TITLE

CAMP_Tongyu_Cropland_20021001_20030331.sfc

CONTACT

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DATE OF THIS DOCUMENT

30 Aug. 2004

1. 0 DATASET OVERVIEW

1.1 Introduction

The field experiment of energy and mass exchange process between the land and atmosphere in semi-arid area, northeast china.

Objectives
Based on the observation data to analysis the facts and mechanisms of the water and heat flux transfer in the ecosystem in semiarid areas.
By comparing the different transfer process over different land surface, we study the effects of the land use on the aridification in the north of China.

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 30 minutes.

1.4 Physical location of the measurement

Latitude : 44.416 N

Longitude : 122.867 E
Elevation : 184.0m above sea level.
Landscape : The cropland surface
Canopy height : Corn, canopy height: 120cm (in winter there is no any corn). From May to Oct. the height of the corn is change with the growing season, while the maximum height is 120cm.
Soil Characteristics: sand, light chernozem

1.5 Data source

Original data was provided by the Chinese Academy of Sciences (CAS).

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	CS105	TEXAS ELECT
Air Temperature	HMP	VAISALA
Specific Humidity	45C_L	VAISALA
Wind Speed	034A_L,	Met One
Wind Direction	014A_L	Met One
Precipitation	TE525MM_L	TEXAS ELECT
Incoming Shortwave	CM21	Kipp & Zonen
Outgoing Shortwave	CM21	Kipp & Zonen
Incoming Longwave	CG4	Kipp & Zonen
Outgoing Longwave	CG4	Kipp & Zonen
Skin Temperature	IRTSD-P	APOGEE

2.3 Instrumentation specification

Station Pressure (1.5m) : Station Pressure at the 1.5 m height (hPa)
Air Temperature (1.95m) : Air Temperature at the 1.95m height (deg.C)
Specific Humidity (1.95m) : Specific Humidity at the 1.95m height (g/kg)
Wind Speed (17.06m) : Wind Speed at the 17.06m height (m/s)
Wind Direction (17.06m) : Wind Direction at the 17.06m height (deg.)
Precipitation (1.0m) : Precipitation at the 1.0 m (mm)
Incoming Shortwave (3.0m) : Shortwave Downward Radiation at the 3.0m height (W/m^2)
Outgoing Shortwave (3.0m) : Shortwave Upward Radiation at the 3.0m height (W/m^2)
Incoming Longwave (3.0m) : Longwave Downword Radiation at the 3.0m height (W/m^2)
Outgoing Longwave (3.0m) : Longwave Upword Radiation at the 3.0m height (W/m^2)
Skin Temperature (1.5m) : Skin Temperature at the 1.5m (deg.C)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Data are downloaded from the Tower once each month. Then, data are sent to Beijing, where they are processed.

3.2 Description of derived parameters and processing techniques used

Temperature, specific humidity and radiation are instantaneous values. Atmospheric pressure is averaged over the previous 30 minutes. Wind speed and direction are the *resulting* average speed and direction over the previous 30 minutes (calculated by the data logger by means of data recorded every 5 seconds): this to minimize data unreliability due to sudden gusts.

And the Two 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”,

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

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

3.3 Data format

These data are in the CEOP EOP-3 data format agreed to by the CEOP Scientific Steering Committee. This format is described in detail as part of the CEOP Reference Site Data Set Procedures Report which is available at the following URL:

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

4.2 UCAR/JOSS Quality Control Procedures

UCAR/JOSS conducted two primary quality assurance/control procedures on the reference site data. First the data has been evaluated by a detailed QA algorithm that Verifies the format is correct, examines any QC flags, and conducts basic checks on data values. Second, JOSS conducts a manual inspection of time series plots of each parameter.

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

Only when the Infrared Radiation Temperature of the land Surface (IRTS) is larger than 0.0 (deg. C) the measured Skin Temperature data is available.

