERENCES

None

9.0 Missing Data Periods

File Name : CAMP_NorthEastThai_Nakhonrachasima_20031001_20041231.twr
Data Period : 2003/10/01 00:00 - 2004/12/31 23:00

Station Pressure
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/04/09 23:00
2004/06/14 21:00
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Air Temperature (4.00m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Air Temperature (9.50m)
2003/10/21 13:00 - 2003/10/21 18:00 (6)
2003/11/11 14:00 - 2003/11/12 00:00 (11)
2003/12/29 00:00
2004/01/08 03:00
2004/01/10 10:00
2004/01/10 19:00 - 2004/01/11 02:00 (8)
2004/01/15 00:00 - 2004/01/15 01:00 (2)
2004/01/15 22:00 - 2004/01/16 01:00 (4)
2004/01/17 01:00
2004/01/18 00:00 - 2004/01/18 01:00 (2)
2004/01/19 00:00
2004/01/30 09:00 - 2004/01/30 10:00 (2)
2004/01/30 14:00 - 2004/01/30 18:00 (5)
2004/01/30 20:00
2004/01/31 00:00 - 2004/01/31 01:00 (2)
2004/01/31 09:00

2004/02/01 09:00 - 2004/02/01 10:00 (2)
2004/02/02 06:00 - 2004/02/02 10:00 (5)
2004/02/03 07:00 - 2004/02/03 09:00 (3)
2004/02/03 13:00 - 2004/02/03 21:00 (9)
2004/02/06 01:00 - 2004/02/06 06:00 (6)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/03/03 12:00 - 2004/03/03 15:00 (4)
2004/03/04 07:00 - 2004/03/04 12:00 (6)
2004/03/05 07:00 - 2004/03/05 11:00 (5)
2004/03/06 05:00 - 2004/03/06 11:00 (7)
2004/03/07 08:00 - 2004/03/07 10:00 (3)
2004/03/08 05:00 - 2004/03/08 12:00 (8)
2004/03/09 04:00 - 2004/03/09 11:00 (8)
2004/03/10 05:00 - 2004/03/10 09:00 (5)
2004/03/11 07:00 - 2004/03/11 10:00 (4)
2004/03/12 08:00 - 2004/03/12 09:00 (2)
2004/03/22 06:00 - 2004/03/22 09:00 (4)
2004/03/23 10:00
2004/03/24 09:00
2004/03/26 05:00
2004/03/26 07:00 - 2004/03/26 10:00 (4)
2004/03/29 09:00 - 2004/03/29 10:00 (2)
2004/03/29 12:00 - 2004/03/29 18:00 (7)
2004/03/29 22:00
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Dew Point Temperature (4.00m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Dew Point Temperature (9.50m)
2003/10/21 13:00 - 2003/10/21 18:00 (6)
2003/11/11 14:00 - 2003/11/12 00:00 (11)
2003/12/29 00:00
2004/01/08 03:00
2004/01/10 10:00
2004/01/10 19:00 - 2004/01/11 02:00 (8)
2004/01/15 00:00 - 2004/01/15 01:00 (2)
2004/01/15 22:00 - 2004/01/16 01:00 (4)
2004/01/17 01:00
2004/01/18 00:00 - 2004/01/18 01:00 (2)
2004/01/19 00:00
2004/01/30 09:00 - 2004/01/30 10:00 (2)
2004/01/30 14:00 - 2004/01/30 18:00 (5)
2004/01/30 20:00
2004/01/31 00:00 - 2004/01/31 01:00 (2)
2004/01/31 09:00
2004/02/01 09:00 - 2004/02/01 10:00 (2)
2004/02/02 06:00 - 2004/02/02 10:00 (5)

