National Climatic Data Center

DATA DOCUMENTATION

FOR

DATASET 6207 (DSI-6207)

MICROARTS Upper Air Data

December 16, 2003

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

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Table of Contents

1. Abstract: This is a historical dataset provided by The National Climatic Data Center (NCDC). Each file contains both an ID record and a data record. The ID record contains information on station location, date and time of release. Both the hour of observation and the actual time of release (hour and minute) are entered. The hour of observation allows observations to be readily assigned for synoptic analyses and for ease of selection of specific synoptic hours for users. For synoptic hours (H = 00, 06, 12, 18) the hour of observation will be H whenever the actual release time is H-30 to H+29 (e.g., the synoptic hour will be 12 when the actual release is from 1130 to 1229 UTC). For regular synoptic observations the actual release should occur as close as possible to H-30. For non-synoptic hours, the hour of observation will be the nearest whole hour, H-30 to H+29 (e.g., enter 10 when the actual release is from 0930 to 1029 UTC). Flight and equipment information are entered in the ID record and include ascension number, observer initials, type of radiosonde, baroswitch or radiosonde serial number and manufacturer, types of sensing elements, balloon weight, age and manufacturer, reason for flight termination, the number of times the flight was recomputed and the version of software used to reduce the data. The number of recomputes informs the NWS management of potential problems with data reduction and communications software. Sky condition, present weather, surface wind and type of corrections applied to data elements are also recorded in the ID record.

The data record is repeated for each level of the clouding and contains the ascension number and the elapsed time since release in minutes and seconds. The elapsed time is used for such purposes as micro-scale research projects, to provide more accurate ground truth for satellite data, and to compute balloon ascension rates used in the data editing process. The data record also contains pressure, height, relative humidity, dew-point depression, and wind speed and direction. The record contains an indicator specifying the reason for selection of the level such as the level being significant, mandatory, the end of missing or doubtful strata, wind data only, etc. A signal quality flag and as element quality flag are provided for each element to indicate system performance and automated or manual quality control performed at the station. When agencies require that wind data be observed at specific intervals during the flight (1-minute, .5-minute, 1000 ft., etc.), wind data are entered in the data record according to elapsed time and interpolated height and pressure. If the wind data elapsed time does not correspond to a thermodynamic elapsed time, the temperature and humidity data elements are 9 filled for that particular record.

2. Element Names and Definitions:

ID Record

Record Position	Element Name	Code Definitions and Remarks
1	Station Number Indicator	This field contains an indicator specifying the type of station number in the next field: 0 = WBAN number 1 = WMO number 2 = Air Force Augmented WMO number. 3 = Ship Call Sign 4 = Mobile Unit Call Sign.
2-9	Station Number	The number assigned to the station according to

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		the numbering system specified in record position 1. Numbers should be right justified, ship Call signs left justified. NWS stations must enter WBAN number. If the number is missing, enter 00000000.
10-14	Latitude	The station latitude in degrees and minutes. The last character is “N” or “s” as appropriate. When unknown, this field contains “9999N”.
15-20	Longitude	The station longitude in degrees and minutes. The last character is “E” or “W” as appropriate. When unknown, this field contains “99999E”
21-24	Elevation	The height of the launch site in whole meters.
25-28	Year	The 4 digit year expressed at the hour of observation.
29-30	Month	The numeric month expressed at the hour of observation.
31-32	Day	The numeric day expressed at the hour of observation.
33-34	Hour	The hour (24-hour clock) of observation. For synoptic hours (H=00, 06, 12, 18) the hour of observation will be H whenever the actual release time is H-30 to H+29. For example, the synoptic hour will be entered as 12 when the actual release is from 1130 to 1229 UTC. For regular synoptic observations the actual release should occur as close as possible to H-30. For non-synoptic hours, the hour of observation will be the nearest whole hour, H-30 to H+29 (e.g. the hour is entered as 10 when release is 0930 to 1029 UTC).
35-38	Release Time	The hour and minute UTC (24-hour clock) of the actual release time.
39-42	Ascension Number	The ascension number for the year. The first release on or after Jan 1 will be numbered 0001.
43-46	Observer Initials	The initials of the first and last name of the observer.
47-49	Data Reduction System	The type of data reduction system used at the site. 001 = Manual 002 = Time series 003 = Nova mini computer 004 = Mini-art 005 = Micro-art 006 = Class 007 = Marwin, MRS 008 = MSS 009 = LAMS 010 = ASAP 011 = MV 7800
50-52	Sonde Manufacturer	The manufacturer of the Sonde in use. 001 = VIZ 002 = Vaisala 003 = Spacedata 004 = Air 005 = Atear