6.2 Missing data periods

There are four missing periods indicated below;

2002/10/01 00:00 - 2002/10/16 04:30,
2002/10/19 09:30 - 2002/10/21 01:30
2002/12/21 03:00 - 2003/02/12 05:00
2003/03/31 16:00 - 2003/03/31 23:30

And the Skin Temperature is not available during first half EOP-3 (2002/10 - 2003/03).

7.0 REFERENCE REQUIREMENTS

These data was collected and is provided "Predictive Study of Aridification in Northern China in association with Life-supporting Environment Changes" projects funded by National Key Basic Research Development Program G1999043404.

8.0 REFERENCES

None.

TITLE

CAMP_Tongyu_Cropland_20030401_20030930.sfc.doc

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DATE OF THIS DOCUMENT

14 Jan. 2005

1. 0 DATASET OVERVIEW

1.7 Introduction

The field experiment of energy and mass exchange process between the land and atmosphere in semi-arid area, northeast china.

Objectives
Based on the observation data to analysis the facts and mechanisms of the water and heat flux transfer in the ecosystem in semiarid areas.
By comparing the different transfer process over different land surface, we study the effects of the land use on the aridification in the north of China.

1.8 Time period covered by the data

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

1.9 Temporal characteristics of the data

All parameters are recoded every 30 minutes.

1.10 Physical location of the measurement

Latitude : 44.416 N
Longitude : 122.867 E
Elevation : 184.0m above sea level.
Landscape : The cropland surface
Canopy height : Corn, canopy height: 120cm (in winter there is no any corn). From May to Oct. the height of the corn is change with the growing season, while the maximum height is 120cm.
Soil Characteristics: sand, light chernozem

1.11 Data source

Original data was provided by the Chinese Academy of Sciences (CAS).

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	CS105	TEXAS ELECT
Air Temperature	HMP	VAISALA
Specific Humidity	45C_L	VAISALA
Wind Speed	034A_L,	Met One
Wind Direction	014A_L	Met One
Precipitation	TE525MM_L	TEXAS ELECT
Incoming Shortwave	CM21	Kipp & Zonen
Outgoing Shortwave	CM21	Kipp & Zonen
Incoming Longwave	CG4	Kipp & Zonen
Outgoing Longwave	CG4	Kipp & Zonen
Skin Temperature	IRTSD-P	APOGEE

2.4 Instrumentation specification

Station Pressure (1.5m) : Station Pressure at the 1.5 m height (hPa)
Air Temperature (1.95m) : Air Temperature at the 1.95m height (deg.C)
Specific Humidity (1.95m) : Specific Humidity at the 1.95m height (g/kg)
Wind Speed (17.06m) : Wind Speed at the 17.06m height (m/s)
Wind Direction (17.06m) : Wind Direction at the 17.06m height (deg.)
Precipitation (1.0m) : Precipitation at the 1.0 m (mm)
Incoming Shortwave (3.0m) : Shortwave Downward Radiation at the 3.0m height (W/m^2)
Outgoing Shortwave (3.0m) : Shortwave Upward Radiation at the 3.0m height (W/m^2)
Incoming Longwave (3.0m) : Longwave Downword Radiation at the 3.0m height (W/m^2)
Outgoing Longwave (3.0m) : Longwave Upword Radiation at the 3.0m height (W/m^2)
Skin Temperature (1.5m) : Skin Temperature at the 1.5m (deg.C)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Data are downloaded from the Tower once each month. Then, data are sent to Beijing, where they are processed.

3.2 Description of derived parameters and processing techniques used

Temperature, specific humidity and radiation are instantaneous values. Atmospheric pressure is averaged over the previous 30 minutes. Wind speed and direction are the *resulting* average speed and direction over the previous 30 minutes (calculated by the data logger by means of data recorded every 5 seconds): this to minimize data unreliability due to sudden gusts.

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”,

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

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

Compute Dew Point Temperature (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

Compute the Specific Humidity (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.

