TITLE Radar_Rain_intensity_Ulannbaator_20021111_20070820

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1.0 DATASET OVERVIEW

1.1 Introduction

Raw data of Mongolian airport radar with multi elevation were converted to CAPPI (Constant Altitude Plane Indicator) data with spatial resolution of 2km. Radar echo intensity is converted to rainfall intensity using Z-R relationship: Z=200*R**1.6.

The range is 180km in radius, however, there is wide "shadow area" in the eastern part of CAPPI data in lower CAPPI data. The shadow area decreases as CAPPI height increase, and the shadow area almost disappear till 5km.

1.2 Time period covered by the data

Start: 11 Nov. 2002
End : 20 Aug. 2007

1.3 Temporal characteristics of the data

CAPPI data are recorded every about 10 minutes.

1.4 Physical location of the measurement

Location of Radar site
Latitude : 47.8275N
Longitude : 106.7264E
Elevation : 1525m above sea level
Picture of radar site: http://www.sigmet.com/frames4.htm

1.5 Data source

1.6 Website address references

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

2.2 Description of the instrumentation
2.3 Instrumentation specification

3.0 DATA COLLECTION AND PROCESSING
3.1 Description of data collection
3.2 Description of derived parameters and processing techniques used
1) Property of Mongolian airport radar
1. Wave length: 5cm
2. Range : 180km in radius
3. Elevation angles: 0.0, 0.5, 0.8, 1.3, 2.0, 2.7, 3.7, 5.0, 7.0, 10.0, 14.0, 19.0, 24.0, 32.0, 40.0 deg.

2) Software that made CAPPI data
Raw PPI data with multi elevation were converted to CAPPI data using IRIS software. For further details, apply to SIGMET home page (http://www.sigmet.com/frames1.htm).

3) CAPPI data
1 File name
a) CAPPI data
ex. CAP0306232052_05km.dat
* Volume scan for CAPPI was finished at 20h52m MST on 23 June, 2003.
* CAPPI height is 5km above radar site
MST=Mongolia Standard Time=GMT+8

b) Hourly rainfall amount
ex. HRAIN06012319_05km.DAT
* Hourly rainfall amount at 5km from 19h00m to 19h59m on 23 Jan., 2006.

2 CAPPI height
Data set contains CAPPI data at 1km and 5km.
5km above radar site is about 6.5km (=5.0+1.5) above sea level

3 Temporal resolution
a) About 10 min for CAPPI data
b) 1 hour for Hourly rainfall amount

4 Data format
a) CAPPI data is text data, and composed of annotation and data.
Annotation: 1st. to 10th line.
Data: 11th (the northernmost) to 190th (the southernmost) line.
b) Location of radar site in CAPPI data

CAPPI data is composed of 180*180 grids, and the origin (X=1,Y=1) of a radar coordinate is the left bottom.

Radar site (47.8275N/106.7264E) is (X=90.5, Y=90.5) on a radar coordinate system. A grid (X=90.5, Y=180)/(X=180, Y=90.5) is 180 km away to the north/east of radar site.

c) Resolution of a grid: 2km

d) Z-R relationship: Z=200*R**1.6

e) Unit: mm/hr

ex. "12.0" means that rainfall intensity is 12.0 mm/hr.

"-1.0" means that grid is out of range.

4.0 QUALITY CONTROL PROCEDURES

No quality control procedure was applied.

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

6.1.2 Quality issues

6.2 Missing data periods

There are a lot of missing data period.

01 SEP, 2005 to 22 Jan, 2006

7.0 REFERENCE REQUIREMENTS

Mongolian airport radar data were collected and are provided within the framework of AMPEX (ADEOS II Mongolian Plateau Experiment for Ground truth), RAISE (Rangelands Atmosphere-Hydrosphere-Biosphere Interaction Study Experiment in Northeastern Asia) project promoted by the Core Research for Evaluational Science and Technology (CREST/JST) and the Frontier Research System for Global Change.

8.0 REFERENCES

Iwasaki, H., 2006: Study on influence of rainfall distribution on NDVI anomaly over the arid regions in Mongolia using an operational weather radar. *SOLA*, **2**, 168-171.

Iwasaki, H., T. Sato, T. Nii, F. Kimura, K. Nakagawa, I. Kaihotsu and T. Koike, 2007: Diurnal variation of convective activity and precipitable water around Ulaanbaator, Mongolia, and impact of soil moisture on convective activity in the nighttime. *Mon. Wea. Rev.* (in press).