

National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 5200 (DSI-5200)

Winds Aloft

October 12, 2005

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

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1. **Abstract:** This data set includes winds aloft observations which are the measurement and computation of wind speeds and directions at various levels above the surface of the earth. Data periods vary from station to station which covers countries over the entire globe. The earliest period of record is in 1927 and the latest is in 1971. There are several decks within this set and they are listed alphabetically.

2. **Element Names and Definitions:**

Tape Deck	Station Number	Time				Units Ind.	Blank	Length	No. of Levels	Blank	First Level		Last Level		
		YR	MO	DA	HR						Direction	Speed	Direction	Speed	
52xx	xxxxxx	xx	xx	xx	xx	x	b	xxx	xx	b	xxx	xxx		xxx	xxx

001
002
003
004
005
006
007
008
009
010
011
101
1NN

This standard tape format is standard only within a given deck but variable as necessary between the several decks within the data family. Fields 001-006 are used for the identification portion of the observation. Field 007 is used for a "units indicator" which indicates the units of wind speed as follows:

- 1 = Meters per second
- 2 = Knots
- 3 = Miles per hour
- 4 = Kilometers per hour
- 5 = V5 code
- 6 = Meters per second to 1/10
- 7 = 1955 fa code
- 8 = 1959 fa code (USWB 1955)
- 9 = Not specified

Field 009 is used for "tape length" which is the number of character positions in the tape format for each deck. Field 010 is used for the "number of levels" in each individual observation. This figure is determined by EDPM procedures during the conversion of the data.

Fields 101-1NN are used for data. A data field must always contain 6 positions, 3 for wind direction and 3 for wind speed. Wind direction is recorded as whole degrees with 360° = North, 000 = Calm, and 990 = variable. Wind speed was retained in the units punched. The only modification consisted in adding a sufficient number of zeros to the left to form a three digit field, or in obtaining the hundreds position from x-overpunches or direction codes. The data fields of the tape format are determined by the individual needs of each deck. Under this variable tape format, Field 101 may be used, when deemed necessary, as an indicator field for extra information not

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normally included in the taped observation. When Field 101 is used for this purpose, the first level of data begins in Field 102.

Winds aloft observations transcribed from source material to punch cards have been grouped into "Card Decks", homogeneous groups of data, based on uniqueness of source data, geographical area, card format, or other distinguishing features. These card decks have subsequently been converted to tape decks. For each tape deck, a brief description is presented of the deck and its data source with reference to the procedures used for card to tape conversion. The tape deck numbering system is a 4-digit number, the first two being "52" to denote the tape family. The remaining two digits are arbitrarily assigned, depending upon source material of the data.

African_middle_east_winds_aloft 1953-1961

Tape Deck 5293 was derived from the six sources listed below. The station-periods produced from the various sources are as follows:

"Overseas Supplement to the Daily Weather Report of the Meteorological Office, London"

40427	1/56-12/59
40575	3/53-12/59
40588	3/53-12/54
40648	1/56-12/59
40564	3/53-12/59
40586	3/53-12/59
40597	1/56-12/59

IGY Microcards 7/57-12/58 (This source overlaps the source above.)

40427	40449
40564	40575
40586	40597
40608	40650
40676	40689
40948	40980

Microfilm of British records.

40427	1/50-12/55
40597	1/50-12/55
40648	1/51-12/55

Microfilm of Arabian records.

40477	6/59-2/62
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TD 9000 (CD 523) Northern Hemisphere Winds Aloft

40449	1/49-6/57, 1/59-5/60
40608	2/49-6/57, 1/59-5/60
40621	3/49-8/53
40642	4/49-6/57, 1/59-4/63
40648	8/58-5/60

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40650 2/49-6/57
 40672 2/49-5/56
 40676 2/49-6/57
 40688 2/49-3/57
 40689 8/49-6/57, 1-3/59

"Afghanistan Meteorological Institute Monthly Weather Bulletin."

40948 1/59-12/61
 40980 1-8/59, 10/59-4/60, 6-7/60, 9/60-11/61

The overall period of record for this deck is January 1953-November 1961. Data were listed reviewed for meteorological consistency and corrections were made to the taped observations prior to conversion to the above tape format.

Data from the **IGY Microcards, The Afghanistan Bulletin, and Overseas Supplement (56-59)** reported levels in meters while all other sources reported levels in feet.

Substitutions were made as shown below when desired levels were not reported above the 2000 ft. level.

