

TITLE: CAMP_Mongolia_E4_20021003_20030331.stm.txt

CONTACT(S):

```
-----  
Name      | Ichirow kaihotsu  
-----  
+-----  
Address   | Department of Natural Environmental Sciences,  
          | Sougoukagaku-bu, Hiroshima University  
          | 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

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|  
-----+-----+-----+-----  
+-----  
E4          | 46.06'10.0'' | 106.46'47.2'' | 1318    | 1 hour  
-----  
-
```

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>

This data set includes soil moisture and temperature at 3 and 10 cm depths.

2.0 INSTRUMENTATION DESCRIPTION:

The platform is ground. The calibration is standard calibration of the model presented by the probe maker. The theory of measurements for soil moisture is TDR and for soil temperature is platinum resistance thermometer. Spatial coverage is point. The type of data is described in table below.

Table : ASSH Type of Data.

```
=====  
Parameter/Variable | Range   | Units  | Source  
Description         |         |        |  
-----+-----+-----+-----  
Soil moisture      | 0 - 95 | %      | Trime IT  
-----+-----+-----+-----
```

Soil temperature | -50 - 50 | degC | thermometer
=====

3.0 DATA COLLECTION AND PROCESSING:

Point measurements at 3cm and 10cm depths from Automatic Station for Soil Hydrology (ASSH) station.

The ASSH data were provided in Mongolian Standard Time in Summer (MSTS) and were converted to UTC time by subtracting 9 hours from the local standard time.

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.joss.ucar.edu/ghp/ceopdm/refdata_report/ceop_soils_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.

The quality control flags follow the CEOP data flag definition document.

5.0 GAP FILLING PROCEDURES

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

6.0 DATA REMARKS:

6.1 Missing data periods

2002/10/01 00:00 - 2002/10/03 15:00
2003/03/31 16:00 - 2003/03/31 23:00

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_E4_20030401_20030924.stm.txt

CONTACT(S):

```
-----  
Name      | Ichirow kaihotsu  
-----  
+-----  
Address   | Department of Natural Environmental Sciences,  
          | Sougoukagaku-bu, Hiroshima University  
          | 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

24 January 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 24 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|  
-----+-----+-----+-----  
+-----  
E4          | 46.06'10.0'' | 106.46'47.2'' | 1318    | 1 hour  
-----  
-
```

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:

The platform is ground. The calibration is standard calibration of the model presented by the probe maker. The theory of measurements for soil moisture is TDR and for soil temperature is platinum resistance thermometer. Spatial coverage is point. The type of data is described in table below.

Table : ASSH Type of Data.

Parameter/Variable Description	Range	Units	Source
Soil moisture	0 - 95	%	Trime IT
Soil temperature	-50 - 50	degC	thermometer

3.0 DATA COLLECTION AND PROCESSING:

Point measurements at 3cm and 10cm depths from Automatic Station for Soil Hydrology (ASSH) station.

The ASSH data were provided in Mongolian Standard Time in Summer (MSTS) and were converted to UTC time by subtracting 9 hours from the local standard time.

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

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_E4_20031001_20040331.stm.txt

CONTACT(S):

Name | Ichiro Kaihotsu
-----+-----

Address | Department of Natural Environmental Sciences,
| Sougoukagaku-bu, Hiroshima University
| 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 remote sensing 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 remote sensing 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|  
-----+-----+-----+-----+-----  
E4          | 46.06'10.0" | 106.46'47.2" | 1318   | 1 hour  
-----
```

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:

The platform is ground. The calibration is standard calibration of the model presented by the probe maker. The theory of measurements for soil moisture is TDR and for soil temperature is platinum resistance thermometer. Spatial coverage is point. The type of data is described in table below.

Table : ASSH Type of Data.

```
=====  
Parameter/Variable | Range | Units | Source  
Description        |      |      |  
-----+-----+-----+-----  
Soil moisture      | 0 - 95 | %    | Trime IT  
-----+-----+-----+-----  
Soil temperature   |-50 - 50 | degC | thermometer  
=====
```

3.0 DATA COLLECTION AND PROCESSING:

Point measurements at 3cm and 10cm depths from Automatic Station for Soil Hydrology (ASSH) station.

The ASSH data were provided in Mongolian Standard Time in Summer (MSTS) and were converted to UTC time by subtracting 9 hours from the local standard time.

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_E4_20031001_20040331.stm
Data Period : 2003/10/01 00:00 - 2004/03/31 23:00

Soil Temperature (-0.10m)
No missing data.

Soil Temperature (-0.03m)
No missing data.

Soil Moisture (-0.10m)
2004/01/21 04:00 - 2004/01/21 05:00 (2)
2004/01/23 01:00 - 2004/01/23 06:00 (6)
2004/01/23 20:00 - 2004/01/24 08:00 (13)
2004/01/24 21:00 - 2004/01/25 07:00 (11)
2004/01/25 23:00 - 2004/01/26 08:00 (10)
2004/01/27 02:00 - 2004/01/27 04:00 (3)
2004/01/28 01:00 - 2004/01/28 07:00 (7)
2004/01/28 22:00 - 2004/01/29 08:00 (11)
2004/01/30 00:00 - 2004/01/30 08:00 (9)
2004/01/30 23:00 - 2004/02/06 09:00 (155)
2004/02/06 19:00 - 2004/02/07 08:00 (14)
2004/02/07 23:00 - 2004/02/08 08:00 (10)
2004/02/09 03:00 - 2004/02/09 06:00 (4)
2004/02/10 00:00 - 2004/02/10 08:00 (9)
2004/02/11 00:00 - 2004/02/11 07:00 (8)
2004/02/16 05:00
2004/02/24 03:00 - 2004/02/24 06:00 (4)
2004/02/24 16:00 - 2004/02/26 09:00 (42)
2004/02/27 21:00 - 2004/03/07 09:00 (205)
2004/03/07 20:00 - 2004/03/08 07:00 (12)
2004/03/11 22:00 - 2004/03/12 10:00 (13)
2004/03/12 20:00 - 2004/03/13 07:00 (12)
2004/03/16 14:00 - 2004/03/20 09:00 (92)
2004/03/21 00:00 - 2004/03/21 06:00 (7)
2004/03/22 05:00 - 2004/03/22 07:00 (3)
2004/03/22 19:00 - 2004/03/23 09:00 (15)
2004/03/31 22:00 - 2004/03/31 23:00 (2)

Soil Moisture (-0.03m)
2004/01/21 04:00 - 2004/01/21 05:00 (2)
2004/01/23 01:00 - 2004/01/23 06:00 (6)

2004/01/23 20:00 - 2004/01/24 08:00 (13)
2004/01/24 21:00 - 2004/01/25 07:00 (11)
2004/01/25 23:00 - 2004/01/26 08:00 (10)
2004/01/27 02:00 - 2004/01/27 04:00 (3)
2004/01/28 01:00 - 2004/01/28 07:00 (7)
2004/01/28 22:00 - 2004/01/29 08:00 (11)
2004/01/30 00:00 - 2004/01/30 08:00 (9)
2004/01/30 23:00 - 2004/02/06 09:00 (155)
2004/02/06 19:00 - 2004/02/07 08:00 (14)
2004/02/07 23:00 - 2004/02/08 08:00 (10)
2004/02/09 03:00 - 2004/02/09 06:00 (4)
2004/02/10 00:00 - 2004/02/10 08:00 (9)
2004/02/11 00:00 - 2004/02/11 07:00 (8)
2004/02/16 05:00
2004/02/24 03:00 - 2004/02/24 06:00 (4)
2004/02/24 16:00 - 2004/02/26 09:00 (42)
2004/02/27 21:00 - 2004/03/07 09:00 (205)
2004/03/07 20:00 - 2004/03/08 07:00 (12)
2004/03/11 22:00 - 2004/03/12 10:00 (13)
2004/03/12 20:00 - 2004/03/13 07:00 (12)
2004/03/16 14:00 - 2004/03/20 09:00 (92)
2004/03/21 00:00 - 2004/03/21 06:00 (7)
2004/03/22 05:00 - 2004/03/22 07:00 (3)
2004/03/22 19:00 - 2004/03/23 09:00 (15)
2004/03/31 22:00 - 2004/03/31 23:00 (2)

TITLE: CAMP_Mongolia_E4_20040401_20041231.stm.txt

CONTACT(S):

Name | Ichiro Kaihotsu
-----+-----

Address | Department of Natural Environmental Sciences,
| Sougoukagaku-bu, Hiroshima University
| 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

30 June 2006

1.0 DATA SET OVERVIEW:

1.1 Introduction or abstract

To develop and verify algorithms for satellite remote sensing 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 remote sensing 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|  
-----+-----+-----+-----+-----  
E4          | 46.06'10.0"| 106.46'47.2"| 1318  | 1 hour  
-----
```

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:

The platform is ground. The calibration is standard calibration of the model presented by the probe maker. The theory of measurements for soil moisture is TDR and for soil temperature is platinum resistance thermometer. Spatial coverage is point. The type of data is described in table below.

Table : ASSH Type of Data.

```
=====
```

Parameter/Variable	Range	Units	Source
Soil moisture	0 - 95	%	Trime IT
Soil temperature	-50 - 50	degC	thermometer

```
=====
```

3.0 DATA COLLECTION AND PROCESSING:

Point measurements at 3cm and 10cm depths from Automatic Station for Soil Hydrology (ASSH) station.

The ASSH data were provided in Mongolian Standard Time in Summer (MSTS) and were converted to UTC time by subtracting 9 hours from the local standard time.

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:

Regarding the observing interval, the soil moisture and temperature data was recorded at every hour until the 2004/10/01 03:00, but the data has been recorded once in two hours from then.

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_E4_20040401_20041231.stm
Data Period : 2004/04/01 00:00 - 2004/12/31 23:00

Soil Temperature (-0.10m)

2004/05/02 18:00 - 2004/06/02 02:00 (729)

Soil Temperature (-0.03m)

2004/05/02 18:00 - 2004/06/02 02:00 (729)

Soil Moisture (-0.10m)

2004/04/01 00:00 - 2004/04/01 10:00 (11)

2004/04/01 21:00 - 2004/04/03 07:00 (35)

2004/05/02 18:00 - 2004/06/02 02:00 (729)

Soil Moisture (-0.03m)

2004/04/01 00:00 - 2004/04/01 10:00 (11)

2004/04/01 21:00 - 2004/04/03 07:00 (35)

2004/05/02 18:00 - 2004/06/02 02:00 (729)