TITLE: CAMP_Mongolia_BTS_20021001_20030331.sfc.txt

CONTACT(S):

  Name | Ichirow kaihotsu

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  ----
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  E-mail. | kaihotu@hiroshima-u.ac.jp

DATE OF THIS DOCUMENT

   03 March 2004

1.0 DATA SET OVERVIEW:

1.1 Introduction or abstract

To develop and verify algorithms for satellite remotesensing of soil
moisture
by microwave radiometers "AMSR" and "AMSR-E", soil moisture conditions
and related meteorological/hydrological factors are being monitored by
automatic
stations spread in the Mongolian Plateau, where high quality data are
expected
to be obtained because of relatively uniform ground-surface-conditions.
Intensive moving observations synchronized with satellite passing
carried out
after launching ADEOS-II and AQUA.
We also conduct fundamental studies focused on the time-space variation
of water
and energy budgets in the subjected region, to confirm reliability of
ground
observation results and satellite remotesensing products.
This project is implemented under the framework of JAXA-JRA "Ground
Truth for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters
Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with
Institute of

Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.2 Time period covered by the data

   The First half CEOP EOP-3 time period (01 October 2002 to 31 March
2003).

1.3 Physical location (including lat/lon/elev) of the measurement or
platform

```
----------------------------------------------------------------------
--
  Station name |  Lat.(deg.) | Long. (deg.) | Alt.(m) |Measurement
interval|
  -------------+-------------+-------------+---------
+--------------------
  BTS          | 46.46'35.4''| 107.08'32.2''|  1371   | 30 minutes

----------------------------------------------------------------------
-
```

1.4 Data source if applicable (e.g. for operational data include agency)

These data are obtained under the framework of JAXA-JRA "Ground Truth
for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters
Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with
Institute of
Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.5 Any World Wide Web address references

   http://home.hiroshima-u.ac.jp/~ampex/hm/index-e.htm

2.0 INSTRUMENTATION DESCRIPTION:

Table : AWS Type of Data.

Parameter/Variable Description	Range	Units	Source
Wind speed(WS)	1.0 - 60	m/s	WIND-MONITOR 05103-4 (Young)
Wind direction(WD)	0 - 355	deg	WIND-MONITOR 05103-4 (Young)
Humidity(AH)	0 - 100	%	50Y(VAISALA)
Airtemperature(AT)	-40 - 60	degC	Pt1000
Air pressure(AP)	600-1060	hPa	ANALOG BAROMETER PTB101 (Campbell; VAISALA)

```
   Soil surface temp.| 55-99.9 |  degC  | 4000.4G (EVEREST)
   -------------------+---------+--------+--------------------------
   Rn(net radiation) |0.25 - 60| microm | NET RADIOMETER Q7(REBS)
   -------------------+---------+--------+--------------------------
   Rainfall(P)        | 0.2     |  mm    | RAIN COLLECTOR II(Davis)
   -------------------+---------+--------+--------------------------
```

3.0 DATA COLLECTION AND PROCESSING:

   Wind speed, Wind direction, Relative humidity, Temperature, Air
Pressure,
   Soif surface temperature and radiation are averaged over the previous
30
   minutes. Precipitation is accumulated on the previous 30 minutes.
   The instruments height of each sensor are as follows ;

```
   ====================================================================
   Parameter/Variable | Instruments height above ground
   -------------------+------------------------------------------------
   Wind speed(WS)     |   2.4 m
   -------------------+------------------------------------------------
   Wind direction(WD)|   2.4 m
   -------------------+------------------------------------------------
   Humidity(AH)       |   1.5 m
   -------------------+------------------------------------------------
   Airtemperature(AT)|   1.5 m
   -------------------+------------------------------------------------
   Air pressure(AP)  |   1.1 m
   -------------------+------------------------------------------------
   Soil surface temp.|   0   m
   -------------------+------------------------------------------------
   Rn(net radiation) |   1.5 m
   -------------------+------------------------------------------------
   Rainfall(P)        |   1.0 m
   ====================================================================
```

   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.joss.ucar.edu/ghp/ceopdm/refdata_report/ceop_sfc_met_format.h
tml

4.0 QUALITY CONTROL PROCEDURES

4.1 CAMP QC/QA Procedures

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

4.2 UCAR/JOSS QC/QA Procedures

Additionally, UCAR/JOSS conducted two primary quality assurrance/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.

