TITLE

CAMP_Tibet_D105-AWS_20021001_20030331.twr

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DATE OF THIS DOCUMENT

02 Sep. 2004

1. 0 DATASET OVERVIEW

1.1 Introduction

To clarify the energy and water cycle in the Tibetan Plateau, it is important to understand the characteristics of the basic meteorological elements and surface fluxes.

The purpose of Tibet AWS (Automatic Weather Station) observation is to improve the quantitative understanding of land-atmosphere interactions over the Tibetan Plateau and develop the land surface process models by monitoring these meteorological values.

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 : 33.06429 N
Longitude : 91.94256 E
Elevation : 5038.6 m a.s.l.
Landscape : Bare land (with the thin weed-like plant)
Canopy height : Less than 5cm.
Soil Characteristics: Silt loam / Sandy loam

1.5 Data source

1.6 Website address references

http://monsoon.t.u-tokyo.ac.jp/camp/tibets/

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

This AWS was constructed in summer 2000 to represent the cold location north of the Tanngla Mts. The site was located in the shallow slope of the mountain. 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	HMP-45D	VAISALA
Air Temperature	TS-801(Pt100)	Okazaki
Relative Humidity	HMP-45D	VAISALA
Wind Speed	WS-D32	Komatsu
Wind Direction	WS-D32	Komatsu

2.3 Instrumentation specification

Station Pressure (0.5m) : Station Pressure at the 0.5m height (hPa)
Air Temperature (9.3m) : Air Temperature at the 9.3m height (deg.C)
Air Temperature (1.0m) : Air Temperature at the 1.0m height (deg.C)
Relative Humidity (9.3m) : Relative Humidity at the 9.3m height (%)
Relative Humidity (1.0m) : Relative Humidity at the 1.0m height (%)
Wind Speed (10.0m) : Wind Speed at the 10.0m height (m/s)
Wind Speed (5.0m) : Wind Speed at the 5.0m height (m/s)
Wind Speed (1.0m) : Wind Speed at the 1.0m height (m/s)

Wind Direction (10.0m) : Wind Direction at the 10.0m height (deg.)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Original data are sampled at every 5 seconds (0.2Hz) and average is computed and stored in a data logger (Campbell CR-10X).
Data are downloaded from the Tower twice every year, in spring and summer. Then, data are sent to Japan, where they are processed.

3.2 Description of derived parameters and processing techniques used

Air Temperature, relative humidity, Wind speed and Wind direction averaged over the previous hour. Air pressure is instantaneous values of each 1 hour.

One humidity sensor is set up for the comparison the performance of No.1 (9.3 m) and No.2 (1.0m) humidity sensor. This reference sensor is exchanged its level (From 1.0 m to 8.2 m) or down (From 9.3m to 1.0m) for every operation. We selected the couple of dataset (No.1 main sensor and No.1 reference sensor; No2. main sensor and No. 2 reference sensor) just before or after 5 days of the operation, and made the linear regressions.
RH1 = a1*RH_ref + b1
RH2 = a1*RH_ref + b2
From these two equations, the regression function between RH1 and RH2 can be derived as
RH2 = a*RH1 + b
RH2 (1.0 m) was corrected as a reference of RH1 using above relation and put the data flag “I”.

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;

Net radiation were computed by using (GEMPAK):
NET_radiation = down(in)short + down(in)long - up(out)short - up(out)long;

Specific Humidity (Qv) was computed by using
Qv = 0.622 Rv / (1 + Rv)
Rv = Evap / Air_Pressure
Evap = Rh * 0.01 * Evap_sat
Evap_sat = 6.1078^(a*Air_Temp/(b+Air_Temp))
(a = 7.5, b = 237.3 for Air_Temp >= 0 degC; a = 9.5, b = 265.3 for Air_Temp < 0)

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

None

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided within the framework of GAME/CAMP Tibet Scientific and Technological Research Project, funded by the Ministry of Education, Culture, Sports, Science and Technology; the Japan Science and Technology Agency; the Frontier Research System for Global Change; the Japan Aerospace Exploration Agency; the Chinese Academy of Sciences; and the Chinese Academy of Meteorological Sciences.

8.0 REFERENCES

H. Ishikawa and GAME-Tibet Boundary Layer Group, 2001: What has been known and what has not in GAME/Tibet BL observation, Proceedings of the Fifth International Study Conference on GEWEX in Asia and GAME, 691.

Ma, Yaoming, O. Tsukamoto， H. Ishikawa, Z. Su, M. Menenti, J. Wang and J. Wen, 2002: Determination of regional land surface heat flux densities over heterogeneous landscape of HEIFE integrating satellite remote sensing with field observations, Jour. Meteorol. Soc. Japan, 80(3), 485-501.

