National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 6300 (DSI-6300)

Includes documentation for (DSI-6301 – DSI-6350)
NCDC UPPER AIR DIGITAL FILES

December 10, 2002

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

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1. Abstract: Datasets in the DSI-63XX series consist primarily of radiosonde and pibal data. The data begin in 1940s and extend to the present. All of these datasets were either built in the DSIF-63 format or converted to the DSIF-63 format. All of these data sets have been loaded into the CARDS (DSI-6305) data set and quality controlled with the Complex Quality Control system. Rough errors are corrected or flagged as suspicious or erroneous. Station histories are available for the CARDS dataset on-line at NCDC. Data in the DSI-6301 dataset (US National dataset) were quality controlled by hand. The AIRS (DSI-6350) dataset, which replaced DSI 6301, have been quality controlled by single station analysis. The highest quality data are found in the CARDS (DSI-6305) data set.

Please see the following appendices for additional information on the following datasets:

Appendix 01 DSI-6301 U.S. RAWINSONDE (CARDS)
Appendix 02 DSI-6302 NMC GLOBAL-GTS UPPER AIR (CARDS)
Appendix 07 DSI-6307 MONADS
Appendix 16 DSI-6316 ARGENTINE UPPER AIR
Appendix 19 DSI-6319 KOREA UPPER AIR
Appendix 20 DSI-6320 HUNGARY UPPER AIR
Appendix 21 DSI-6321 NATIONAL NETHERLANDS UPPER AIR

Data Set Aliases:

DSI-6301 U.S. RAWINSONDE
DSI-6302 NMC Global-GTS UPPER AIR
DSI-6304 GLOBAL UPPER AIR CARDS (Core Subset)
DSI-6305 NCDC Upper Air Digital Files (CARDS)
DSI-6307 MONADS
DSI-6308 MIT UPPER AIR
DSI-6309 NCAR-NMC UPPER AIR
DSI-6310 GLOBAL U/A CARDS (DSIF 54)
DSI-6311 GLOBAL UPPER AIR CARDS (DSIF 56)
DSI-6314 USSR GTS UPPER AIR
DSI-6315 PEOPLES REPUBLIC OF CHINA(PRC) UPPER AIR
DSI-6316 ARGENTINE UPPER AIR
DSI-6318 HONG KONG UPPER AIR
DSI-6319 KOREA UPPER AIR
DSI-6320 HUNGARY UPPER AIR
DSI-6321 NATIONAL NETHERLANDS UPPER AIR
DSI-6322 AUSTRALIAN GTS UPPER AIR
DSI-6323 AUSTRALIAN U/A THERMO/WINDS MERGED
DSI-6324 BRAZILIAN UPPER AIR
DSI-6325 GLOBAL UPPER AIR CARDS (FUSSR)
DSI-6326 GLOBAL UPPER AIR CARDS (DSIF 5683)
DSI-6348 CARDS CLIMATE SUBSET with adjusted data
DSI-6350 AIRS

2. Element Names and Definitions:

NCDC Standard Archive Format - DSIF63

Identification Portion (108 Characters)

FIELD	1	2	3	4	5	6	7	8
ELEMENT	BEG REC	WMO NUM	STN IND	STN NUM	LAT	LONG	ELEV	YEAR
#CHARS	#	XXXXXX	X	XXXXXXXX	XXXXXXXA	XXXXXXXXA	XXXXX	XXXX
REC. POS.	1	2-7	8	9-16	17-24	25-33	34-38	39-42

FIELD	9	10	11	12	13	14	15	16
ELEMENT	MONTH	DAY	HOUR	RELSE TIME	CLOUDS AND WX	OBSN TYPE	SON/BAR IND	SON/BAR NUMBER
#CHARS	XX	XX	XX	XXXX	XXXXXXXXX	XX	X	X...X
REC. POS.	43-44	45-46	47-48	49-52	53-61	62-63	64	65-84

FIELD	17	18	19	20					
ELEMENT	SONDE TYP	QC EFFORT	DATA SRCE	TYPE OF CORRECTION P	Z	T	H	DSI	W
#CHARS	XXX	X	XX	XX	XX	XX	XX	XX	XX
REC. POS	85-87	88	89-90	91-102					

FIELD	21	22
ELEMENT	# OF ADD RECS	NUM LEVELS
#CHARS	XXX	XXX
REC. POS	103-105	106-108

Note: DSIF63 records are written as ANSI standard variable-length records/blocks, generally on magnetic tape. Immediately prior to field #1 (above) there are four ASCII characters that specify the length (in bytes) of the record that follows. The total record length for the data and the four ASCII characters cannot exceed 9912 characters. DSIF63 data written as variable-length data on disk files do not contain the four additional character record length descriptors.

DSIF63 data written on magnetic tape will contain as many complete records as possible within a variable-length block of up to 12000 bytes.

Data Portion (56 Characters) Repeated Number of Levels (NUM LEVELS) Times

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FIELD	1	2	3	4	5	6	7	8	9
ELEMENT	LVL QUAL	ELPSD TIME	PRESS	HGT	TEMP	REL HUM	DPDP	WND DIR	WND SPD
#CHARS	X	XXXXX	XXXXXX	SXXXXXX	SXXXX	XXXX	XXX	XXX	XXXX
REC. POS.	1	2-6	7-12	13-19	20-24	25-28	29-31	32-34	35-38

FIELD	10	11	12
ELEMENT	TYP LVL	ELEMENT QLTY ET P H T U DP WD	NCDC USE
#CHARS	XX	XX XX XX XX XX XX XX	XX
REC. POS.	39-40	41-54	55-56

... Fields 1-12 (Data Portion) may be repeated up to 175 times in each physical record.

NCDC Standard Archive Format - Identification Portion

Position: 1
Element: BEG REC IND

Definition: BEGIN RECORD INDICATOR -- The "#" sign will indicate the beginning of each new record.

Position: 2-7
Element: WMO NUM

Definition: WMO NUMBER -- The WMO number is the five-digit number with a "0" appended for those stations that have a WMO Number assigned. Those stations without an assigned WMO number are assigned the five-digit number of a nearby WMO station and a digit between 5 and 9 inclusive is appended (6th position) by the Global Climate Lab., NCDC. All mobile stations will be identified by a number beginning with "99", followed by a unique four-digit number; (0010 through 0999) are reserved for semi-fixed platforms such as Ocean Station Vessels and Ice Islands). 999999 = Number not assigned (mobile platform).

Range of values is 000000-999999.

Position: 8
Element: STN IND
Definition: STATION NUMBER INDICATOR -- This indicator specifies the type of station number in the next field.

Range of values is 0-9.

0 = WBAN NUMBER
1 = AIR FORCE AUGMENTED WMO NUMBER
2 = SHIP CALL SIGN
3 = MOBILE PLATFORM CALL SIGN
4 = MOBILE PLATFORM ID (Assigned by NCDC)

:
:

5 = WMO/CARDS NUMBER
6 = FIXED PLATFORM CALL SIGN
7 = OTHER STATION NUMBER (ORIGIN UNKNOWN)
8 = RESERVED
9 = NO STATION NUMBER

Position: 9-16
Element: STN NUM

Definition: STATION NUMBER -- The number assigned to the station according to the numbering system specified in record position 8. Numbers are right justified and zero filled, ship CALL signs or mobile unit IDs are left justified and blank filled. NWS stations must enter WBAN number. If missing, enter "99999999". Range of values is alpha-numeric 00000000 through 99999999 and A^^^^^^^ through ZZZZZZZZ(^ = blank) in the ASCII order. The only special characters allowed are blanks and dashes; all letters are uppercase.