2004/02/03 07:00 - 2004/02/03 09:00 (3)
2004/02/03 13:00 - 2004/02/03 21:00 (9)
2004/02/06 01:00 - 2004/02/06 06:00 (6)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/03/03 12:00 - 2004/03/03 15:00 (4)
2004/03/04 07:00 - 2004/03/04 12:00 (6)
2004/03/05 07:00 - 2004/03/05 11:00 (5)
2004/03/06 05:00 - 2004/03/06 11:00 (7)
2004/03/07 08:00 - 2004/03/07 10:00 (3)
2004/03/08 05:00 - 2004/03/08 12:00 (8)
2004/03/09 04:00 - 2004/03/09 11:00 (8)
2004/03/10 05:00 - 2004/03/10 09:00 (5)
2004/03/11 07:00 - 2004/03/11 10:00 (4)
2004/03/12 08:00 - 2004/03/12 09:00 (2)
2004/03/22 06:00 - 2004/03/22 09:00 (4)
2004/03/23 10:00
2004/03/24 09:00
2004/03/26 05:00
2004/03/26 07:00 - 2004/03/26 10:00 (4)
2004/03/29 09:00 - 2004/03/29 10:00 (2)
2004/03/29 12:00 - 2004/03/29 18:00 (7)
2004/03/29 22:00
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Relative Humidity (4.00m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Relative Humidity (9.50m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Specific Humidity (4.00m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/04/09 23:00
2004/06/14 21:00
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Specific Humidity (9.50m)
2003/10/21 13:00 - 2003/10/21 18:00 (6)
2003/11/11 14:00 - 2003/11/12 00:00 (11)
2003/12/29 00:00
2004/01/08 03:00
2004/01/10 10:00
2004/01/10 19:00 - 2004/01/11 02:00 (8)
2004/01/15 00:00 - 2004/01/15 01:00 (2)
2004/01/15 22:00 - 2004/01/16 01:00 (4)

2004/01/17 01:00
2004/01/18 00:00 - 2004/01/18 01:00 (2)
2004/01/19 00:00
2004/01/30 09:00 - 2004/01/30 10:00 (2)
2004/01/30 14:00 - 2004/01/30 18:00 (5)
2004/01/30 20:00
2004/01/31 00:00 - 2004/01/31 01:00 (2)
2004/01/31 09:00
2004/02/01 09:00 - 2004/02/01 10:00 (2)
2004/02/02 06:00 - 2004/02/02 10:00 (5)
2004/02/03 07:00 - 2004/02/03 09:00 (3)
2004/02/03 13:00 - 2004/02/03 21:00 (9)
2004/02/06 01:00 - 2004/02/06 06:00 (6)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/03/03 12:00 - 2004/03/03 15:00 (4)
2004/03/04 07:00 - 2004/03/04 12:00 (6)
2004/03/05 07:00 - 2004/03/05 11:00 (5)
2004/03/06 05:00 - 2004/03/06 11:00 (7)
2004/03/07 08:00 - 2004/03/07 10:00 (3)
2004/03/08 05:00 - 2004/03/08 12:00 (8)
2004/03/09 04:00 - 2004/03/09 11:00 (8)
2004/03/10 05:00 - 2004/03/10 09:00 (5)
2004/03/11 07:00 - 2004/03/11 10:00 (4)
2004/03/12 08:00 - 2004/03/12 09:00 (2)
2004/03/22 06:00 - 2004/03/22 09:00 (4)
2004/03/23 10:00
2004/03/24 09:00
2004/03/26 05:00
2004/03/26 07:00 - 2004/03/26 10:00 (4)
2004/03/29 09:00 - 2004/03/29 10:00 (2)
2004/03/29 12:00 - 2004/03/29 18:00 (7)
2004/03/29 22:00
2004/04/09 23:00
2004/06/14 21:00
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Wind Speed (4.00m)
2004/03/01 01:00 - 2004/03/01 06:00 (6)
2004/12/29 19:00 - 2004/12/30 01:00 (7)
2004/12/31 18:00 - 2004/12/31 23:00 (6)

Wind Speed (9.50m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Wind Speed (10.50m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

Wind Direction (10.50m)
2004/03/01 00:00 - 2004/03/01 05:00 (6)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

U Wind Component (10.50m)
2003/10/20 15:00 - 2004/03/31 23:00 (3921)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)

V Wind Component (10.50m)
2003/10/20 15:00 - 2004/03/31 23:00 (3921)
2004/12/29 18:00 - 2004/12/30 00:00 (7)
2004/12/31 17:00 - 2004/12/31 23:00 (7)