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

6.2 Missing data periods

There are three missing periods indicated below;

2003/04/13 06:00	-	2003/04/17 09:00
2003/04/19 03:00	-	2003/05/12 07:00
2003/09/30 16:00	-	2003/09/30 23:30

And the Skin Temperature is not available during latter half EOP-3 (2003/04 - 2003/09).

7.0 REFERENCE REQUIREMENTS

These data was collected and is provided "Predictive Study of Aridification in Northern China in association with Life-supporting Environment Changes" projects funded by National Key Basic Research Development Program G1999043404.

8.0 REFERENCES

None.

TITLE

CAMP_Tongyu_Cropland_20031001_20040331.sfc

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DATE OF THIS DOCUMENT

18 May. 2006

1. 0 DATASET OVERVIEW

1.13 Introduction

The field experiment of energy and mass exchange process between the land and atmosphere in semi-arid area, northeast china.

Objectives
Based on the observation data to analysis the facts and mechanisms of the water and heat flux transfer in the ecosystem in semiarid areas.
By comparing the different transfer process over different land surface, we study the effects of the land use on the aridification in the north of China.

1.14 Time period covered by the data

Start: 1 October 2003, 00:00
End: 31 March 2004, 23:30

1.15 Temporal characteristics of the data

All parameters are recoded every 30 minutes.

1.16 Physical location of the measurement

Latitude : 44.416 N
Longitude : 122.867 E
Elevation : 184.0m above sea level.
Landscape : The cropland surface
Canopy height : Corn, canopy height: 120cm (in winter there is no any corn).
From May to Oct. the height of the corn is change with the growing season, while the maximum height is 120cm.
Soil Characteristics: sand, light chernozem

1.17 Data source

Original data was provided by the Chinese Academy of Sciences (CAS).

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	CS105	TEXAS ELECT
Air Temperature	HMP	VAISALA
Specific Humidity	45C_L	VAISALA
Wind Speed	034A_L,	Met One
Wind Direction	014A_L	Met One
Precipitation	TE525MM_L	TEXAS ELECT
Incoming Shortwave	CM21	Kipp & Zonen
Outgoing Shortwave	CM21	Kipp & Zonen
Incoming Longwave	CG4	Kipp & Zonen
Outgoing Longwave	CG4	Kipp & Zonen
Skin Temperature	IRTSD-P	APOGEE

2.5 Instrumentation specification

Station Pressure (1.5m) : Station Pressure at the 1.5 m height (hPa)
Air Temperature (1.95m) : Air Temperature at the 1.95m height (deg.C)
Specific Humidity (1.95m) : Specific Humidity at the 1.95m height (g/kg)
Wind Speed (17.06m) : Wind Speed at the 17.06m height (m/s)
Wind Direction (17.06m) : Wind Direction at the 17.06m height (deg.)
Precipitation (1.0m) : Precipitation at the 1.0 m (mm)
Incoming Shortwave (3.0m) : Shortwave Downward Radiation at the 3.0m height (W/m^2)
Outgoing Shortwave (3.0m) : Shortwave Upward Radiation at the 3.0m height (W/m^2)
Incoming Longwave (3.0m) : Longwave Downword Radiation at the 3.0m height (W/m^2)
Outgoing Longwave (3.0m) : Longwave Upword Radiation at the 3.0m height (W/m^2)
Skin Temperature (1.5m) : Skin Temperature at the 1.5m (deg.C)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Data are downloaded from the Tower once each month. Then, data are sent to Beijing, where they are processed.

3.2 Description of derived parameters and processing techniques used

Temperature, specific humidity and radiation are instantaneous values. Atmospheric pressure is averaged over the previous 30 minutes. Wind speed and direction are the *resulting* average speed and direction over the previous 30 minutes (calculated by the data logger by means of data recorded every 5 seconds): this to minimize data unreliability due to sudden gusts.

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”,

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

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

Compute Dew Point Temperature (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

Compute the Specific Humidity (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.