Desired Level		1st Sub		2nd Sub	
Ft	Mts	Ft	Mts	Ft	Mts
3,000	1,000	-	900	-	-
5,000	1,500	-	-	-	-
7,000	2,100	6,400	2,000	-	-
10,000	3,000	11,000	-	-	-
12,000	4,000	-	3,600	-	-
14,000	4,200	-	4,500	-	-
16,000	5,000	-	-	-	-
18,000	5,400	-	5,500	-	-
20,000	6,000	21,000	-	-	-
22,000	-	23,000	-	-	-
24,000	7,200	-	7,000	-	-
26,000	8,000	-	-	-	-
27,000	-	28,000	-	-	-
30,000	9,000	29,000	-	31,000	-
33,000	10,000	32,000	-	-	-
35,000	10,500	34,000	-	-	-
36,000	11,000	37,000	-	-	-
40,000	12,000	39,000	-	38,000	-
42,000	13,000	-	-	-	-
45,000	14,000	47,000	14,100	-	-
50,000	15,000	-	-	-	-
53,000	16,000	-	15,900	-	-
55,000	17,000	-	-	-	-
60,000	18,000	-	-	-	-
62,000	19,000	-	-	-	-
65,000	20,000	64,000	20,400	-	-
70,000	-	72,000	-	-	-
75,000	23,000	-	22,800	-	-
85,000	26,000	-	25,200	-	-
90,000	27,600	-	-	-	-

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Data were listed and reviewed for meteorological consistency and corrections were made to the taped observations prior to conversion to the above tape format.

African_winds_aloft 1961-1963

Tape Deck 5290 contains winds aloft data that include 144 stations in Africa and 15 stations in Syria, Israel and Jordan. Station numbers have been assigned, from the WMO numbering system, within each country according to the current boundaries. The overall period of record for this deck is July 1961 through June 1963.

Substitutions were made as shown below when desired levels were not reported above the 9,000 ft. or 2,700 Mts. level.

Desired Level		1st Sub		2nd Sub		3rd Sub		4th Sub		5th Sub	
Ft	Mts	Ft	Mts	Ft	Mts	Ft	Mts	Ft	Mts	Ft	Mts
10,000	3,000	11,000	3,300	-	-	-	-	-	-	-	-
12,000	3,600	13,000	3,900	11,000	3,300	-	-	-	-	-	-
14,000	4,200	15,000	4,500	13,000	3,900	-	-	-	-	-	-
16,000	4,800	17,000	5,100	15,000	4,500	-	-	-	-	-	-
18,000	5,400	19,000	5,700	17,000	5,100	-	-	-	-	-	-
20,000	6,000	21,000	6,300	19,000	5,700	22,000	6,600	-	-	-	-
25,000	7,500	26,000	7,800	24,000	7,200	27,000	8,100	23,000	6,900	28,000	8,400
30,000	9,000	31,000	9,300	29,000	8,700	32,000	9,600	28,000	8,400	33,000	9,900
35,000	10,500	36,000	10,800	34,000	10,200	37,000	11,100	33,000	9,900	38,000	11,400
40,000	12,000	41,000	12,300	39,000	11,700	42,000	12,600	38,000	11,400	43,000	12,900
45,000	13,500	46,000	13,800	44,000	13,200	47,000	14,100	43,000	12,900	48,000	14,400
50,000	15,000	51,000	15,300	49,000	14,700	52,000	15,600	48,000	14,400	53,000	15,900
55,000	16,500	56,000	16,800	54,000	16,200	57,000	17,100	53,000	15,900	58,000	17,400
60,000	18,000	61,000	18,300	59,000	17,700	62,000	18,600	58,000	17,400	63,000	18,900
65,000	19,500	66,000	19,800	64,000	19,200	67,000	20,100	63,000	18,900	68,000	20,400
70,000	21,000	71,000	21,300	69,000	20,700	72,000	21,600	68,000	20,400	73,000	21,900
75,000	22,500	76,000	22,800	74,000	22,200	77,000	23,100	73,000	21,900	78,000	23,400
80,000	24,000	81,000	24,300	79,000	23,700	82,000	24,600	78,000	23,400	-	-
85,000	25,500	86,000	25,800	84,000	25,200	87,000	26,100	83,000	24,900	-	-
90,000	27,000	91,000	27,300	89,000	26,700	92,000	27,600	88,000	26,400	-	-
95,000	28,500	96,000	28,800	94,000	28,200	97,000	29,100	93,000	27,900	-	-
100,000	30,000	101,000	30,300	99,000	29,700	102,000	30,600	98,000	29,400	-	-
105,000	31,500	106,000	31,800	104,000	31,200	107,000	32,100	103,000	30,900	-	-
110,000	33,000	111,000	33,300	109,000	32,700	112,000	33,600	108,000	32,400	-	-
115,000	34,500	116,000	34,800	114,000	34,200	117,000	35,100	113,000	33,900	-	-
120,000	36,000	121,000	36,300	119,000	35,700	122,000	36,600	118,000	35,400	-	-
125,000	37,500	124,000	37,200	123,000	36,900	122,000	36,600	-	-	-	-

The 5th Sub level was not used for stations 40007 through 61499.

Data were listed and reviewed for meteorological consistency and corrections were made to the taped observations prior to conversion to the above tape format.

Burma_haitian_winds_aloft 1956-1957

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This deck consolidates Burma winds aloft (TD 5257) and Haitian pibals (TD5269). The Burma data is for 10 stations, the Haitian data is from Port Au Prince, with a general period of April 1956 through July 1957.

Observations for the Haitian data are reported at hours 04, 10, 16 and 22. The following levels are reported: Surface, each 1000 foot interval from 1000 through 12,000 feet, 14,000 feet, 16,000 feet, 18,000 feet, 20,000 feet, 25,000 feet and 30,000 feet.

Data were listed and reviewed for meteorological consistency and corrections were made to the taped observations prior to conversion to the above tape format.

Chinese_winds_aloft 1956-1959

Data for 230 stations in China for period August 1956 through December 1959 are available (TD 5203). For the early part of the period, where necessary, station numbers were changed from the old to the new numbering system.

Data were listed and reviewed for meteorological consistency and corrections were made to the taped observations prior to conversion to the above tape format.

Indian_pakistan_winds_aloft 1954-1963 Indian_pakistan_winds_aloft 1953-1959

Tape Deck 5256 includes as many as 4 observations daily that were recorded for 15 stations in Pakistan, 39 stations in India, and 4 in Sarawak and North Borneo for the overall period December 1953 through December 1963.

Data were listed and reviewed for meteorological consistency and corrections were made to the taped observations prior to conversion to the above tape format.

Italian_pibals 19270401-19331231

Japanese_winds_aloft 1941-1953

Winds aloft data for seventy-three stations are contained in Tape Deck 5204. The overall period of record is November 1941 through December 1953. The new international numbering system was used for all stations.

Korean_winds_aloft 1937-1957

Data from Tape Deck 5239 was produced from pilot balloon observations recorded in the "Upper Air Current Observations-Jinsen Meteorological Observatory", and includes observations taken at 16 Korean stations during the period July 1937 through December 1957.

Portuguese_macao_indian_winds_aloft 1948

This deck consolidates Portuguese (TD 5220) and Indian (TD 5231) winds aloft data into one. The overall period of record is from March 1948 through December 1948.

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The first portion of this deck contains pibal data for 6 stations in Portugal. When a desired level was missing, the observation was searched by the card punch operator for a substitute level using the following table:

Levels	Range	Levels	Range	Levels	Range
Surface	-	2,700m	2,550-2,849	12,000m	11,000-13,000
300	150-449	3,000m	2,850-3,499	15,000m	14,000-16,000
600	450-749	4,000m	3,500-4,499	18,000m	17,000-19,000
900	750-1,049	5,000m	4,500-5,499	21,000m	20,000-22,000
1,200m	1,050-1,349	6,000m	5,500-6,499	24,000m	23,000-25,000
1,500m	1,350-1,649	7,000m	6,500-7,499	27,000m	26,000-28,000
1,800m	1,650-1,949	8,000m	7,500-8,499	30,000m	29,000-31,000
2,100m	1,950-2,249	9,000m	8,500-9,499	33,000m	32,000-34,000
2,400m	2,250-2,549	10,000m	9,500-10,999	36,000m	35,000-37,000

Winds aloft data for 80 stations in India, Pakistan, Arabia, Burma, Ceylon, and Indian Ocean Islands are also contained in this deck. The old international numbering system was used for these stations.

Data for stations 20368, 20402, 20408, 20471 and 20473 were machine listed and edited for meteorological consistency. Corrections were made to the taped observation before conversion to the format shown above. All other stations were converted without being edited.

Se_asian_winds_aloft 1960-1967
Se_asian_winds_aloft 1959-1967

Winds aloft data for 200 stations in South East Asia and the Pacific Islands for the general period September 1959 through July 1967 are contained in Tape Deck 5200.