Position: 17-24
Element: LAT

Definition: LATITUDE -- The station latitude in hundred-thousandths of degrees, the last character is "N" or "S" as appropriate. When unknown, this field contains "9999999N".

Range of the numeric values is 0000000-9000000 and 99999999.

Position: 25-33
Element: LONG

Definition: LONGITUDE -- The station longitude in hundred-thousandths of degrees, the last character is "E" or "W" as appropriate. When unknown, this field contains "99999999E".

Range of the numeric values is 00000000-18000000 and 99999999.

Position: 34-38
Element: ELEV

Definition: ELEVATION -- The height of the launch site in tenths of meters (MSL). Left most character is '-' if below mean sea level. Missing is indicated by "99999".

Range is all numeric values between -9999 and 99999.

Position: 39-42
Element: YEAR

Definition: YEAR -- The year expressed at the hour of observation (UTC).

Range of values is the earliest year of upper air observations through the current year processed.

Position: 43-44
Element: MONTH

Definition: MONTH -- The month expressed at the hour of observation (UTC).

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Range of values is 01-12.

Position: 45-46
Element: DAY

Definition: DAY -- The numeric day expressed at the hour of observation (UTC).

Range of values is 01-31.

Position: 47-48
Element: HOUR
Definition: HOUR -- The hour (24-hour clock) of observation (UTC). The hour of observation will be the nearest whole hour to the time of release, H-30 to H+29 minutes.

Range of values is 00-23 and 99.

Position: 49-52
Element: RELSE TIME

Definition: TIME OF ACTUAL RELEASE -- The hour and minute UTC (24-hour clock) of the actual release time expressed as HHMM where HH = hour and MM = minutes. Missing is indicated by "9999".
Range of values is 0000-2359 and 9999.

Position: 53-61
Element: CLOUDS-WX

Definition: CLOUDS AND WEATHER -- The observation of the clouds and weather at the time of release. The field is of the form $N_h C_L h C_M C_H WWWW$, where:

N_h = Amount of low or mid-level clouds present according to WMO 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
- = Cloud cover is indiscernible for reason other than "9" or observation not made. The code figure "/" has been converted to "-".

C_L, C_M, C_H = The cloud type according to WMO Code Tables 0509, 0513, and 0515. Code figure "/" has been converted to "-".

h = WMO Code Table 1600 for the height above ground for the base of the lowest cloud seen. Code figure "/" has been converted to "-".

Position: 62-63
Element: OBSN-TYPE

Definition: TYPE OF OBSERVATION -- The observation type codes entered are:

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01 = radio/rawinsonde
02 = rocketsonde
03 = satellite
04 = dropsonde
05 = aircraft flight level report
06 = Profiler
07 = PIBAL
08 = APOB
09 = RAWIN (RADAR winds only)
10 = Rawinsonde (RADAR winds)
11 = Radiosonde (optical theodolite)
12 = Rawinsonde (OMEGA NAVAID)
13-98 = reserved
99 = missing

Range of values is 01-99.

Position: 64
Element: SON/BAR IND

Definition: SONDE/BAROSWITCH NUMBER INDICATOR -- An indicator specifying the type of number in the next field.

Range of values is 0-9.

0 = SONDE SERIAL NUMBER
1 = BAROSWITCH NUMBER
2-8 reserved
9 = missing

Position: 65-84
Element: SON/BAR NUMBER

Definition : SONDE/BAROSWITCH NUMBER -- The Sonde serial number or the Baroswitch number left justified in the field. Missing is indicated by all 9's.

Range of values of this element are alpha-numeric and may contain any combination of uppercase letters, "-", "/", ".", and numbers 0-9.

Position: 85-87
Element: SONDE TYPE

Definition: SONDE TYPE -- The type of Sonde used at the station.
Range of values is 000-999.

VIZ Radiosondes - USA
001 = VIZ model 1392-510, NWS Accu-Lok, 1680 MHz, also known as J031
002 = VIZ model unknown
003 = VIZ model 1492-510, NWS ART "A" Accu-Lok, 1680 MHz
004 = VIZ model 1492-520, NWS ART "B" Accu-Lok, 1680 MHz
005 = VIZ (MSS) model 1799-610, USAF Transponder Radiosonde, 1680 MHz

Space Data Division Radiosondes - USA
006 = Space Data (ART2B) Transponder - model 909-11-02
007 = Space Data (ART2A) Artsonde - model 909-10-01
:
:

008 = Space DAta - Meteorological Sounding System (MSS)

SONDE Type codes 551-565 are reserved for additional Space Data Sondes.

Vaisala Radiosondes - Finland
009 = Vaisala RS80 (versions unknown)

VIZ Manufacturing Company Radiosondes - USA
010 = VIZ model 1499-520, NWS Art "B" Transponder Radiosonde, 1680/403 MHz
012 = VIZ (Beukers) model
013 = VIZ model 1492-530, NWS ART "C" Accu Lok, 1680 MHz
014-019 = Reserved

Vaisala Radiosondes - Finland
020 = Vaisala RS80-15N Navy MRS (OMEGA Navaid windfinding)
021 = Vaisala RS80-15P (OMEGA Navaid windfinding)
022 = Vaisala RS80-15L (Loran-C Navaid windfinding)
023 = Vaisala - model unknown (Prior to RS80)
024 = Vaisala RS11, 25 MHz
025 = Vaisala RS12, 25 MHz
026 = Vaisala RS13, 25 MHz
027 = Reserved
028 = Vaisala RS15, 25 MHz
029-030 = Reserved
031 = Vaisala RS18, 25 MHz
032-036 = Reserved
037 = Vaisala RS21 series, 400 and 1680 MHz
038 = Vaisala RS80-56 (Radio Direction Finding(RDF), 1680 MHz) pressure cell
039 = Vaisala RS80-57 (RDF, 1680 Mhz)
040-044 = Reserved
045 = Sonde used by China; manufactured in China, GZZ-2, also called GZZ-59, 400 MHz

GZZ (P-59) (China Meteorological Administration) - China
046 = Chinese sonde other than GZZ; make and model unknown
047 = COMB radiosonde - like P3-049; see Moltchanov
048 = GZZ - model unknown
049 = Reserved
050 = UK Met. Office MK IIb

Graw - Germany
051 = Graw M60, 27 or 403 MHz
052 = Graw - model unknown
053 = Graw - H50, 27 MHz
054 = Graw - RSG, 403 MHz
055 = Graw - Minisonde DSIFS-87, 403 MHz
056-069 = Reserved for Graw sondes

A-22 Series (Malakhite) - USSR:
070 = A-22 - model unknown
071-072 = Reserved
073 = A-22-III, 403 MHz
074 = A-22-IV, 403 MHz
075-077 = Reserved
078 = A-22-IV.D
079-080 = Reserved

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081 = A-22-VII, 403 MHz
082-084 = Reserved

Astor (Subsidiary of Philips) - Australia:
085 = Astor - model unknown
086 = Astor Raysonde Model T.D.C.
087 = Astor, 72 MHz
088 = Astor, 402 MHz
089 = Astor MkI, 402 MHz
090 = Astor - Type 403
091-099 = Reserved