K. Tanaka, I. Tamagawa, H. Ishikawa, Y. Ma and Z. Hu, 2003: Surface energy and closure of the eastern Tibetan Plateau during the GAME-Tibet IOP 1998, J. Hydrology, vol. 283, pp. 169-183

K. Tanaka and H. Ishikawa, 2001: Long term monitoring of surface energy fluxes of the Amdo PBL site in the eastern Tibetan Plateau, Proceedings of the Fifth International Study Conference on GEWEX in Asia and GAME, 384-388.

Ueno, K., H. Fujii, H. Yamada and L. Liu, （2001） Weak and Frequent Monsoon Precipitation over the Tibetan Plateau. J. Meteor. Soc. Japan, 79, 1B, 419-434.

TITLE

CAMP_Tibet_D105-AWS_20030401_20030930.twr

CONTACT

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DATE OF THIS DOCUMENT

19 Apr. 2006

1. 0 DATASET OVERVIEW

1.7 Introduction

To clarify the energy and water cycle in the Tibetan Plateau, it is important to understand the characteristics of the basic meteorological elements and surface fluxes.

The purpose of Tibet AWS (Automatic Weather Station) observation is to improve the quantitative understanding of land-atmosphere interactions over the Tibetan Plateau and develop the land surface process models by monitoring these meteorological values.

1.8 Time period covered by the data

Start: 1 October 2002, 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 : 33.06429 N
Longitude : 91.94256 E
Elevation : 5038.6 m a.s.l.
Landscape : Bare land (with the thin weed-like plant)
Canopy height : Less than 5cm.
Soil Characteristics: Silt loam / Sandy loam

1.11 Data source

1.12 Website address references

http://monsoon.t.u-tokyo.ac.jp/camp/tibets/

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

This AWS was constructed in summer 2000 to represent the cold location north of the Tanngla Mts. The site was located in the shallow slope of the mountain. 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	HMP-45D	VAISALA
Air Temperature	TS-801(Pt100)	Okazaki
Relative Humidity	HMP-45D	VAISALA
Wind Speed	WS-D32	Komatsu
Wind Direction	WS-D32	Komatsu

2.4 Instrumentation specification

Station Pressure (0.5m) : Station Pressure at the 0.5m height (hPa)
Air Temperature (9.3m) : Air Temperature at the 9.3m height (deg.C)
Air Temperature (1.0m) : Air Temperature at the 1.0m height (deg.C)
Relative Humidity (9.3m) : Relative Humidity at the 9.3m height (%)
Relative Humidity (1.0m) : Relative Humidity at the 1.0m height (%)
Wind Speed (10.0m) : Wind Speed at the 10.0m height (m/s)
Wind Speed (5.0m) : Wind Speed at the 5.0m height (m/s)
Wind Speed (1.0m) : Wind Speed at the 1.0m height (m/s)
Wind Direction (10.0m) : Wind Direction at the 10.0m height (deg.)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Original data are sampled at every 5 seconds (0.2Hz) and average is computed and stored in a data logger (Campbell CR-10X).
Data are downloaded from the Tower twice every year, in spring and summer. Then, data are sent to Japan, where they are processed.

3.2 Description of derived parameters and processing techniques used

Air Temperature, relative humidity, Wind speed and Wind direction averaged over the previous hour. Air pressure is instantaneous values of each 1 hour.

One humidity sensor is set up for the comparison the performance of No.1 (9.3 m) and No.2 (1.0m) humidity sensor. This reference sensor is exchanged its level (From 1.0 m to 9.3 m) or down (From 9.3m to 1.0m) for every operation. We selected the couple of dataset (No.1 main sensor and No.1 reference sensor; No2. main sensor and No. 2 reference sensor) just before or after 5 days of the operation, and made the linear regressions.
RH1 = a1*RH_ref + b1
RH2 = a1*RH_ref + b2
From these two equations, the regression function between RH1 and RH2 can be derived as
RH2 = a*RH1 + b
(a = 1.0030, b=0.9339)
RH2 (1.0 m) was corrected as a reference of RH1 using above relation and put the data flag “I”.

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;

Net radiation were computed by using (GEMPAK):
NET_radiation = down(in)short + down(in)long - up(out)short - up(out)long;

Specific Humidity (Qv) was computed by using
Qv = 0.622 Rv / (1 + Rv)
Rv = Evap / Air_Pressure
Evap = Rh * 0.01 * Evap_sat
Evap_sat = 6.1078^(a*Air_Temp/(b+Air_Temp))
(a = 7.5, b = 237.3 for Air_Temp >= 0 degC; a = 9.5, b = 265.3 for Air_Temp < 0)

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

Please see the chapter 9.0.