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53-55	Sonde Type	The type of Sonde used at the station. 001 = VIZ J031 002 = VIZ ACCU-LOC 003 = VIZ A 004 = VIZ B 005 = VIZ MSS 006 = VAISALA 007 = Spacedata-Transponder 008 = Spacedata-Artsonde 009 = Spacedata-MSS 010 = VIZ B – Tansponder
56	Sonde/Baroswitch Number Indicator	An indicator specifying the type of number in the next field. 0 = Sonde serial number 1 = Baroswitch number
57-76	Sonde/Baroswitch	The sonde serial number or the Baroswitch number right justified in the field.
77-79	Humidity Type	Type of humidity element used in the system. 001 = Lithium Chloride Hygrister 002 = 1960’s Carbon Hygristor 003 = 1980’s Carbon Hygrister 004 = HUMICAP
80-82	Temperature Type	Type of temperature element used in the system. 001 = Rod Thermistor 002 = Bead Thermistor 003 = Chip Thermistor
83-85	Pressure Type	Type of pressure element used in the system. 001 = Baroswitch 002 = Transducer – oven controlled 003 = Transducer – non-oven controlled 004 = Derived (Transponder)
86-88	Tracking Type	The type of tracking system. 001 = 72-2 002 = SCR-658 003 = WBRT-57 004 = WBRT-60 005 = GMD-1 006 = GMD-1A 007 = GMD-1B 008 = GMD-5 009 = OMEGA 010 = LORAN 011 = ART-1 012 = ART-1A 013 = ART-2 014 = ART-2A 015 = MDS 016 = MSS RANGING
89	Transponder	Is a transponder used?

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		0 = No 1 = Yes
90-92	Balloon Manufacturer	The manufacturer of the balloon. 001 = KAYSAM 002 = Weathertronics 003 =
93-96	Balloon Weight	Nominal weight of the balloon in grams.
97-98	Balloon Age	Age of the balloon in months.
99	Train Regulator	Was a train regulator used? 0 = No 1 = Yes
100	PIBAL Light	Was a PIBAL light used? 0 = No 1 = Yes
101	PIBAL Type	PIBAL wind equipment type according to WMO Code Table 0265. 0 = Pressure instrument associated with wind-measuring equipment. 1 = Optical theodolite 2 = Radio thedolite 3 = Radar
102-103	Reason for Termination	Reason for termination of the flight. 01 = Balloon burst 02 = Balloon forced down by icing 03 = Leaking or floating balloon 04 = Weak or fading signal 05 = Battery failure 06 = Ground equipment 07 = Switching failure 08 = Radiosonde failure 09 = Other
104	Recomputes	The number of times this flight has been recomputed.
105-113	Clouds and Weather	The observation of the clouds and weather at the time of release. The field is of the form $N_hC_lhC_mC_hWWWW$, where: N_h = The amount of low or mid-level clouds present according to WMO Code Table 2700. 0 = 0 okta (tenths) 1 = 1 okta (1/10) or less, but not zero 2 = 2 oktas (2/10-3/10) 3 = 3 oktas (4/10) 4 = 4 oktas (5/10) 5 = 5 oktas (6/10) 6 = 6 oktas (7/10-8/10) 7 = 7 oktas (9/10) or more, but not overcast 8 = 8 oktas (10/10) 9 = Sky is obscured by fog and/or other meteorological phenomena

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		- = Cloud cover is indiscernible for reason other than “9” or observation not made. The WMO code figure “/” must be converted to “-“. C_l,C_m,C_h = The cloud type according to WMO Code Tables 0509, 0513, and 0515. Code figure “/” must be converted to “-“. h = WMO Code Table 1600 for the height above ground of the base of the lowest cloud seen. Code figure “/” must be converted to “-“. WW = Present weather according to WMO Code Table 4677. Up to two types of present weather or obscurations may be entered.
114-116	Surface Wind Direction	The direction of the surface wind at the time of release in whole degrees.
117-119	Surface Wind Speed	The speed of the surface wind at time of release in meters per second to the nearest 0.1 meter per second. Don not enter the decimal point; 12.3 meters per second = 123
120-122	Wind Averaging Interval	The interval of time or height over which the wind is derived. 000 = None (instantaneous) 001 = 2 MIN to 14 km (MSL), 4 MIN above 14 km (MSL). (Pre-1990 FHM Standard, NWS) 002 = Post-1989 FHM Standard 003 = 20 seconds to 15K ft., 60 seconds above 15K ft. 004 = 005 =
123-134	Type of Correction	The type of correction applied to individual data elements by automated systems of observers.
123-124	Pressure Corrections	00 = No correction applied 01 = NASA temperature correction 02 = EMCWF temperature correction 99 = Unknown
125-126	Height Corrections	00 = No correction applied 01 = Local gravity correction 02 = Standard gravity correction 99 = Unknown
127-128	Temperature Corrections	00 = NO correction applied 01 = NASA radiation correction 02 = EMCWF radiation correction 03 = NMC radiation correction 11 = NASA lag correction 12 = EMCWF lag correction 13 = NMC lag correction 21 = NASA radiation and lag correction 22 = EMCWF radiation and lag correction 23 = NMC radiation and lag correction 99 = Unknown
129-130	Humidity	00 = No corrections applied