Atmospheric Instrumentation Research (AIR) - USA
100 = AIR model unknown
101 = AIR Intellisonde, 403 MHz
102 = AIR Intellisonde, 1680 MHz
103-110 = Reserved

Autavox - Italy
111 = Autavox - model unknown
112-115 = Reserved

AWA - Australia
116 = AWA - model unknown
117 = AWA (like Astor Raysonde model T.D.C.)
118-125 = Reserved

Bendix -USA
126 = Bendix - model unknown
127 = Bendix/Friez AN/AMQ-1
128 = Bendix/Friez - model 271-2
129 = Bendix, 403 MHz
130 = Bendix, 1680 MHz)
131-134 = Reserved

Chronometric - Canada
135 = Chronometric - model unknown
136 = Chronometric (introduced 1945)
137-144 = Reserved

Diamond Hinman - USA
145 = Diamond Hinman - model unknown
146 = Diamond Hinman, 72.2 MHz
147 = Diamond Hinman, 403.1 MHz
148-150 = Reserved

Eclipse Radio - Australia
151 = Eclipse - model unknown
152-154 = Reserved

Frieberg - Germany
155 = Frieberg - model unknown
156-164 = Reserved

GZZ (P-59) China Meteorological Administration) - China
165-174 = Reserved

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India Meteorological Department Radiosonde
175 = Indian Clock and fantype sondes - model unknown
176-180 = Reserved
181 = Indian, 401 MHz (introduced 1967)
182 = Indian, 1680 MHz (introduced 1967)
183 = Mark III, 401 MHz (1992 version of SONDE Type 181)
184 = MK 3, 1680 MHz (1992 version of SONDE Type 182)
185-189 = Reserved

United Kingdom Radiosondes - U.K. / Finland
190 = United Kingdom Sonde - make or model unknown
191 = Kew Pattern Mark (MK, MK)I
192 = Kew Pattern MarkII (MKII< UK MKII)
193 = Kew MarkIIB (UK MKIIB)
194 = Mark3 (MK3, U.K. RS3)
195 = Mark4 (Same as Vaisala RS80)-Finish
196-214 = Reserved

LANG - Germany
215 = Lang - model unknown
216-219 = Reserved

Mars 1782 MHz (Also known as MARZ) - USSR
220 = MARS - model unknown
221 = MARS-0 (winds only)
222 = MARS-1 (temperature and winds)
223 = MARS-2 (temperature, humidity, and winds)
224 = MARS-2-1 (Used with Meteor and Meteorit tracking system.)
225 = MARS-2-2 (Used with Meteorit-2 tracking system.)

MRZ (Like MARS, but designed for use with AVK-1 computer based system) - USSR
226 = MRZ- model unknown
227-231 = Reserved
232 = MRZ-2A (winds only)
233 = MRZ-3A (temperature, humidity, and winds)
234-245 = Reserved

Meisei Radiosondes - Japan (info from Indonesia)
246 = Japanese sonde - make or model unknown
247 = Meisei - model unknown
248-256 = Reserved
257 = Meisei RSII76
258 = Meisei RSII85
259 = Reserved

Measurable and Met - France
260 = Measurable - model unknown
261-263 = Reserved
264 = Measurable MH-73A
265 = Metox - model unknown
266 = Metox (introduced in 1947)
267 = Metox (introduced in 1964)
268 = Metox Analog, 403 MHz
269 = Reserved

Metra - Czechoslovakia
270 = Metra - model unknown
271 = Metra 972 (Same as Moltchanov RS-049, but made by Metra Praha.)
272 = Reserved

Moltchanov - USSR
273 = Moltchanov - model unknown
274 = Moltchanov RS-049 (Also known as RZ-049; written P3-049 in Cyrillic.)
275 = Reserved

ONM - France
276 = ONM - model unknown
277-280 = Reserved

Philips Radiosondes - Australia
281 = Philips - model unknown
282 = Philips Mark II
283 = Philips Mark II □
284 = Philips Mark III
285 = Philips RS4-Model I
286 = Philips RS4-Model II
287 = Philips RS4-Model III
288-299 = Reserved

RKZ (or RKS) Series Radiosondes - USSR
300 = RKZ - model unknown
301 = RKZ, 1782 MHz
302 = RKZ-1
303 = RKZ-1A
304 = RKZ-2 (Used with Meteor or Meteorit-1.)
305-310 = Reserved
311 = RKZ-5 (Used with Meteorit-2.)
312-329 = Reserved

RM-12 Radiosondes - Poland
330 = RM-12 model unknown
331-334 = Reserved

RZ Radiosondes - USSR
335 = RZ or RS - model unknown
336 = RZ-042
337 = RZ-049 (Also known as RS-049 and R-049 - see Moltchanov RS-049)
338-344 = Reserved

Space Data Division Radiosondes - USA
400 = Space Data - model unknown
401-415 = Reserved

Swiss Radiosondes - Switzerland
345 = Swiss Sonde - model unknown
346 = Swiss Sonde - model I
347 = Swiss Sonde - model Ia
348 = Swiss Sonde - model II
349 = Swiss Sonde - model III
350 = SRS-400 (Meteolabor)
351-354 = Reserved