UCAR/JOSS did not change any QC flags applied by CAMP.

5.0 GAP FILLING PROCEDURES

   Filled in gap by the Missing value "-999.99".

6.0 DATA REMARKS:

6.1 Missing data periods

7.0 REFERENCE REQUIREMENTS:

Original data were collected and provided within the framework of
JAXA-JRA "Ground Truth for Evaluation of Soil Moisture and
Geophysical/Vegetation parameters Related to Ground Surface Conditions
with AMSR and GLI in the Mongolian Plateau" (PI : Prof. I. Kaihotsu,
Hiroshima Univ.). This JRA has been actually carrying out as an
international cooperational project with Institute of Meteorology
and Hydrology of National Agency for Meteorology, hydrology and
Environment Monitoring of Mongolia.

8.0 REFERENCES:

   Kaihotsu, I., Yamanaka, T., Oyunbaatar D., Ganbold, T., Davaa, G.,
and Koike, T., 2003: Long-term Monitoring by Water Cycle Stations in the
Central Part of the Mongolian Plateau. Proceed. 1st Inter. Conf.
APHW, 1, 117-120.

   T. Koike, Y. Nakamura, I. Kaihotsu, G. Davaa, N. Matsuura, 2003:
AMSR-E Soil Moisture Product validated at the CEOP Mongolia Reference
Site. CEOP Newsletter, No.4, P5.

TITLE: CAMP_Mongolia_BTS_20030401_20030930.sfc.txt

CONTACT(S):

```
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           | Sougoukagaku-bu, Hiroshima University
           | 1-7-1 Higashi-hiroshima,Hiroshima,739-8521, Japan
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   Tel.No. | +81-824-24-6497
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   Fax.No. | +81-824-24-0758
   --------
 +----------------------------------------------------------------
   E-mail. | kaihotu@hiroshima-u.ac.jp

  ------------------------------------------------------------------------
```

DATE OF THIS DOCUMENT

   24 January 2005 (Updated 10 February 2005)

1.0 DATA SET OVERVIEW:

1.1 Introduction or abstract

To develop and verify algorithms for satellite remotesensing of soil
moisture
by microwave radiometers "AMSR" and "AMSR-E", soil moisture conditions
and related meteorological/hydrological factors are being monitored by
automatic
stations spread in the Mongolian Plateau, where high quality data are
expected
to be obtained because of relatively uniform ground-surface-conditions.
Intensive moving observations synchronized with satellite passing
carried out
after launching ADEOS-II and AQUA.
We also conduct fundamental studies focused on the time-space variation
of water
and energy budgets in the subjected region, to confirm reliability of
ground
observation results and satellite remotesensing products.
This project is implemented under the framework of JAXA-JRA "Ground
Truth for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters
Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with
Institute of

Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.2 Time period covered by the data

   The Latter half CEOP EOP-3 time period (01 April 2003 to 30 September
2003).

1.3 Physical location (including lat/lon/elev) of the measurement or
platform

--
  Station name | Lat.(deg.) | Long. (deg.) | Alt.(m) |Measurement
interval|
  -------------+-------------+-------------+---------
+--------------------
   BTS | 46.46'35.4''| 107.08'32.2''| 1371 | 30 minutes

-

1.4 Data source if applicable (e.g. for operational data include agency)

These data are obtained under the framework of JAXA-JRA "Ground Truth
for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters
Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with
Institute of
Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.5 Any World Wide Web address references

   http://home.hiroshima-u.ac.jp/~ampex/hm/index-e.htm

2.0 INSTRUMENTATION DESCRIPTION:

Table : AWS Type of Data.

   ==
   Parameter/Variable | Range | Units | Source
   Description | | |
   -------------------+---------+--------+----------------------------
    Wind speed(WS) |1.0 - 60 | m/s | WIND-MONITOR 05103-4 (Young)
   -------------------+---------+--------+----------------------------
    Wind direction(WD)| 0 - 355 | deg | WIND-MONITOR 05103-4 (Young)
   -------------------+---------+--------+----------------------------
    Humidity(AH) | 0 - 100 | % | 50Y(VAISALA)
   -------------------+---------+--------+----------------------------
    Airtemperature(AT)|-40 - 60 | degC | Pt1000
   -------------------+---------+--------+----------------------------
    Air pressure(AP) |600-1060 | hPa | ANALOG BAROMETER PTB101
                      | | | (Campbell; VAISALA)
   -------------------+---------+--------+----------------------------

```
  Soil surface temp.| 55-99.9 |  degC  | 4000.4G (EVEREST)
  ------------------+---------+--------+---------------------------
  Rn(net radiation) |0.25 - 60| microm | NET RADIOMETER Q7(REBS)
  ------------------+---------+--------+---------------------------
  Rainfall(P)       | 0.2     |  mm    | RAIN COLLECTOR II(Davis)
  ------------------+---------+--------+---------------------------
```