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided within the framework of GAME/CAMP Tibet Scientific and Technological Research Project, funded by the Ministry of Education, Culture, Sports, Science and Technology; the Japan Science and Technology Agency; the Frontier Research System for Global Change; the Japan Aerospace Exploration Agency; the Chinese Academy of Sciences; and the Chinese Academy of Meteorological Sciences.

8.0 REFERENCES

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Ueno, K., H. Fujii, H. Yamada and L. Liu, （2001） Weak and Frequent Monsoon Precipitation over the Tibetan Plateau. J. Meteor. Soc. Japan, 79, 1B, 419-434.

9.0 Missing data periods

Air Temperature (1.00m)
2003/05/26 08:00
2003/07/23 10:00 - 2003/07/23 12:00 (3)
2003/07/25 06:00
2003/08/03 07:00

Air Temperature (9.30m)
2003/07/23 08:00
2003/07/23 10:00 - 2003/07/23 12:00 (3)
2003/07/25 06:00
2003/08/03 07:00
2003/08/22 03:00

Specific Humidity (1.00m)
2003/05/26 08:00
2003/07/23 10:00 - 2003/07/23 12:00 (3)
2003/07/25 06:00
2003/08/03 07:00

Specific Humidity (5.00m)
2003/04/01 00:00 - 2003/09/30 23:00 (ALL)

Specific Humidity (9.30m)
2003/07/23 08:00 - 2003/07/23 12:00 (5)
2003/07/25 06:00
2003/08/03 07:00
2003/08/22 03:00

TITLE

CAMP_Tibet_D105-AWS_20031001_20041128.twr

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DATE OF THIS DOCUMENT

7 July. 2006
Updated 07 October 2006

1. 0 DATASET OVERVIEW

1.13 Introduction

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The purpose of Tibet AWS (Automatic Weather Station) observation is to improve the quantitative understanding of land-atmosphere interactions over the Tibetan Plateau and develop the land surface process models by monitoring these meteorological values.

1.14 Time period covered by the data

Start: 1 October 2003, 00:00
End: 28 November 2004, 23:00

1.15 Temporal characteristics of the data

All parameters are recoded every hour.

1.16 Physical location of the measurement

Latitude : 33.06429 N
Longitude : 91.94256 E
Elevation : 5038.6 m a.s.l.
Landscape : Bare land (with the thin weed-like plant)
Canopy height : Less than 5cm.
Soil Characteristics: Silt loam / Sandy loam

1.17 Data source

1.18 Website address references

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2.1 Platform

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Station Pressure	PTB220C	VAISALA
Air Temperature	TS-801(Pt100)	Okazaki
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Air Temperature	TS-801(Pt100)	Okazaki
Relative Humidity	HMP-45D	VAISALA
Wind Speed	WS-D32	Komatsu
Wind Direction	WS-D32	Komatsu

2.5 Instrumentation specification

Station Pressure (0.5m) : Station Pressure at the 0.5m height (hPa)
Air Temperature (9.3m) : Air Temperature at the 9.3m height (deg.C)
Air Temperature (1.0m) : Air Temperature at the 1.0m height (deg.C)
Relative Humidity (9.3m) : Relative Humidity at the 9.3m height (%)
Relative Humidity (1.0m) : Relative Humidity at the 1.0m height (%)
Wind Speed (10.0m) : Wind Speed at the 10.0m height (m/s)
Wind Speed (5.0m) : Wind Speed at the 5.0m height (m/s)
Wind Speed (1.0m) : Wind Speed at the 1.0m height (m/s)
Wind Direction (10.0m) : Wind Direction at the 10.0m height (deg.)

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Original data are sampled at every 5 seconds (0.2Hz) and average is computed and stored in a data logger (Campbell CR-10X).
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3.2 Description of derived parameters and processing techniques used

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One humidity sensor is set up for the comparison the performance of No.1 (9.3 m) and No.2 (1.0m) humidity sensor. This reference sensor is exchanged its level (From 1.0 m to 9.3 m) or down (From 9.3m to 1.0m) for every operation. We selected the couple of dataset (No.1 main sensor and No.1 reference sensor; No2. main sensor and No. 2 reference sensor) just before or after 5 days of the operation, and made the linear regressions.
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Specific Humidity (Qv) was computed by using
Qv = 0.622 Rv / (1 + Rv)
Rv = Evap / Air_Pressure
Evap = Rh * 0.01 * Evap_sat
Evap_sat = 6.1078^(a*Air_Temp/(b+Air_Temp))
(a = 7.5, b = 237.3 for Air_Temp >= 0 degC; a = 9.5, b = 265.3 for Air_Temp < 0)

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

At the 1.00 and 10.00 m heights there are periods of high winds in April-June 2004 and in October and November 2004. But the reason is still not be sure. Then the Quality control flag was put “D”.

6.2 Missing data periods

Please see the chapter 9.0.

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided within the framework of GAME/CAMP Tibet Scientific and Technological Research Project, funded by the Ministry of Education, Culture, Sports, Science and Technology; the Japan Science and Technology Agency; the Frontier Research System for Global Change; the Japan Aerospace Exploration Agency; the Chinese Academy of Sciences; and the Chinese Academy of Meteorological Sciences.

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Ma, Yaoming, O. Tsukamoto， H. Ishikawa, Z. Su, M. Menenti, J. Wang and J. Wen, 2002: Determination of regional land surface heat flux densities over heterogeneous landscape of HEIFE integrating satellite remote sensing with field observations, Jour. Meteorol. Soc. Japan, 80(3), 485-501.

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K. Tanaka and H. Ishikawa, 2001: Long term monitoring of surface energy fluxes of the Amdo PBL site in the eastern Tibetan Plateau, Proceedings of the Fifth International Study Conference on GEWEX in Asia and GAME, 384-388.

Ueno, K., H. Fujii, H. Yamada and L. Liu, （2001） Weak and Frequent Monsoon Precipitation over the Tibetan Plateau. J. Meteor. Soc. Japan, 79, 1B, 419-434.

9.0 Missing data periods

File Name : CAMP_Tibet_D105-AWS_20031001_20041128.twr
Data Period : 2003/10/01 00:00 - 2004/11/28 23:00

Station Pressure (1.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Station Pressure (5.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Station Pressure (9.30m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Station Pressure (10.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Air Temperature (1.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Air Temperature (5.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Air Temperature (9.30m)
2004/04/22 03:00
2004/06/15 09:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Air Temperature (10.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Dew Point Temperature (1.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Dew Point Temperature (5.00m)
  2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Dew Point Temperature (9.30m)
  2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Dew Point Temperature (10.00m)
    2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Relative Humidity (1.00m)
    2004/04/22 03:00
    2004/10/30 18:00 - 2004/11/20 03:00 (490)
    2004/11/24 17:00 - 2004/11/27 04:00 (60)

Relative Humidity (5.00m)
    2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Relative Humidity (9.30m)
    2004/04/22 03:00
    2004/10/30 18:00 - 2004/11/20 03:00 (490)
    2004/11/24 17:00 - 2004/11/27 04:00 (60)

Relative Humidity (10.00m)
    2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Specific Humidity (1.00m)
    2003/11/02 04:00 - 2003/11/02 10:00 (7)
    2004/04/22 03:00
    2004/09/28 06:00
    2004/10/08 11:00
    2004/10/11 13:00
    2004/10/30 18:00 - 2004/11/20 03:00 (490)
    2004/11/24 17:00 - 2004/11/27 04:00 (60)

Specific Humidity (5.00m)
    2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Specific Humidity (9.30m)
    2004/04/22 03:00
    2004/06/15 09:00
    2004/09/28 06:00
    2004/10/08 11:00
    2004/10/30 18:00 - 2004/11/20 04:00 (491)
    2004/11/24 17:00 - 2004/11/27 04:00 (60)

Specific Humidity (10.00m)
    2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Wind Speed (1.00m)
    2004/04/22 04:00
    2004/10/30 19:00 - 2004/11/20 04:00 (490)
    2004/11/24 18:00 - 2004/11/27 05:00 (60)

Wind Speed (5.00m)
    2004/04/22 03:00

2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Wind Speed (9.30m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Wind Speed (10.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

Wind Direction (1.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Wind Direction (5.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Wind Direction (9.30m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

Wind Direction (10.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

U Wind Component (1.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

U Wind Component (5.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

U Wind Component (9.30m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

U Wind Component (10.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)

V Wind Component (1.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

V Wind Component (5.00m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

V Wind Component (9.30m)
2003/10/01 00:00 - 2004/11/28 23:00 (ALL)

V Wind Component (10.00m)
2004/04/22 03:00
2004/10/30 18:00 - 2004/11/20 03:00 (490)
2004/11/24 17:00 - 2004/11/27 04:00 (60)