



SMEX02 Balloon-borne Radiosonde Data, Iowa, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Eichinger, W. 2004. *SMEX02 Balloon-borne Radiosonde Data, Iowa, Version 1*. [Indicate subset used]. Boulder, Colorado USA. NASA National Snow and Ice Data Center Distributed Active Archive Center. <https://doi.org/10.5067/UKOUWG8EP6N3>. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/NSIDC-0231>



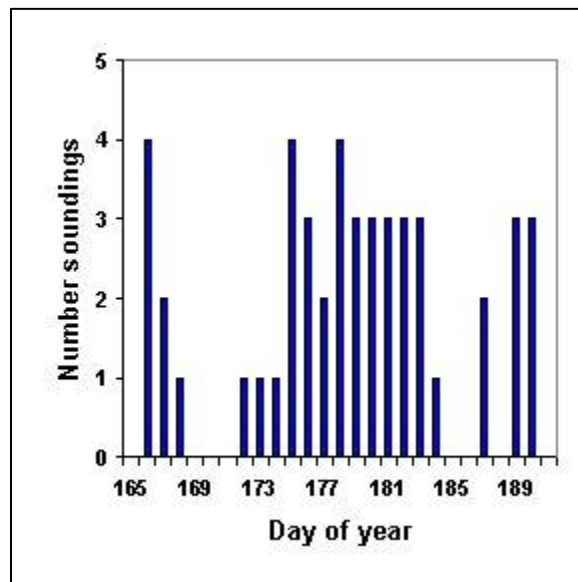
National Snow and Ice Data Center

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1 DETAILED DATA DESCRIPTION

The radiosonde data launches normally coincided with satellite overpasses, and in some cases multiple launches were made to characterize atmospheric boundary layer growth. The figure below shows the frequency of launches.



1.1 Format

Data are provided in ASCII text files.

1.2 File Naming Convention

File names consist of the prefix "rad" for radiosonde, followed by numbers representing the month, day, hour, minute, and year. For example, the file "rad_062615022002.txt" was collected 26 June 2002 at 15:02 GMT.

1.3 Spatial Coverage

Measurements were taken from the geographical coordinates 41.00°N, 93.61°W. Elevation is approximately 310 m above sea level.

1.4 Temporal Coverage

Measurements were taken from 15 June through 9 July 2002. (Not all days were covered. Data are missing for 18, 19, and 20 June and 4, 5, and 7 July.)

1.4.1 Temporal Resolution

Launches took place between one and four times daily.

1.5 Parameter or Variable

1.5.1 Parameter Description

Parameters are pressure, air temperature, relative humidity, dew point temperature, wind direction and speed.

The following table shows the data table elements and the units of measurement for the parameters. These data have been quality controlled; suspect or missing data has been flagged with a value of -999.

Header information (first line)	Includes start time in time, day, month, and year	
Site information (second line)	Includes station number, name of city, latitude, longitude, and elevation.	
Data Columns	Description	Unit of Measurement
Time min	Time after starting the measurements	minutes
s	Time after starting the measurements	seconds
AscRate m/s	Balloon ascent rate	meters per second
Hgt/agl m	Height above ground level	meters
Pressure hPa	Air pressure	hectopascals
Temp degC	Air Temperature	degrees Celsius
RH %	relative humidity	percentage
Dewp degC	Dew point temperature	degrees Celsius
Dir deg	Wind direction	degree
Speed m/s	Wind speed	meters per second

1.5.2 Sample Data Record

11:53 02313 Time min	24 Kelley AscRate s	JUNE 42.00N Hgt/agl m/s	2002 93.61W Pressure m	GMT 310 m Temp hPa	RH degC	Dewp %	Dir degC	Speed deg	m/s
0	0	0.00	0	980.70	19.90	76	15.60	198	7.10
0	2	4.00	8	979.70	19.80	69	14.00	197	6.30
0	4	2.70	11	979.40	19.80	69	14.00	197	6.30
0	6	2.80	17	978.70	19.80	69	14.00	197	6.30
0	8	2.90	23	978.00	19.70	69	13.90	197	6.40
0	10	2.90	29	977.30	19.60	70	14.00	197	6.40
0	12	2.80	34	976.80	19.60	70	14.00	198	6.40

2 DATA ACQUISITION AND PROCESSING

2.1 Data Acquisition Methods

Measurements are based on use of the free-flying radiosonde, which transmitted data to the ground station over a 403 MHz radio link. Pressure, temperature and humidity were measured by sensors in the radiosonde. The location of the sonde was obtained by navigation networks (Nav aids) via a receiver module on the sonde. The Navaid signals were relayed to the ground station for processing and computation of the wind profile.

The precision for atmospheric pressure is better than 1 hPa for pressures between 1060 hPa and 100 hPa, and better than 0.5 hPa for pressures between 100 hPa and 3 hPa.

The precision for air temperature is better than 0.2° C from -90° C to 60° C.

The precision for relative humidity of the air is 3%.

The precision for wind speed and direction is 0.5 m/s regardless of balloon distance from the ground system.

2.2 Sensor or Instrument Description

The instrument used for the radiosonde was a DigiCORA MV11. This automatic rawinsonde set designed for accurate measurement of upper air pressure, temperature, relative humidity, and winds up to altitudes of 30 km. The measured data are processed automatically and given in standard meteorological formats.

3 REFERENCES AND RELATED PUBLICATIONS

[Iowa Institute of Hydraulic Research](#)

4 CONTACTS AND ACKNOWLEDGMENTS

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Acknowledgments:

William P. Kustas and Fuquin Li of the USDA ARS Hydrology Lab.

5 DOCUMENT INFORMATION

5.1 Publication Date

April 2004

5.2 Date Last Updated

22 March 2021