3.0 DATA COLLECTION AND PROCESSING:

  Wind speed, Wind direction, Relative humidity, Temperature, Air
Pressure,
  Soif surface temperature and radiation are averaged over the previous
30
  minutes. Precipitation is accumulated on the previous 30 minutes.
  The instruments height of each sensor are as follows ;

```
  ====================================================================
  Parameter/Variable | Instruments height above ground
  ------------------+-------------------------------------------------
  Wind speed(WS)    |   2.4 m
  ------------------+-------------------------------------------------
  Wind direction(WD)|   2.4 m
  ------------------+-------------------------------------------------
  Humidity(AH)      |   1.5 m
  ------------------+-------------------------------------------------
  Airtemperature(AT)|   1.5 m
  ------------------+-------------------------------------------------
  Air pressure(AP)  |   1.1 m
  ------------------+-------------------------------------------------
  Soil surface temp.|   0   m
  ------------------+-------------------------------------------------
  Rn(net radiation) |   1.5 m
  ------------------+-------------------------------------------------
  Rainfall(P)       |   1.0 m
  ====================================================================
```

    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", In the case of calculated by using
     dubious value fagged "D", the data flag was put "D".

    Dew Point Temperature were 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 were 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 (4.6m) 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.
The quality control flags follow the CEOP data flag definition
document.

5.0 GAP FILLING PROCEDURES

N/A

6.0 DATA REMARKS:

6.1 Missing data periods

6.2 Data Quality issues

The net radiation from 23-30 September 2003 seems to be too low.
All values are less than 100 W/m2. This is the reason that rainfall
or snowfall from 23-30 September 2003.

7.0 REFERENCE REQUIREMENTS:

Original data were collected and provided within the framework of
JAXA-JRA "Ground Truth for Evaluation of Soil Moisture and
Geophysical/Vegetation parameters Related to Ground Surface Conditions
with AMSR and GLI in the Mongolian Plateau" (PI : Prof. I. Kaihotsu,
Hiroshima Univ.). This JRA has been actually carrying out as an
international cooperational project with Institute of Meteorology
and Hydrology of National Agency for Meteorology, hydrology and
Environment Monitoring of Mongolia.

8.0 REFERENCES:

Kaihotsu, I., Yamanaka, T., Oyunbaatar D., Ganbold, T., Davaa, G.,
and Koike, T., 2003: Long-term Monitoring by Water Cycle Stations in the
Central Part of the Mongolian Plateau. Proceed. 1st Inter. Conf.
APHW, 1, 117-120.

T. Koike, Y. Nakamura, I. Kaihotsu, G. Davaa, N. Matsuura, 2003:

AMSR-E Soil Moisture Product validated at the CEOP Mongolia Reference Site. CEOP Newsletter, No.4, P5.

TITLE: CAMP_Mongolia_BTS_20031001_20040331.sfc.txt

CONTACT(S):

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        | 1-7-1 Higashi-hiroshima,Hiroshima,739-8521, Japan
 --------+-------------------------------------------------------------
  Tel.No. | +81-824-24-6497
 --------+-------------------------------------------------------------
  Fax.No. | +81-824-24-0758
 --------+-------------------------------------------------------------
  E-mail. | kaihotu@hiroshima-u.ac.jp
 ----------------------------------------------------------------------
```

DATE OF THIS DOCUMENT

 05 June 2006

1.0 DATA SET OVERVIEW:

1.1 Introduction or abstract

To develop and verify algorithms for satellite remotesensing of soil moisture
by microwave radiometers "AMSR" and "AMSR-E", soil moisture conditions
and related meteorological/hydrological factors are being monitored by automatic
stations spread in the Mongolian Plateau, where high quality data are expected
to be obtained because of relatively uniform ground-surface-conditions.
Intensive moving observations synchronized with satellite passing carried out
after launching ADEOS-II and AQUA.
We also conduct fundamental studies focused on the time-space variation of water
and energy budgets in the subjected region, to confirm reliability of ground
observation results and satellite remotesensing products.
This project is implemented under the framework of JAXA-JRA "Ground Truth for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with Institute of
Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.2 Time period covered by the data

The First half CEOP EOP-4 time period (01 October 2003 to 31 March 2004).

1.3 Physical location (including lat/lon/elev) of the measurement or platform