VIZ Manufacturing Company Radiosondes - USA

355 = VIZ US Army AN/AMT-1 (no model number), 403 MHz
356 = VIZ US Army AN/AMT-2, model 1000, 403 MHz
357 = VIZ US Army AN/AMT-4A, model 1001, 1680 MHz
358 = VIZ US Navy AN/AMT-7B, model 1002, 403 MHz
359 = VIZ AN/AMQ-9 (XEI) Transponder Radiosonde, model 1003, 1680/403 MHz
360 = VIZ US Army Windsonde, model 1004
361 = VIZ AN/AMQ-9 (XE2) Transponder Radiosonde, model 1005, 1680/403 MHz
362 = VIZ US Army AN/AMT-4B, model 1013, 1680 MHz
363 = VIZ USWB (Vac. tube), model 1021, 403 MHz
364 = VIZ USWB (Vac. tube), model 1022, 1680 MHz
365 = VIZ US Army AN/AMT-2A, model 1023, 403 MHz
366 = VIZ USWB (Vac. tube), model 1030, 72 MHz
367 = VIZ USWB (winds only), model 1031, 1680 MHz
368 = VIZ US Army AN/AMT-12, model 1038, 1680 MHz
369 = VIZ US Army AN/AMT-4C, model 1042, 1680 MHz
370 = VIZ US Army AN/AMT-4D, model 1045, 1680 MHz
371 = VIZ US Navy Rocketsonde, model 1049, 403 MHz
372 = VIZ US Navy AN/AMT-11B, model 1051, 403 MHz
373 = VIZ USWB (Vac. tube), model 1056, 1680 MHz
374 = VIZ USWB (Vac. tube), model 1057, 403 MHz
375 = VIZ USWB (Vac. tube), model 1058, 72.2 MHz
376 = VIZ USWB Windsonde, model 1059, 1680 MHz
377 = VIZ US Navy AN/AMT-11 (DK), model 1060, 403 MHz
378 = VIZ USWB (Vac. tube), model 1062, 1680 MHz
379 = VIZ USWB (Vac, tube), model 1063, 1680 MHz
380 = VIZ USWB (Vac. tube), model 1064, 1680 MHz
381 = VIZ USWB (Vac. tube), model 1065, 403 MHz
382 = VIZ USWB (Vac. tube), model 1066, 403 MHz
383 = VIZ USWB (Vac. tube), model 1067, 72.2 MHz (Shipboard)
384 = VIZ USWB (Vac. tube), model 1068, 1680 MHz
385 = VIZ USWB (Vac. tube), model 1069, 403 MHz
386 = VIZ Canadian AES (Vac. tube), model 1070, 107 MHz (Shipboard)
387 = VIZ USWB (Vac. tube), model 1071, 72.2 MHz, (PTU only)
388 = VIZ USWB (Vac. tube), model 1072, 1680 MHz
389 = VIZ USWB (Vac. tube), model 1073, 1680 MHz, (Baroswitch/Hypsometer)
390 = VIZ USWB (Vac. tube), model 1074, 1680 MHz
391 = VIZ USWB (Vac. tube), model 1075, 403 MHz
392 = VIZ USWB (Vac. tube) Transponder, model 1076, 1680/403 MHz
393 = VIZ USWB (Vac. tube), model 1077, 72.2 MHz, (RADAR shipboard)
394 = VIZ USWB (Vac. tube, pulsed), model 1078,403 MHz, (RADAR shipboard)
395 = VIZ USWB (Vac. tube), model 1079, 1680/403 MHz
396 = VIZ New Zealand, model 1080, 72.2 MHz, (RADAR)
397 = VIZ USWB (Vac. tube), model 1081, 403 MHz
398 = VIZ US Army AN/AMT-4B, model 1089, 1680 MHz
399 = VIZ US Army AN/AMT-4D, model 1090, 1680 MHz
400 = VIZ US Army AN/AMT-12A, model 1091, 1680 MHz
401 = VIZ USWB (Vac. tube), model 1092, 1680 MHz, (BOMEX) first use of Accu-Lok.)
402 = VIZ USWB (Vac. tube), model 1093, 1680 MHz
403 = VIZ USWB (Vac. tube), model 1095-410, 403 MHz
404 = VIZ USWB (Vac. tube), Transponder/Hypsometer model 1096, 1680/403 MHz
405 = VIZ USWB (Vac. tube), model 1097, 72.2 MHz, (RADAR shipboard)
406 = VIZ USWB (Vac. tube, pulsed), model 1098,403 MHz,(RADAR shipboard)
407 = VIZ US Army AN/AMT-9, model 1099, 1680 MHz, (Computed pressure)
408 = VIZ US Army AN/AMT-11E, model 1151, 403 MHz, (RADAR Navy shipboard)

409 = VIZ US Army AN/AMT-4D, model 1190, 1680 MHz
410 = VIZ US Army AN/AMT-12A, model 1191, 1680 MHz
411 = VIZ NOAA-NWS Transistor MDO, model 1192, 1680 MHz
412 = VIZ NOAA-NWS Hypsometer, model 1193, 1680 MHz, introduced dual air duct.
413 = VIZ NOAA-NWS Transistor MDO, model 1195, 403 MHz,RADAR winds
414 = VIZ NWS Transistor MDO Transponder, model 1199, 1680/403 MHz
415 = VIZ NOAA-NWS LoRAN-C, model 1205, 403 MHz
416 = VIZ NOAA-NWS OMEGA, model 1206, 403 MHz
417 = VIZ Decca receiver, model 1207, 403 MHz, RADAR winds
418 = VIZ "Windrosonde"/LoRAN-C, model 1210, 403 MHz, (Dropsonde Beuker)
419 = VIZ "Windrosonde"/OMEGA, model 1211, 403 MHz, (Dropsonde Beuker)
420 = VIZ NOAA-NWS LoRAN-C, model 1220, 403 MHz, (First sonde made by VIZ with solid-state transmitter)
421 = VIZ NOAA-NWS OMEGA, model 1221, 403 MHz
422 = VIZ Automet LoRAN-C (IFYGL), model 1223, 403 MHz
423 = VIZ Automet OMEGA (Gate), model 1224, 403 MHz
424 = VIZ Egypt - "Firefly", model l239, 403 MHz, RADAR winds
425 = VIZ US Army AN/AMT-4, model 1290, 1680 MHz
426 = VIZ US Army AN/AMT-12, model 1291, 1680 MHz
427 = VIZ NOAA-NWS baseline, model 1292-410, 1680 MHz
428 = VIZ NOAA-NWS Accu-Lok, model 1292-510, 1680 MHz
429 = VIZ NOAA-NWS Hypsometer, model 1293, 1680 MHz
430 = VIZ NOAA-NWS Windsonde model 1294
431 = VIZ NOAA-NWS, model 1295, 403 MHz
432 = VIZ NOAA-NWS Transponder/Hypsometer, model 1296,1680/403 MHz
433 = VIZ NOAA-NWS, model 1298, 403 MHz pulsed, RADAR winds
434 = VIZ NOAA-NWS Transponder, model 1299, 1680/403 MHz
435 = VIZ NOAA-dropsonde, model 1315-, 403.5 MHz, capacitive aneroid, OMEGA winds, manufactured for NOAA & USAF
436 = VIZ NOAA-dropsonde, model 1315-, 404.5 MHz, capacitive aneroid, OMEGA winds, manufactured for NOAA & USAF
437 = VIZ NOAA-dropsonde, model 1315-, 405.5 MHz, capacitive aneroid, OMEGA winds, manufactured for NOAA & USAF
438 = VIZ Automet LoRAN-C, model 1323, 403 MHz, CMOS switching
439 = VIZ Automet OMEGA, model 1324, 403 MHz, CMOS switching
440 = VIZ Automet VLF/OMEGA, model 1332, 403 MHz, CMOS switching

441 = VIZ NWS baseline, model 1392-410, 1680 MHz
442 = VIZ NWS Hypsometer, baseline, model 1393-410, 1680 MHz, field baselined
443 = VIZ NWS Hypsometer, Accu-Lok, model 1393-510, 1680 MHz, factory
baselined sensors
444 = VIZ NWS Windsonde, model 1394-410, 1680 MHz
445 = VIZ NWS baseline, model 1395-410, 403 MHz
446 = VIZ NWS Accu-Lok, model 1395-510, 403 MHz
447 = VIZ NWS Transponder, baseline, model 1399-410, 1680 MHz
448 = VIZ NWS Transponder, Accu-Lok, model 1399-510, 1680 MHz
449 = VIZ Time sequenced (1/2 sec.), model 1492-512,
1680MHz, used by Israel Ministry of Defense
450 = VIZ Time sequenced (1/2 sec.), model 1492-522, 1680MHz, used in Turkey
451 = VIZ MKI/digital/PTU, model 1507-510, 403 MHz
452 = VIZ MKI/digital/LoRAN-C, model 1523-510, 403 MHz
453 = VIZ MKI/digital/OMEGA, model 1524-510, 403 MHz
454 = VIZ MKII/digital/PTU (MDS), model 1540-510, 1680 MHz
455 = VIZ MKII/digital/PTU, model 1540-511, 1680 MHz
456 = VIZ MKII/digital/LoRAN-C, model 1540-513, 1680 MHz
457 = VIZ MKII/digital/OMEGA, model 1540-513, 1680 MHz
458 = VIZ MKII/digital/PTU w/cutoff, model 1540-522,
1680 MHz, contains user-set altitude cutoff
459 = VIZ MKII/digital/PTU and ozone, model 1540-523, 1680 MHz
460 = VIZ MKII/digital/PTU W/o dereeler
461 = VIZ MKII/digital/PTU (4 inputs), model 1540-526, 1680 MHz
462 = VIZ MKII/digital/LoRAN (4 thermistors), model 1540-528, 1680 MHz
463 = VIZ MKII/LoRAN-C (MDS), model 1543-510, 403 MHz
464 = VIZ MKII/LoRAN-C, model 1543-511, 403 MHz
465 = VIZ MKII/LoRAN-C w/cutoff, model 1543-522,
403 MHz, contains user-set altitude cutoff
466 = VIZ MKII/LoRAN-C w/ozone, model 1543-523, 403 MHz
467 = VIZ MKII/LoRAN-C w/o dereeler, model 1543-525, 403 MHz
468 = VIZ MKII/LoRAN-C (4 inputs), model 1543-526, 403 MHz
469 = VIZ MKII/LoRAN-C (4 thermistors), model 1543-528, 403 MHz
470 = VIZ MKII OMEGA, model 1544-511, 403 MHz
471 = VIZ MKII OMEGA (with/cutoff), model 1544-522, 403 MHz
472 = VIZ MKII OMEGA (w/ozone), model 1544-523, 403 MHz
473 = VIZ MKII OMEGA (w/o dereeler), model 1544-525, 403 MHz
474 = VIZ MKII OMEGA (4 inputs), model 1544-526, 403 MHz
475 = VIZ MKII/VLF/OMEGA (MDS), model 1545-510, 403 MHz
476 = VIZ MKII/VLF/OMEGA, model 1545-511, 403 MHz
477 = VIZ MKII/VLF/OMEGA,(w/cutoff), model 1545-522, 403 MHz
478 = VIZ MKII/VLF/OMEGA (w/o dereeler), model 1545-525, 403 MHz
479 = VIZ MKII/VLF/OMEGA (4 inputs), model 1545-526, 403 MHz
480 = VIZ MKII/PTU, model 1547-511, 403 MHz
481 = VIZ MKII/PTU (w/cutoff), model 1547-522, 403 MHz
482 = VIZ MKII/PTU (w/ozone), model 1547-523, 403 MHz
483 = VIZ MKII/PTU (w/o dereeler), model 1547-525, 403 MHz
484 = VIZ MKII/PTU (4 inputs), model 1547-526, 403 MHz
485 = VIZ US Army MDS RDF, model 1560-510, 1680 MHz, MDS system
486 = VIZ US Army MDS/LoRAN-C, model 1563-510,403 MHz, MDS system
487 = VIZ US Army MDS/OMEGA, model 1564-510, 403 MHz, MDS system
488 = VIZ USAF Transponder Windsonde, model 1799-310,
1680 MHz, GMD-5 MSS system
489 = VIZ B-2 (RDF, 1680 MHz) capacitance aneroid pressure sensor
490-550 = Reserved for future VIZ sondes.
551-565 = Reserved for future Space Data Division sondes.

Weathermeasure Radiosondes - USA
566 = Weathermeasure, model unknown
567-570 = Reserved

Whitely Electric Radiosondes
571 = Whitely, model unknown
572 = Whitely, mark II
573-575 = Reserved
576-799 = Reserved

800-898 = NMC INSTRUMENT CODES (NMC CODE + 800 WHENEVER THE DATA SOURCE CODE IS "00" AND OBSERVATION IS PRIOR TO 1/22/92 1200 UTC).
900-998 = NMC INSTRUMENT CODES (NMC CODE + 900 WHENEVER The DATA SOURCE CODE IS "00" AND OBSERVATION IS AFTER 1/22/92 1200 UTC).
999 = Missing

900 to 999 = From WMO GTS code table 3685, 900 added to numbers in the code table. Starting 13 October 1999.

Table 3685 -$r_a r_a$ (Radiosonde/sounding system used)

900	Reserved
901	Reserved
902	No radiosonde B passive target (e.g. reflector)
903	No radiosonde B active target (e.g. transponder)
904	No radiosonde B passive temperature-humidity profiler
905	No radiosonde B active temperature-humidity profiler
906	No radiosonde B radio-acoustic sounder
907-908	No radiosonde B . . . (reserved)
909	No radiosonde B system unknown or not specified
910	VIZ type A pressure-commutated (USA)
911	VIZ type B time-commutated (USA)
912	RS SDC (Space Data Corporation B USA)
913	Astor (no longer made C Australia)
914	VIZ Mark I MICROSONDE (USA)
915	EEC Company type 23 (USA)
916	Elin (Austria)
917	Graw G. (Germany)
918	Reserved for allocation of radiosonde
919	Graw M60 (Germany)
920	Indian Meteorological Service MK3 (India)
921	VIZ/Jin Yang Mark I MICROSONDE (South Korea)
922	Meisei RS2-80 (Japan)
923	Mesural FMO 1950A (France)
924	Mesural FMO 1945A (France)
925	Mesural MH73A (France)
926	Meteolabor Basora (Switzerland)
927	AVK-MRZ (Russian Federation)
928	Meteorit Marz2-1 (Russian Federation)
929	Meteorit Marz2-2 (Russian Federation)

:
:

930	Oki RS2-80 (Japan)
931	VIZ/Valcom type A pressure-commutated (Canada)
932	Shanghai Radio (China) or GZZ
933	UK Met Office MK3 (UK)
934	Vinohrady (Czechoslovakia)
935	Vaisala RS18 (Finland)
936	Vaisala RS21 (Finland)
937	Vaisala RS80 (Finland)
938	VIZ LOCATE Loran-C (USA)
939	Sprenger E076 (Germany)
940	Sprenger E084 (Germany)
941	Sprenger E085 (Germany)
942	Sprenger E086 (Germany)
943	AIR IS - 4A - 1680 (USA)
944	AIR IS - 4A - 1680 X (USA)
945	RS MSS (USA)
946	Air IS - 4A - 403 (USA)
947	Meisei RS2-91 (Japan)
948	VALCOM (Canada)
949	VIZ MARK II (USA)
950	GRAW DFM-90 (Germany)
951	VIZ-B2 (USA)
952	Vaisala RS80-57H
953-959	Reserved for allocation of radiosondes
960	Vaisala RS80/MicroCora (Finland)
961	Vaisala RS80/DigiCora or Marwin (Finland)
962	Vaisala RS80/PCCora (Finland)
963	Vaisala RS80/Star (Finland)
964	Orbital Sciences Corporation, Space Data Division, transponder radiosonde, type 909-11-XX, where XX correspond to the model of the instrument (USA)
965	VIZ transponder radiosonde, model number 1499B520 (USA)
966-970	Reserved for additional automated sounding systems
971	RS90/DigiCora or Marwin (Finland)
972	RS90/PC-Cora (Finland)
973	RS90/Autosonde (Finland)
974	RS90/Star (Finland)
975-989	Reserved for additional automated sounding systems
990	Radiosonde not specified or unknown
991	Pressure-only radiosonde
992	Pressure-only radiosonde plus transponder
993	Pressure-only radiosonde plus radar-reflector
994	No-pressure radiosonde plus transponder
995	No-pressure radiosonde plus radar-reflector
996	Descending radiosonde
997-999	Reserved for allocation of sounding systems with incomplete sondes

NOTES:

(1) References to countries in brackets indicate the manufacturing location rather than the country using the instrument.

Position: 88
Element: QC EFFORT

Definition: Quality Control Effort -- Intended for use in conjunction with the DATA SRCE element for determining if the appendices of this documentation must be referenced for decoding the ELEMENT QUALITY flags.

If QC EFFORT = 0, the ELEMENT QUALITY flags defined within the body of this document apply regardless of the DATA SRCE.

If the QC EFFORT > 0, the ELEMENT QUALITY flags are defined in Quality Statement, paragraph 10 of this document. Range of values is 0-9.

0 = NCDC QC after 12/92
1 = NCDC QC prior to 1/93
2 = QC at source
3 = Complex Quality Control (CARDS)
4 = NCDC Radiation Corrections Dataset (DSI-6348)
5-7 = reserved
8 = no QC
9 = Unknown

Position: 89-90
Element: DATA SRCE

Definition: DATA SOURCE/FORMAT -- This field indicates the data source. See appendices keyed to the data source values for details concerning the original source.

Range of values is 00-99.

00 = DSI-6103 (NMC)
01 = DSI-6201 (U. S. National data set prior to 1/93)
02 = Standard Nonreal-Time Data Transfer Format (Mostly MicroART - post 12/92)
03 = Mini Rawin System Format (MRS)
04 = DSIAT/WDAT Format
05 = RIA
06 = Manuscript
07 = Range standard
08 = MIT
09 = NCAR
10 = DSIF54
11 = DSIF56
12 = other PC-based, semi-automated reduction system
13 = Canadian upper air archives
14 = USSR GTS
15 = Peoples' Republic of China (PRC)
16 = Argentina
17 = British Antarctica
18 = Hong Kong
19 = Korea
:
:

20 = Hungary
21 = The Netherlands
22 = Australian GTS
23 = Australian National Data Set
24 = Brazil
25 = USSR National
26 = DSI-5683 (from DSI5801 - NCDC)
27-49 = reserved
50 = NWS Gateway
51-98 = reserved
99 = unknown

Position: 91-102
Element: CORTYP

Definition: TYPE OF CORRECTION -- The type of correction applied to individual data elements by automated systems or observers.

Currently, corrections which may be applied to the data are not being transferred with the data.

Range of values is 00-99.

Position: 91-92
Element: CORTYP-P

Definition: PRESSURE CORRECTIONS

00 = No correction applied
01 = NASA temperature correction
02 = ECMWF temperature correction
99 = Missing/unknown

Position: 93-94
Element: CORTYP-Z

Definition: HEIGHT CORRECTIONS

00 = No correction applied
01 = Local gravity correction02 = Standard gravity correction
03 = NCDC recalculation for temperature correction
99 = Missing/unknown

Position: 95-96
Element: CORTYP-T

Definition: TEMPERATURE CORRECTIONS

00 = No correction applied
01 = CIMO solar corrected and CIMO infrared corrected
02 = CIMO solar corrected and infrared corrected
03 = CIMO solar corrected only
04 = Solar and infrared corrected automatically by radiosonde system
05 = Solar corrected automatically by radiosonde system
06 = Solar and infrared corrected as specified by country
07 = Solar corrected as specified by country
08-23 = RESERVED
:
:

24 = NCDC temperature correction for thermistor radiation errors
99 = Missing/unknown

Position: 97-98
Element: CORTYP-H

Definition: HUMIDITY CORRECTIONS

00 = No corrections applied
01 = NASA lag correction
02 = EMCWF lag correction
03 = NMC lag correction
99 = Missing/unknown

Position: 99-100
Element: CORTYP-DSI

Definition: DEW POINT CORRECTIONS

00 = No corrections applied
01 = NASA lag correction
02 = EMCWF lag correction
03 = NMC lag correction
99 = Missing/unknown

Position: 101-102
Element: CORTYP-W
Definition: WIND CORRECTIONS

00 = No corrections applied
01 = Elevation angle correction
02 = Ranging correction
99 = Missing/unknown

Position: 103-105
Element: ADD RECS

Definition: NUMBER OF ADDITIONAL RECORDS -- Number of additional records remaining in this observation. If an observation contains 175 or less levels, the additional record number will be 000. If an observation contains more than 175 levels, the first record will indicate how many records to follow. This additional record number will decrease by 1 until the last record's additional record number will be 000.

Range of values is 000-999.

Position: 106-108
Element: NUM LVLS

Definition: NUMBER OF LEVELS -- This is the number of data levels found in the current physical record. The range of values is 001-175. The maximum number of levels per physical record is 175. High-vertical-resolution observations may consist of more than one physical record.

NCDC Standard Archive Format - Data Portion

Position: 1
:
:

Element: LVL QUAL

Definition: LEVEL QUALITY INDICATOR -- Denotes the results of any quality controls applied to this level.

Range is 0-9 as follows:

0 = All available elements are correct
1 = One or more elements are suspect; no replacement level exists
2 = One or more elements are suspect; a replacement level exists.
3 = Operator (observer) deleted, no replacement level follows
4 = NCDC edit/quality control has determined this level to be highly suspect.
5 = Wrong tropopause level; no replacement
6 = Wrong tropopause level; a replacement exists
7 = Unknown
8 = Replacement level
9 = The level has not been checked

Position: 2-6
Element: ELPSD TIME

Definition: TIME -- The elapsed time since the release of sounding in whole minutes and seconds (mmmss). Missing is indicated by "99999".

Range of values is 00000-99999; range of seconds (ss) is 00-59 except 99 when missing.

Position: 7-12
Element: PRESS

Definition: PRESSURE -- Atmospheric pressure at the current level in hundredths of hectopascals (0.01 millibars). Missing is indicated by "999999".

Range of values is 000000-999999.

Position: 13-19
Element: HGT

Definition: HEIGHT -- Geopotential height of the current level in whole geopotential meters (MSL); below mean sea level heights are expressed as a negative number. Missing is indicated by "-999999". Each entry of height contains a "+" or "-" sign in the left-most position. The height is right-justified. When applicable, zeros are placed between the sign and first digit of the height, eg., +031137 = 31137 meters, -000127 = 127 meters below mean sea level.

Range is all numeric values between -999999 and +999999.

Position: 20-24
Element: TEMP

Definition: TEMPERATURE -- The air temperature at the current level in degrees and tenths Celsius. Missing is indicated by "+9999". Each entry of temperature contains a leading "+" or "-" sign in the left-most position. The temperature is right-justified. When applicable, zeros are placed between the

sign and the first digit of the temperature, e.g., +0012 = 1.2C, -0697 = -69.7C.

Range is all numeric values between -9999 and +9999.

Position: 25-28
Element: REL HUM

Definition: RELATIVE HUMIDITY -- The relative humidity at the current level to 0.1 percent. Missing is indicated by "9999".

Range of values is 0000-9999.

Position: 29-31
Element: DPDP

Definition: DEW-POINT DEPRESSION -- The dew-point depression at the current level in degrees and tenths Celsius. Missing is indicated by "999".

Range of values is 000-999.

Position: 32-34
Element: WND DIR

Definition: WIND DIRECTION -- Direction of the wind at the current level in whole degrees (nearest five degrees for observations received through GTS). Missing is indicated by "999".

Range of values is 000-360, 399, and 999. (Direction when wind is calm is 000; when direction is variable 399 is entered.)