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

6.2 Missing data periods

The missing data period are listed in chapter 9.0.

7.0 REFERENCE REQUIREMENTS

These data was collected and is provided "Aridification in Northern China in association with human being's adpatation" projects funded by National Key Basic Research Development Program G2006CB400501.

8.0 REFERENCES

None.

9.0 Missing Data Periods

File Name : CAMP_Tongyu_Cropland_20031001_20040331.sfc
Data Period : 2003/10/01 00:00 - 2004/03/31 23:30

Station Pressure
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Air Temperature
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Dew Point Temperature
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)
Relative Humidity
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Specific Humidity
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Wind Speed
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)
Wind Direction
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

U Wind Component
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

V Wind Component
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Precipitation
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Snow Depth
2003/10/01 00:00 - 2004/03/31 23:30 (ALL)

Incoming Shortwave
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Outgoing Shortwave
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Incoming Longwave
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Outgoing Longwave
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Net Radiation
2003/10/08 22:30 - 2003/10/08 23:00 (2)
2003/10/09 12:30 - 2003/10/09 23:00 (22)
2003/10/11 18:00 - 2003/10/11 23:00 (11)
2003/10/20 01:30 - 2003/10/20 03:00 (4)
2003/11/02 04:00 - 2003/11/02 23:30 (40)
2004/03/31 16:00 - 2004/03/31 23:30 (16)

Skin Temperature
2003/10/01 00:00 - 2004/03/31 23:30 (ALL)

Incoming PAR
2003/10/01 00:00 - 2004/03/31 23:30 (ALL)

Outgoing PAR
2003/10/01 00:00 - 2004/03/31 23:30 (ALL)

TITLE

CAMP_Tongyu_Cropland_20040401_20041231.sfc

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DATE OF THIS DOCUMENT

29 Jun. 2006

1. 0 DATASET OVERVIEW

1.19 Introduction

The field experiment of energy and mass exchange process between the land and atmosphere in semi-arid area, northeast china.

Objectives
Based on the observation data to analysis the facts and mechanisms of the water and heat flux transfer in the ecosystem in semiarid areas.
By comparing the different transfer process over different land surface, we study the effects of the land use on the aridification in the north of China.

1.20 Time period covered by the data

Start: 1 April 2004, 00:00
End: 31 December 2004, 23:30

1.21 Temporal characteristics of the data

All parameters are recoded every 30 minutes.

1.22 Physical location of the measurement

Latitude : 44.416 N
Longitude : 122.867 E
Elevation : 184.0m above sea level.
Landscape : The cropland surface
Canopy height : Corn, canopy height: 120cm (in winter there is no any corn). From May to Oct. the height of the corn is change with the growing season, while the maximum height is 120cm.
Soil Characteristics: sand, light chernozem

1.23 Data source

Original data was provided by the Chinese Academy of Sciences (CAS).

1.24 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	CS105	TEXAS ELECT
Air Temperature	HMP	VAISALA
Specific Humidity	45C_L	VAISALA
Wind Speed	034A_L,	Met One
Wind Direction	014A_L	Met One
Precipitation	TE525MM_L	TEXAS ELECT
Incoming Shortwave	CM21	Kipp & Zonen
Outgoing Shortwave	CM21	Kipp & Zonen
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Outgoing Longwave	CG4	Kipp & Zonen
Skin Temperature	IRTSD-P	APOGEE