A combination of levels, as shown below, was used to obtain the desired levels for the tape format. The position of the desired level was searched and if no data were found, a substitute level was selected when available and used as the desired level. No effort was made to retain the original identity of the substituted data. A substitute level was used only when it had not been used for a previous level. Surface through 9,000 ft. levels were used, when available, with no substitution. The following table was used for all stations except 48819 and 48845:

Desired Level (Feet)	1st Sub	2nd Sub	3rd Sub	4th Sub	5th Sub	6th Sub
10,000	11,000	-	-	-	-	-
12,000	13,000	-	-	-	-	-
14,000	15,000	-	-	-	-	-
16,000	17,000	-	-	-	-	-
18,000	19,000	-	-	-	-	-
20,000	21,000	22,000	23,000	-	-	-
25,000	26,000	24,000	27,000	23,000	28,000	-
30,000	31,000	29,000	32,000	28,000	33,000	-
35,000	36,000	34,000	37,000	33,000	38,000	-
40,000	41,000	39,000	42,000	38,000	43,000	-

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45,000	46,000	44,000	47,000	43,000	48,000	-
50,000	51,000	49,000	52,000	48,000	53,000	-
55,000	56,000	54,000	57,000	53,000	58,000	-
60,000	61,000	59,000	62,000	58,000	63,000	-
65,000	66,000	64,000	67,000	63,000	68,000	-
70,000	71,000	69,000	72,000	68,000	73,000	-
75,000	76,000	74,000	77,000	73,000	78,000	-
80,000	81,000	79,000	82,000	78,000	83,000	-
85,000	86,000	84,000	87,000	83,000	88,000	89,000

Height data for stations reported in meters require different substitution of levels than those for other stations. The meter levels are selected with respect to the nearest corresponding level in feet for these stations so that all levels on the final library tape can be considered as height in feet. The following table is used:

Desired Meter Level	Corresponding Level in Feet	Substitution (Meters)
1,000	3,000	-
1,500	5,000	-
2,000	6,000	-
3,000	10,000	-
4,000	12,000	-
5,000	16,000	-
5,000	18,000	-
6,000	20,000	7,000
8,000	25,000	-
9,000	30,000	-
11,000	35,000	10,000
12,000	40,000	-
14,000	45,000	13,000
15,000	50,000	-
17,000	55,000	16,000
18,000	60,000	-
20,000	65,000	19,000
22,000	70,000	21,000
23,000	75,000	-
25,000	80,000	24,000
26,000	85,000	-

Winds_aloft 1954-1960 (South America)

Tape Deck 5270 contains winds aloft data for Argentina, Chile and Uruguay for a period of March 1954 through August 1960. When desired levels were not present the following levels were substituted, as available, during the conversion of the data. There were no substitutions for surface.

Desired Level	1st Sub	2nd Sub	3rd Sub	4th Sub	5th Sub
Mts	Ft	Ft	Ft	Ft	Ft
200	1,000	-	-	-	-

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500	2,000	-	-	-	-	-
1,000	3,000	4,000	-	-	-	-
1,500	5,000	6,000	4,000	-	-	-
2,000	7,000	6,000	-	-	-	-
2,500	8,000	9,000	-	-	-	-
3,000	10,000	9,000	-	-	-	-
3,500	11,000	12,000	-	-	-	-
4,000	13,000	14,000	15,000	12,000	-	-
5,000	16,000	17,000	15,000	18,000	-	-
6,000	20,000	21,000	19,000	18,000	-	-
7,000	23,000	24,000	22,000	25,000	-	-
8,000	26,000	27,000	25,000	28,000	-	-
9,000	30,000	29,000	31,000	32,000	-	-
10,000	33,000	32,000	34,000	35,000	-	-
11,000	36,000	37,000	35,000	38,000	-	-
12,000	39,000	40,000	38,000	41,000	-	-
13,000	43,000	42,000	44,000	41,000	-	-
14,000	46,000	45,000	47,000	44,000	-	-
15,000	48,000	49,000	47,000	50,000	-	-
16,000	53,000	52,000	54,000	51,000	50,000	-
17,000	55,000	56,000	54,000	57,000	53,000	58,000
18,000	60,000	59,000	61,000	58,000	62,000	-
19,000	63,000	64,000	62,000	61,000	-	-
20,000	65,000	64,000	66,000	67,000	68,000	-
21,000	70,000	69,000	71,000	68,000	72,000	73,000
23,000	75,000	74,000	76,000	73,000	77,000	78,000
24,000	80,000	79,000	81,000	78,000	82,000	85,000
26,000	85,000	84,000	86,000	83,000	87,000	88,000
27,000	90,000	89,000	91,000	88,000	92,000	93,000
29,000	95,000	96,000	94,000	97,000	93,000	98,000
31,000	100,000	101,000	99,000	102,000	98,000	103,000
32,000	105,000	106,000	104,000	107,000	103,000	108,000
34,000	110,000	111,000	109,000	112,000	108,000	113,000
35,000	115,000	116,000	114,000	117,000	113,000	118,000
37,000	120,000	121,000	119,000	122,000	118,000	123,000
38,000	125,000	126,000	124,000	127,000	123,000	128,000
40,000	130,000	131,000	129,000	128,000	128,000	133,000

Winds_aloft 1949-1971 (Philippine)

These winds aloft data are for 10 stations in the Philippine Islands (TD 5282) for the overall period of March 1949 through January 1971. During punching the following substitutions were made when the desired level was not reported:

Desired Level	Substitute Level
30,000 Ft	32,000 Ft
35,000	36,000
40,000	41,000
45,000	47,000
55,000	54,000
70,000	68,000

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For period Sep 1960-Dec 1963:

Desired Level	Substitute Level
20,000 Ft	19,000 Ft

3. **Start Date:** 19270401

4. **Stop Date:** 19711231

5. **Coverage:** Global Coverage

- a. Southernmost Latitude: 90S
- b. Northernmost Latitude: 90N
- c. Westernmost Longitude: 180W
- d. Easternmost Longitude: 180E

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:**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
Phone: (828) 271-4800.

8. **Technical Contact:**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001
Phone: (828) 271-4800.

9. **Known Uncorrected Problems:**

10. **Quality Statement:**

11. **Essential Companion Datasets:** None.

12. **References:** None.

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Appendix:

The "Old" International Index Numbering System

Prior to about 1921, stations were identified by combinations of letters, which in many cases were mnemonically related to the stations name, such as call letters currently used in airways weather reporting. However, to relate such a system to the entire globe became impractical and a digital system was devised. In 1929 each continent or major oceanic division was assigned a block of numbers from 000 to 999, it being thought that no confusion would exist between continents. At that time the system worked satisfactorily, since weather charts were more on a continental basis than on a hemispheric or world basis. However, with the increased density of reporting networks, brought on especially by the needs of World War II, a thousand numbers were not enough for some continents, and supplementary numbers were established. To avoid geographical confusion, supplementary numbers were arranged as approximately the compliment of 1,000, so that, as an example, primary numbers 000, 001, etc., appeared in the same area as supplementary numbers 999 998, etc., and vice versa. Many cards have been punched containing only such a 3-digit stations number, when data from a limited geographical area were included in a card deck. For more comprehensive decks; however, the system became inadequate, and 5-digit numbering system was devised, where the first digit described the continent, the second digit described the type of station number (primary, supplementary, arbitrary, etc.) and the international index number was used for the remaining three digits. Conventions normally used were as follows:

First Digit	Second Digit
1 Europe, Near East, Greenland, Iceland	0 Primary number
2 Asia, except Near East	1 Arbitrarily assigned number (for stations without an international index number)
3 Africa	2 Supplementary number
4 Southwest Pacific Ocean (Australia, New Zealand, and Oceanic Islands)	3 Specialized use for map
5 North America	7 Plotting decks (101 and 102)
6 South America	8 Regarding substitution of
	9 Primary for arbitrary numbers

Other variations of this system have been used. In the map plotting deck for later years (522, 5281) the first two digits were used in combination to describe both the country of continent and the type of 3-digit number, i.e., primary or supplementary. The Germans, in some of their decks, used the first two positions as a country code. In the USSR, where more than 1,000 numbers were in use, each, index number was preceded by a zone number, from 1 to 9, so that weather observations were identified by a 4-digit number. These were usually punched by preceding the number with a 2 for Europe and Asia, although some decks use 1 for Europe and 2 for Asia, and 0 in the second position to indicate primary numbers. Deviations from originally established systems also exist.

The "New" International Index Numbering System

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In 1949, the World Meteorological Organization adopted the "Block Numbering" system, whereby the world was divided into geographical areas, numbered from 00 to 99. The station number IIiii, identifies the location, where II represents the block number, and iii the index number.

The block numbers have been allocated as follows:

Europe (including USSR in Europe and Asia)	00-39
Asia	40-49
China	50-59
Africa	60-69
North and Central America	70-79
South America	80-89
Australia and Pacific Ocean	90-99

Station index numbers having the same five figures (e.g., 55555, 77777, etc.) or ending with 000 or 999, or duplicating special code indicators (e.g., 10001, 77744, 19191, 89998, etc.) are not assigned to meteorological stations.

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