```
-------------------------------------------------------------------------
Station name |  Lat.(deg.) | Long. (deg.) | Alt.(m) |Measurement interval|
-------------+-------------+--------------+---------+--------------------
BTS          | 46.46'35.4"| 107.08'32.2"|  1371   | 30 minutes
-------------------------------------------------------------------------
```

1.4 Data source if applicable (e.g. for operational data include agency)

These data are obtained under the framework of JAXA-JRA "Ground Truth for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with Institute of
Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.5 Any World Wide Web address references

http://home.hiroshima-u.ac.jp/~ampex/hm/index-e.htm

2.0 INSTRUMENTATION DESCRIPTION:

Table : AWS Type of Data.

```
================================================================================
=====
Parameter/Variable | Range   | Units  | Source
Description         |         |        |
-------------------+---------+--------+---------------------------
 Wind speed(WS)    |1.0 - 60 |  m/s  | WIND-MONITOR 05103-4  (Young)
-------------------+---------+--------+---------------------------
 Wind direction(WD)| 0 - 355 |  deg  | WIND-MONITOR 05103-4  (Young)
-------------------+---------+--------+---------------------------
 Humidity(AH)      | 0 - 100 |  %    | 50Y(VAISALA)
-------------------+---------+--------+---------------------------
 Airtemperature(AT)|-40 - 60 |  degC | Pt1000
-------------------+---------+--------+---------------------------
 Air pressure(AP)  |600-1060 |  hPa  | ANALOG BAROMETER PTB101
           |       |        | (Campbell; VAISALA)
-------------------+---------+--------+---------------------------
 Soil surface temp.| 55-99.9 |  degC | 4000.4G (EVEREST)
```

```
-------------------+---------+--------+--------------------------
 Rn(net radiation) |0.25 - 60| microm | NET RADIOMETER Q7(REBS)
-------------------+---------+--------+--------------------------
 Rainfall(P)       | 0.2     | mm     | RAIN COLLECTOR II(Davis)
-------------------+---------+--------+--------------------------
```

3.0 DATA COLLECTION AND PROCESSING:

  Wind speed, Wind direction, Relative humidity, Temperature, Air Pressure,
  Soif surface temperature and radiation are averaged over the previous 30
  minutes. Precipitation is accumulated on the previous 30 minutes.
  The instruments height of each sensor are as follows ;

```
==================================================================
=====
 Parameter/Variable | Instruments height above ground
 -------------------+--------------------------------------------
  Wind speed(WS)    |    2.4 m
 -------------------+--------------------------------------------
  Wind direction(WD)|    2.4 m
 -------------------+--------------------------------------------
  Humidity(AH)      |    1.5 m
 -------------------+--------------------------------------------
  Airtemperature(AT)|    1.5 m
 -------------------+--------------------------------------------
  Air pressure(AP)  |    1.1 m
 -------------------+--------------------------------------------
  Soil surface temp.|    0   m
 -------------------+--------------------------------------------
  Rn(net radiation) |    1.5 m
 -------------------+--------------------------------------------
  Rainfall(P)       |    1.0 m
```

```
==================================================================
=====
```

    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", In the case of calculated by using
    dubious value fagged "D", the data flag was put "D".

    Dew Point Temperature were 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 were 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 (4.6m) 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.
  The quality control flags follow the CEOP data flag definition document.

5.0 GAP FILLING PROCEDURES

  N/A

6.0 DATA REMARKS:

7.0 REFERENCE REQUIREMENTS:

Original data were collected and provided within the framework of
JAXA-JRA "Ground Truth for Evaluation of Soil Moisture and
Geophysical/Vegetation parameters Related to Ground Surface Conditions
with AMSR and GLI in the Mongolian Plateau" (PI : Prof. I. Kaihotsu,

Hiroshima Univ.). This JRA has been actually carrying out as an
international cooperational project with Institute of Meteorology
and Hydrology of National Agency for Meteorology, hydrology and
Environment Monitoring of Mongolia.

8.0 REFERENCES:

  Kaihotsu, I., Yamanaka, T., Oyunbaatar D., Ganbold, T., Davaa, G.,
and Koike, T., 2003: Long-term Monitoring by Water Cycle Stations in the
Central Part of the Mongolian Plateau. Proceed. 1st Inter. Conf.
APHW, 1, 117-120.

  T. Koike, Y. Nakamura, I. Kaihotsu, G. Davaa, N. Matsuura, 2003:
AMSR-E Soil Moisture Product validated at the CEOP Mongolia Reference
Site. CEOP Newsletter, No.4, P5.

9.0 Missing Data Periods:

File Name   : CAMP_Mongolia_BTS_20031001_20040331.sfc
Data Period : 2003/10/01 00:00 - 2004/03/31 23:30

Station Pressure
   No missing data.

Air Temperature
   No missing data.

Dew Point Temperature
   No missing data.

Relative Humidity
   No missing data.

Specific Humidity
   No missing data.

Wind Speed
   No missing data.

Wind Direction
   No missing data.

U Wind Component

No missing data.

V Wind Component
No missing data.

Precipitation
No missing data.

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

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

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

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

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

Net Radiation
No missing data.

Skin Temperature
No missing data.

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_Mongolia_BTS_20040401_20041231.sfc.txt

CONTACT(S):

```
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         | Sougoukagaku-bu, Hiroshima University
         | 1-7-1 Higashi-hiroshima,Hiroshima,739-8521, Japan
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 Tel.No. | +81-824-24-6497
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 Fax.No. | +81-824-24-0758
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 E-mail. | kaihotu@hiroshima-u.ac.jp
-----------------------------------------------------------------------
```

DATE OF THIS DOCUMENT

 30 June 2006

1.0 DATA SET OVERVIEW:

1.1 Introduction or abstract

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by microwave radiometers "AMSR" and "AMSR-E", soil moisture conditions
and related meteorological/hydrological factors are being monitored by automatic
stations spread in the Mongolian Plateau, where high quality data are expected
to be obtained because of relatively uniform ground-surface-conditions.
Intensive moving observations synchronized with satellite passing carried out
after launching ADEOS-II and AQUA.
We also conduct fundamental studies focused on the time-space variation of water
and energy budgets in the subjected region, to confirm reliability of ground
observation results and satellite remotesensing products.
This project is implemented under the framework of JAXA-JRA "Ground Truth for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with Institute of
Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.2 Time period covered by the data

The Second half CEOP EOP-4 time period (01 April 2004 to 31 December 2004).

1.3 Physical location (including lat/lon/elev) of the measurement or platform

```
--------------------------------------------------------------------
Station name |  Lat.(deg.) | Long. (deg.) | Alt.(m) |Measurement interval|
-------------+-------------+--------------+---------+--------------------
BTS          | 46.46'35.4"| 107.08'32.2"|  1371   | 30 minutes
--------------------------------------------------------------------
```

1.4 Data source if applicable (e.g. for operational data include agency)

These data are obtained under the framework of JAXA-JRA "Ground Truth for
Evaluation of Soil Moisture and Geophysical/Vegetation parameters Related to
Ground Surface Conditions with AMSR and GLI in the Mongolian Plateau"
(PI : Prof. I. Kaihotsu, Hiroshima Univ.) and is partnership with Institute of
Meteorology and Hydrology, Ministry of Nature and Environment, Mongolia.

1.5 Any World Wide Web address references

  http://home.hiroshima-u.ac.jp/~ampex/hm/index-e.htm

2.0 INSTRUMENTATION DESCRIPTION:

Table : AWS Type of Data.


```
=====================================================================
=====
Parameter/Variable | Range   | Units  | Source
Description        |         |        |
-------------------+---------+--------+---------------------------
 Wind speed(WS)    |1.0 - 60 |  m/s  | WIND-MONITOR 05103-4  (Young)
-------------------+---------+--------+---------------------------
 Wind direction(WD)| 0 - 355 |  deg  | WIND-MONITOR 05103-4  (Young)
-------------------+---------+--------+---------------------------
 Humidity(AH)      | 0 - 100 |  %    | 50Y(VAISALA)
-------------------+---------+--------+---------------------------
 Airtemperature(AT)|-40 - 60 |  degC  | Pt1000
-------------------+---------+--------+---------------------------
 Air pressure(AP)  |600-1060 |  hPa   | ANALOG BAROMETER PTB101
           |      |       |  (Campbell; VAISALA)
-------------------+---------+--------+---------------------------
 Soil surface temp.| 55-99.9 |  degC  | 4000.4G (EVEREST)
```

```
-------------------+---------+--------+--------------------------
 Rn(net radiation) |0.25 - 60| microm | NET RADIOMETER Q7(REBS)
-------------------+---------+--------+--------------------------
 Rainfall(P)      | 0.2    | mm    | RAIN COLLECTOR II(Davis)
-------------------+---------+--------+--------------------------
```

3.0 DATA COLLECTION AND PROCESSING:

Wind speed, Wind direction, Relative humidity, Temperature, Air Pressure,
Soif surface temperature and radiation are averaged over the previous 30
minutes. Precipitation is accumulated on the previous 30 minutes.
The instruments height of each sensor are as follows ;

```
==============================================================
=====
 Parameter/Variable | Instruments height above ground
 -------------------+------------------------------------------
  Wind speed(WS)    |   2.4 m
 -------------------+------------------------------------------
  Wind direction(WD)|   2.4 m
 -------------------+------------------------------------------
  Humidity(AH)      |   1.5 m
 -------------------+------------------------------------------
  Airtemperature(AT)|   1.5 m
 -------------------+------------------------------------------
  Air pressure(AP)  |   1.1 m
 -------------------+------------------------------------------
  Soil surface temp.|   0   m
 -------------------+------------------------------------------
  Rn(net radiation) |   1.5 m
 -------------------+------------------------------------------
  Rainfall(P)       |   1.0 m

==============================================================
=====
```

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", In the case of calculated by using
dubious value fagged "D", the data flag was put "D".

Dew Point Temperature were 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 were 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 (4.6m) 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.
  The quality control flags follow the CEOP data flag definition document.

5.0 GAP FILLING PROCEDURES

  N/A

6.0 DATA REMARKS:

7.0 REFERENCE REQUIREMENTS:

Original data were collected and provided within the framework of
JAXA-JRA "Ground Truth for Evaluation of Soil Moisture and
Geophysical/Vegetation parameters Related to Ground Surface Conditions
with AMSR and GLI in the Mongolian Plateau" (PI : Prof. I. Kaihotsu,

Hiroshima Univ.). This JRA has been actually carrying out as an
international cooperational project with Institute of Meteorology
and Hydrology of National Agency for Meteorology, hydrology and
Environment Monitoring of Mongolia.

8.0 REFERENCES:

  Kaihotsu, I., Yamanaka, T., Oyunbaatar D., Ganbold, T., Davaa, G.,
and Koike, T., 2003: Long-term Monitoring by Water Cycle Stations in the
Central Part of the Mongolian Plateau. Proceed. 1st Inter. Conf.
APHW, 1, 117-120.

  T. Koike, Y. Nakamura, I. Kaihotsu, G. Davaa, N. Matsuura, 2003:
AMSR-E Soil Moisture Product validated at the CEOP Mongolia Reference
Site. CEOP Newsletter, No.4, P5.

9.0 Missing Data Periods:

File Name   : CAMP_Mongolia_BTS_20040401_20041231.sfc
Data Period : 2004/04/01 00:00 - 2004/12/31 23:30

Station Pressure
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

Air Temperature
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

Dew Point Temperature
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

Relative Humidity
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

Specific Humidity
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

Wind Speed
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

Wind Direction
   2004/06/01 06:00 - 2004/06/01 06:30 (2)

U Wind Component

2004/06/01 06:00 - 2004/06/01 06:30 (2)

V Wind Component
  2004/06/01 06:00 - 2004/06/01 06:30 (2)

Precipitation
  2004/06/01 06:00 - 2004/06/01 06:30 (2)

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

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

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

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

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

Net Radiation
  2004/06/01 06:00 - 2004/06/01 06:30 (2)

Skin Temperature
  2004/06/01 06:00 - 2004/06/01 06:30 (2)

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)