2.6 Instrumentation specification

Station Pressure (1.5m) : Station Pressure at the 1.5 m height (hPa)
Air Temperature (1.95m) : Air Temperature at the 1.95m height (deg.C)
Specific Humidity (1.95m) : Specific Humidity at the 1.95m height (g/kg)
Wind Speed (17.06m) : Wind Speed at the 17.06m height (m/s)
Wind Direction (17.06m) : Wind Direction at the 17.06m height (deg.)
Precipitation (1.0m) : Precipitation at the 1.0 m (mm)
Incoming Shortwave (3.0m) : Shortwave Downward Radiation at the 3.0m height (W/m^2)
Outgoing Shortwave (3.0m) : Shortwave Upward Radiation at the 3.0m height (W/m^2)
Incoming Longwave (3.0m) : Longwave Downword Radiation at the 3.0m height (W/m^2)
Outgoing Longwave (3.0m) : Longwave Upword Radiation at the 3.0m height (W/m^2)
Skin Temperature (1.5m) : Skin Temperature at the 1.5m (deg.C)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Data are downloaded from the Tower once each month. Then, data are sent to Beijing, where they are processed.

3.2 Description of derived parameters and processing techniques used

Temperature, specific humidity and radiation are instantaneous values. Atmospheric pressure is averaged over the previous 30 minutes. Wind speed and direction are the *resulting* average speed and direction over the previous 30 minutes (calculated by the data logger by means of data recorded every 5 seconds): this to minimize data unreliability due to sudden gusts.

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”,

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

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

Compute Dew Point Temperature (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

Compute the Specific Humidity (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.

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

6.2 Missing data periods

The missing data period are listed in chapter 9.0.

7.0 REFERENCE REQUIREMENTS

These data was collected and is provided "Aridification in Northern China in association with human being's adpatation" projects funded by National Key Basic Research Development Program G2006CB400501.

8.0 REFERENCES

None.

9.0 Missing Data Periods

File Name : CAMP_Tongyu_Cropland_20040401_20041231.sfc
Data Period : 2004/04/01 00:00 - 2004/12/31 23:30

Station Pressure

2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
2004/11/10 20:30 - 2004/11/10 22:30 (5)
2004/12/03 18:30 - 2004/12/03 23:30 (11)
2004/12/04 21:30 - 2004/12/04 23:00 (4)
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2004/12/09 08:00 - 2004/12/09 23:30 (32)
2004/12/11 20:30 - 2004/12/11 23:00 (6)
2004/12/14 21:30 - 2004/12/14 23:30 (5)
2004/12/17 10:30 - 2004/12/17 23:30 (27)
2004/12/18 21:00 - 2004/12/19 00:30 (8)
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2004/12/30 22:30 - 2004/12/30 23:30 (3)
2004/12/31 20:30 - 2004/12/31 23:30 (7)

Air Temperature
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
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Dew Point Temperature
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
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2004/12/31 20:30 - 2004/12/31 23:30 (7)

Relative Humidity
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
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Specific Humidity
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
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Wind Speed
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
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Wind Direction
2004/11/01 13:30 - 2004/11/02 03:30 (29)
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U Wind Component
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V Wind Component
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
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Precipitation
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2004/11/02 09:00 - 2004/11/03 03:30 (38)
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2004/12/31 20:30 - 2004/12/31 23:30 (7)

Snow Depth
2004/04/01 00:00 - 2004/12/31 23:30 (ALL)

Incoming Shortwave
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
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2004/12/31 20:30 - 2004/12/31 23:30 (7)

Outgoing Shortwave
2004/11/01 13:30 - 2004/11/02 03:30 (29)
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2004/11/05 08:30
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Incoming Longwave
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2004/11/02 09:00 - 2004/11/03 03:30 (38)
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Outgoing Longwave
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Net Radiation
2004/11/01 13:30 - 2004/11/02 03:30 (29)
2004/11/02 09:00 - 2004/11/03 03:30 (38)
2004/11/05 08:30
2004/11/09 18:00 - 2004/11/10 00:30 (14)
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2004/12/31 20:30 - 2004/12/31 23:30 (7)

Skin Temperature
2004/04/01 00:00 - 2004/12/31 23:30 (ALL)

Incoming PAR
2004/04/01 00:00 - 2004/12/31 23:30 (ALL)

Outgoing PAR
2004/04/01 00:00 - 2004/12/31 23:30 (ALL)