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	Corrections	01 = NASA lag correction 02 = EMCWF lag correction 03 = NMC lag correction 99 = Unknown
131-132	Dew Point Corrections	00 = No correction applied 01 = NASA lag correction 02 = EMCWF lag correction 03 = NMC lag correction 99 = Unknown
133-134	Wind Corrections	00 = No correction applied 01 = Elevation angle correction 02 = Ranging correction 99 = Unknown
Note: At this writing, the types of corrections which may be applied to the data have not been determined. Input from various agencies will be used to develop initial codes and correction types.		
135-144	Software Version	The version of software in use with the specified recording system.
145-160	Reserved Field	Leave Blank

Data Record

Record Position	Element Name	Code Definitions and Remarks
1	Station Number Indicator	0 = WBAN Number 1 = WMO Number 2 = Sir Force Augmented WMO Number 3 = Ship Call Sign 4 = Mobile Unit Call Sign
2-9	Station Number	Number are right justified, letters are left justified. Missing numbers = ‘00000000’.
10-19	Date/Time	The time of the observation (24-hour clock) UTC. Form = YYYYMMDDHH
20-23	Release Time	The hour and minute UTC (24 hr clock) of the actual release time.
24-27	Ascension Number	The ascension number for the year. The first release on or after Jan 1 will be numbered 0001.
28-32	Elapsed Time	The time in minutes and seconds (mmss) since the actual release time.
33-38	Pressure	Atmospheric pressure at the current level in hundredths of hectopascals (0.01 millibars).
39-43	Height	Geopotential height of the pressure level in whole geopotential meters (MSL).
44-47	Temperature	Dry-bulb temperature to the nearest 0.1 degree Celsius.
48-51	Relative Humidity	The relative humidity to the nearest 0.1 percent.
52-54	Dew Point Depression	The dew-point depression to the nearest 0.1 degree Celsius.
55-57	Wind Direction	The wind direction to the nearest whole degree.
58-61	Wind Speed	Wind speed to the nearest 0.1 meter per second.

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62-63	Type of Level	The reason for selection of the level: 00 = High resolution data sample 01 = Within 20 hecotpascals 02 = Pressure less than 10 hectopascals (mb) 03 = Base pressure level for stability index 04 = Begin doubtful temperature, altitude data 05 = Begin missing data (all elements) 06 = Begin missing relative humidity data 07 = Begin missing temperature data 08 = Highest level reached before balloon descent because of icing or turbulence 09 = end doubtful temperature, altitude data 10 = End missing data (all elements) 11 = End missing relative humidity data 12 = End missing temperature data 13 = Zero degree crossing for the RADAT 14 = Mandatory pressure level 15 = Operator added level 16 = Operator deleted level 17 = Balloon re-ascended beyond precious highest level 18 = Significant relative humidity level 19 = Relative humidity level selection terminated 20 = Surface level 21 = Significant temperature level 22 = Mandatory temperature level 23 = Flight termination level 24 = Tropopause 25 = Aircraft report 26 = Interpolated (generated) level 27 = Mandatory wind level 28 = Significant wind level 29 = Maximum wind level 30 = Incremental wind level (e.g., 1-minute, fixed regional)
64-66	Signal Quality (pressure)	Signal quality for the element expressed as a percentage of individual samples accepted.
67-69	Signal Quality (temperature)	
70-72	Signal Quality (humidity)	
73-75	Signal Quality (dew-point temperature)	
76-77	Element Quality Flags (Elapsed Time)	These fields contain the results of any quality control procedures for identifying suspect and doubtful individual elements: 00 = Element is correct

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		01 = Element is suspect 02 = Element is doubtful 03 = Element failed QC checks 04 = Replacement value (correction) 05 = Estimated value 06 = Observer edited value 09 = Element not checked
78-79	Element Quality Flags (Pressure/Ranging)	
80-81	Element Quality Flags (Height)	These fields contain the results of any quality control procedures for identifying suspect and doubtful individual elements: 00 = Element is correct 01 = Element is suspect 02 = Element is doubtful 03 = Element failed QC checks 04 = Replacement value (correction) 05 = Estimated value 06 = Observer edited value 09 = Element not checked
82-83	Element Quality Flags (Temperature)	
84-85	Element Quality Flags (Humidity)	
86-87	Element Quality Flags (Dew-point Depression)	
88-89	Element Quality Flags (Wind Direction)	
90-91	Element Quality Flags (Wind Speed)	
92-100	Reserved Field	Leave blank
The data records are repeated as many times as necessary to record all levels of the flight. All fields must be right-justified (least significant digit in the rightmost position) unless specified otherwise. All missing fields must be 9 filled unless specified otherwise. Do not enter decimal points. The decimal point is implied by the field position.		

3. Start Date: 19900201

4. Stop Date: 19910831

5. Coverage:

a. Southernmost Latitude: -90.0S
b. Northernmost Latitude: 90.0N
c. Westernmost Longitude: -180.0W
d. Easternmost Longitude: 180.0E

6. How to Order Data:

Ask NCDC's Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
E-mail: **NCDC.Orders@noaa.gov**

7. Archiving Data Center:

Archive Branch
National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

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8. Technical Contact:

National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

9. Known Uncorrected Problems: None.

10. Quality Statement:

11. Essential Companion Datasets:

12. References: