TITLE

CAMP_Pakistan_Askole_20051008_20051231.sfc

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1. 0 DATASET OVERVIEW

1.1 Introduction

In the last decades, many researchers (Archer, 2001, Baudo et al., 2007) have been carrying out intensive meteorological observations in the Northern Area of Pakistan, in order to study the climate change effects on ecosystems, with particular attention to the Baltoro Glacier area.
Studies carried out on this glacier in the last 50 years show small and limited variation concerning its extension in respect to most of the mountain glaciers on the Earth (Mihalcea et al., 2006, 2008). In fact, on the Baltoro Glacier the debris insulation effect allowed a large quantity of ice in the glacier tongue to be conserved.
In this region climate is very wet and characterized by low temperatures. Moreover it is poorly influenced by monsoon and precipitations shows a regular trend (Archer, 2001).
Two Automatic Weather Stations (AWSs) has been installed in the Baltoro Region, respectively in Askole Village at 3015 m asl and in Urdukas campsite at 3926 m asl.

1.2 Time period covered by the data

Start: October 08, 2005, 15:00
End: December 31, 2005, 23:00

1.3 Temporal characteristics of the data

All parameters are recorded hourly. Hour is UTC.

1.4 Physical location of the measurement

Latitude: 35° 40’ 50”
Longitude: 75° 48’ 55”
Elevation: 3015 m a.s.l

1.5 Data source

Original data provided by the Ev-K2-CNR Committee.

1.6 WWW address references

http://www.evk2cnr.org

2.0 INSTRUMENTATION DESCRIPTION

2.1 Platform

The sensors are mounted on a 2-m and a 5-m masts.

2.2 Description of the instrumentation

Parameter	Model	Manifacturer
Air Temperature	DMA570	Lsi-Lastem (Italy)
Precipitation	DQA035	Lsi-Lastem (Italy)
Relative Humidity	DMA570	Lsi-Lastem (Italy)
Atmospheric Pressure	CX115P	Lsi-Lastem (Italy)
Wind Speed	DNA022	Lsi-Lastem (Italy)
Wind Direction	DNA022	Lsi-Lastem (Italy)
Downward Shortwave Radiation	CM6B	Kipp&Zonen (The Netherlands)

2.3 Instrumentation specification

Parameter	Sensor Type	Height of sensor (m)	Accuracy	Resolution
Air Temperature	Thermoresistance	2	0.1°C	0.025°C
Precipitation	Tipping Bucket	1.5	1% (0-1 mm/min); 2% (1-3 mm/min)	0.2 mm
Relative Humidity	Capacitive Plate	2	2.5%	0.2%
Atmospheric Pressure	Slice of Silica	2	1 hPa	0.1 hPa
Wind Speed	3-cup anemometer	5	0.1 m/s	0.05 m/s
Wind Direction	Potentiometer	5	1%	0.1°
Downward Shortwave Radiation	Temperature Difference	2	5% (daily total)	-

3.0 DATA COLLECTION AND PROCESSING

3.1 Description of data collection

Data are downloaded from the AWS twice every year, in spring and autumn. Then, data are sent to Italy, where they are processed.

3.2 Description of derived parameters and processing techniques used

Temperature, relative humidity and solar radiation are instantaneous values. Precipitation is accumulated on the previous hour. Atmospheric pressure is averaged over the previous hour. Wind speed and direction are the *resulting* average speed and direction over the previous hour (calculated by the datalogger by means of data recorded every 5 seconds): this to minimize data unreliability due to sudden gusts. Both of them are calculated weighting the frequency distribution of both variables within each hour.
The three parameters indicated below were computed by using "CEOP Derived Parameter Equations" available at: http://www.joss.ucar.edu/ghp/ceopdm/refdata_report/eqns.html. These data have the flag "I". In the case of calculated by using dubious value flagged "D", the data flag was put D".

Dew Point Temperature was 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 was 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 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. Nocturnal radiation data has been checked for non-zero values; wind speed and direction for sensor freezing and/or unusual high values. Where possible, cross-checking among the variation of different measured parameters (e.g., precipitation with relative humidity) was also performed to assure the consistency among the variations of different variables under the same conditions.
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

The installed barometer was not compensated for the altitude and couldn't measure pressure values below 700 hPa.

6.1.2 Quality issues

Due to sensor freezing, in some cases wind speed and direction were recorded as 0 and 360, respectively, and, thus, considered bad. Sometimes, unusual high values were recorded and they were classified as bad. Due to slow melting of solid precipitation in the not-heated rain gauge, precipitation is sometimes recorded with delay in case of below-zero air temperature. Zero-precipitation is also recorded during snowfall if air temperature is below 0°C. All these data were considered dubious. Atmospheric pressure value of 700 hPa were classified as dubious, due to due to barometer features.

6.2 Missing data periods

All data are missed from October 17, 2005 at 04:00 to October 18, 2005 at 06:00 due to datalogger malfunctioning.

7.0 REFERENCE REQUIREMENTS

Original data was collected and is provided within the framework of the Ev-K2-CNR Committee, thanks to contributions from the Italian National Research Council, the Italian Ministry of Foreign Affairs and the Italian Ministry of University and Research.

8.0 REFERENCES

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