Position: 35-38
Element: WND SPD

Definition: WIND SPEED -- Speed of the wind in meters per second and tenths. Missing is indicated by "9999".

Range of values is 0000-9999.

Position: 39-40
Element: TYP LVL

Definition: TYPE OF LEVEL -- The code indicating the reason for selection of the level.

Range of values is 00-99.

00 = Operator deleted level
01 = Operator added level
02 = Aircraft report
03 = Dropsonde
04 = Rocketsonde
05 = Profiler
06 = reserved
07 = reserved
08 = reserved
09 = Begin missing data (all elements)
:
:

10 = End missing data (all elements)
11 = Begin missing temperature data/doubtful altitude
12 = End missing temperature data
13 = Begin missing relative humidity/dew-point depression data
14 = End missing relative humidity/dew-point depression data
15 = Begin doubtful altitude data
16 = Begin doubtful temperature, altitude data
17 = End doubtful temperature data
18 = reserved
19 = reserved
20 = Interpolated (generated) mandatory pressure level
21 = Interpolated (generated) level other than a mandatory pressure level
22 = Highest level reached before balloon descent because of icing or
23 = Balloon re-ascended beyond previous highest level
24 = Base pressure for stability index.
25 = Zero-degree crossing for the RADAT message.
26 = Tropopause
27 = Maximum wind level
28 = Below surface level
29 = reserved
30 = reserved
31 = Surface level
32 = Mandatory pressure level
33 = Within 20 hectopascals (mb.) of the surface
34 = Flight termination level
35 = Relative humidity level selection terminated
36 = Pressure less than 10 hectopascals
37 = Mandatory temperature level
38 = Significant temperature level
39 = Significant relative humidity level
40 = Winds at constant height (above ground level)
41 = Mandatory wind level
42 = Significant wind level
43 = Incremental wind level (e.g., 1-minute, fixed regional)
44 = Significant thermodynamic level (reason for selection is unknown)
45 = High resolution data sample
46 = Other/unspecified
47 = Generated winds at incremental heights
48-50 = reserved

Codes 51-99 are used for those levels that satisfy the criteria for multiple types.

51-58 = reserved
59 = Begin missing data (all elements) at a tropopause level.
60 = End missing data (all elements) at a tropopause level.
61 = Begin missing temperature data at a tropopause level.
62 = End missing temperature data at a tropopause level.
63 = Begin missing relative humidity/dew-point depression data
at a tropopause level.
64 = End missing relative humidity/dew-point depression data at
a tropopause level.
65 = Begin doubtful altitude data at a tropopause level.
66 = Begin doubtful temperature, altitude data at a tropopause level.
67 = End doubtful temperature data at a tropopause level.
68 = reserved
69 = Begin missing data (all elements) at a mandatory pressure level.
:
:

70 = End missing data (all elements) at a mandatory pressure level.
71 = Begin missing temperature data at a mandatory pressure level.
72 = End missing temperature data at a mandatory pressure level.
73 = Begin missing relative humidity/dew-point depression data at
a mandatory pressure level.
74 = End missing relative humidity/dew-point depression data at
a mandatory pressure level.
75 = Begin doubtful altitude data at a mandatory pressure level.
76 = Begin doubtful temperature, altitude data at a mandatory pressure level.
77 = End doubtful temperature data at a mandatory pressure level.
78-80 = reserved
81 = Level satisfies requirements for selection as a mandatory pressure level
and as a tropopause level.
82 = Level satisfies requirements for selection as a mandatory pressure level
and as a significant level.
83 = Level satisfies requirements for selection as a mandatory pressure level
and as the surface level.
84 = Highest level reached before balloon descent because of icing or
turbulence and is a mandatory level.
85 = Balloon re-ascended beyond previous highest level and is a mandatory
level.
86 = Base pressure for stability index and is a mandatory level.
87 = Zero-degree crossing for the RADAT message and is a mandatory level.
88 = Maximum wind level and is a mandatory level.
89 = Tropopause level, maximum wind level, and mandatory level.
90 = Tropopause level and is a maximum wind level.
91-99 = reserved

Position: 41-54
Element: ELEMENT QLTY

Definition: ELEMENT QUALITY FLAGS -- These fields contain the result of any quality control procedures for identifying suspect and doubtful individual elements, and elements that failed QC checks Descriptions of the element quality flags are contained in the appendices which are keyed to the DATA SRCE field. If, for example, the DATA SRCE is 01 (source = DSI6201), the appendix containing the element quality flag descriptions is Appendix 01; if DATA SRCE is 02 the associated appendix is numbered 02, etc. The Element Quality is assigned a value equivalent to the least correct flag.

The range of values is listed in each applicable appendix. Although the range of values for element quality flags are specific for each data source, as a general rule, any combination of ASCII characters except lowercase letters and "#" is allowed in this element.

Flags set as a result of the Complex Quality Control process, QC EFFORT TYPE 3, are described in Appendix B.

41-42 EQET (Elapsed Time)
43-44 EQP (Pressure/Ranging)
45-46 EQH (Height)
47-48 EQT (Temperature)
49-50 EQU (Humidity)
51-52 EQD (Dew-point Depression)
53-54 EQWDS (Wind Direction/Speed)
55-56 NCDC USE Reserved for internal NCDC use

GENERAL FORMAT NOTES

1. All fields must be right-justified (least-significant digit in the right-most position) unless specified otherwise.

2. All elements defined as numeric must be filled with leading zeros (not blanks) whenever the value stored does not require the use of all positions of the element.

3. Decimal points are not entered. The decimal point is implied by the position in the field.

4. Even though the legal range of permissible characters is presented in this manual, sometimes "illegal" characters might still be found. This convention was adopted in order that data as originally received might be preserved. Where appropriate, a new value will be suggested.

CONVENTIONS AND CONVERSION FORMULAS

Latitude and Longitude

A. The following conventions were employed:

(1) When a latitude is exactly 00, the hemisphere entry will be "N".

(2) When a longitude is exactly 00, the hemisphere entry will be "W".

(3) When a longitude is exactly 180, the hemisphere entry will be "E".

(4) The longitude of an observation taken at the North Pole (90N) or at the South Pole (90S) will be stored as 180E longitude.

B. Latitude and longitude expressed as degrees and minutes are divided by 60 to convert to decimal equivalents.

Winds

A. Conversion of knots to meters-per-second:

1 knot = 0.514791 m. $sec.^{-1}$

Element Quality Control Flags Set By CQC

The Complex Quality Control (CQC) process run by the Comprehensive Aerological Reference Data Set (CARDS) project reset all previous element quality control flags. The flagging convention used by CQC follows:

00 = unchecked value
01 = correct value
02 = suspect value
03 = erroneous value
04 = corrected value (original value is erroneous)
05 = calculated value (original value was missing)
09 = missing value

Values with CQC flags 1, 4, or 5 are to be considered correct.

Values with flag 3 will be corrected in a subsequent entry for the level and it will be indicated with a LVL QUAL indicator of 8. The corrected value will be flagged 4.

Where possible values that were missing, flag 9, will have a calculated replacement in a subsequent entry for the level being indicated with a LVL QUAL indicator of 8. The replacement value will be flagged 5.

NOTE: The wind flag consists of two parts. The units position of the value is the wind speed flag and the tens position is the wind direction flag. For example, a wind flag of 12 would indicate that the wind direction is correct (1) but the wind speed is considered suspect (2).

3. Start Date: 19469999

4. Stop Date: Ongoing.

5. Coverage: Global

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: None.

10. Quality Statement:

In general, the following National Climatic Data Center (NCDC) quality control flags apply only to those observations that indicate QC at NCDC after to 12/92 ("0" in the QC EFFORT field):

NCDC ELEMENT QUALITY FLAGS (post 12/92)

a. These flags identify the result of quality control procedures performed on the element data. The following element flag scheme allows for the employment of numerical differentiation and assessment while preserving an audit trail for edited data. The quality control flags fall into three distinct categories; discrepancies which are corrected, discrepancies which are not corrected, and special considerations. In most cases, each flag number is unique to the element. They are listed below by element. If an entire level is deleted, the unique flag will remain for the element which caused the level deletion and the remaining elements will be given delete flags.

(1) First Category - Flags 01-40

Discrepancies which are corrected by the quality control software are assigned flag values between 01 and 40. Odd numbers indicate the discrepancies that were corrected automatically via software and even numbers indicate the discrepancies that were corrected via manual intervention.

(2) Second Category - Flags 51-89

Discrepancies which are flagged by the quality control software that are not corrected are assigned flag values between 51 and 89. These discrepancies are the same as 01 through 39. Odd numbers indicate the discrepancies were identified but not corrected. Even numbers indicate the discrepancies were identified and reviewed manually but corrections were not made. If manual corrections are made, the flags are updated to the appropriate flags in the first category.

Example: an element has a flagged value of 61. If this discrepancy is reviewed manually and the value is not changed the flag becomes 62, if the value is changed the flag becomes 12.

(3) Deletion and Special Category - Flags 00, 40-50 and 90-99

Flags 00, 41-50, and 90-97 are as described below:

00 = element quality controlled, no discrepancies;
41-49 = element deleted automatically;
50 = element deleted manually;
90-97 = indicates the quality control results of earlier processes
99 = element not quality controlled;

b. Quality control flags are divided into the 4 classifications as described below:

(1) Syntax check - checks data for syntax discrepancies such as readable characters, key punch errors, etc.

(2) Plausibility check - analyzes each element independently of other elements. Values are flagged which can never exist, are not within a certain limit, or do not agree with a first guess field.

(3) Contradiction check - analyzes two or several parameters at the same point. Specific flags that define specific error states are assigned to the element(s) in question.

(4) Diagnostic check - checks values using diagnostic equations or analyzes which the data are to obey at least approximately. Specific flags that define specific error states are assigned to the element(s) in question.

c. A detailed list of quality control flags follows by element:

Elapsed time

MANUAL

FLAG	DISCREPANCY DESCRIPTION	CORRECTED	REVIEW
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	reserved	Auto	No
08	reserved	Manual	Yes
09	elapsed time decreasing by level	Auto	No
10	elapsed time decreasing by level	Manual	Yes
11	slow accession rate	Auto	No
12	slow accession rate	Manual	Yes
13	fast accession rate	Auto	No
14	fast accession rate	Manual	Yes
15	large variability in accession rate	Auto	No
16	large variability in accession rate	Manual	Yes
17-34	reserved		
35	suspect surface data	Auto	No
36	suspect surface data	Manual	Yes
37-40	reserved		
41-50	See the DELETE CODES at the end of this appendix.		
51	original value missing	No	No
52	original value missing	No	Yes
53	syntax	No	No
54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	reserved	No	No
58	reserved	No	Yes
59	elapsed time decreasing by level	No	No
60	elapsed time decreasing by level	No	Yes
61	slow accession rate	No	No
62	slow accession rate	No	Yes
63	fast accession rate	No	No
64	fast accession rate	No	Yes
65	large variability in accession rate	No	No
66	large variability in accession rate	No	Yes
67-84	reserved		
85	suspect surface data	No	No
86	suspect surface data	No	Yes
87-89	reserved		

Source-of-data quality control flags, when applicable:

90 Automatic QC at source (Field 19); determined to be correct.
91 Manual QC at source (Field 19); determined to be correct.

92 Automatic QC at source (Field 19); determined to be suspect.
93 Manual QC at source (Field 19); determined to be suspect.
94 Automatic QC at source (Field 19); determined to be incorrect.
95 Manual QC at source (Field 19); determined to be incorrect.
96 Automatic QC at source (Field 19); element replaced.
97 Manual QC at source (Field 19); element replaced.
98 QC at source (Field 19) is unknown/undetermined.
99 Element has not been quality controlled.

Pressure

MANUAL

FLAG	DISCREPANCY DESCRIPTION	CORRECTED	REVIEW
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	pressure greater than surface pressure	Auto	No
08	pressure greater than surface pressure	Manual	Yes
09	balloon burst	Auto	No
10	balloon burst	Manual	Yes
11	duplicate pressure levels	Auto	No
12	duplicate pressure levels	Manual	Yes
13-26	reserved		
27	flight did not reach required level	Auto	No
28	flight did not reach required level	Manual	Yes
29	leaking pressure cell detected	Auto	No
30	leaking pressure cell detected	Manual	Yes
31	no level within 20 mb of surface	Auto	No
32	no level within 20 mb of surface	Manual	Yes
33	reserved		
34	reserved		
35	suspect surface data	Auto	No
36	suspect surface data	Manual	Yes
37-40	reserved		
41-50	See the DELETE CODES at the end of this appendix.		
51	original value missing	No	No
52	original value missing	No	Yes
53	syntax	No	No
54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	pressure greater than surface pressure	No	No
58	pressure greater than surface pressure	No	Yes
59	balloon burst	No	No
60	balloon burst	No	Yes
61	duplicate pressure levels	No	No
62	duplicate pressure levels	No	Yes
63-76	reserved		
77	flight did not reach required level	No	No
78	flight did not reach required level	No	Yes
79	leaking pressure cell detected	No	No
80	leaking pressure cell detected	No	Yes
81	no level within 20 mb of surface	No	No
82	no level within 20 mb of surface	No	Yes

:
:

83	reserved		
84	reserved		
85	suspect surface data	No	No
86	suspect surface data	No	Yes
87-89	reserved		

Source-of-data quality control flags, when applicable:

90	Automatic QC at source (Field 19); determined to be correct.
91	Manual QC at source (Field 19); determined to be correct.
92	Automatic QC at source (Field 19); determined to be suspect.
93	Manual QC at source (Field 19); determined to be suspect.
94	Automatic QC at source (Field 19); determined to be incorrect.
95	Manual QC at source (Field 19); determined to be incorrect.
96	Automatic QC at source (Field 19); element replaced.
97	Manual QC at source (Field 19); element replaced.
98	QC at source (Field 19) is unknown/undetermined.
99	Element has not been quality controlled.

Height

MANUAL

FLAG	DISCREPANCY DESCRIPTION	CORRECTED	REVIEW
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	reserved		
08	reserved		
09	height decreasing by level	Auto	No
10	height decreasing by level	Manual	Yes
11	hydrostatic imbalance - single level	Auto	No
12	hydrostatic imbalance - single level	Manual	Yes
13	hydrostatic imbalance - adjacent lvls	Auto	No
14	hydrostatic imbalance - adjacent lvls	Manual	Yes
15	hydrostatic imbalance - single level, both height and temperature	Auto	No
16	hydrostatic imbalance - single level, both height and temperature	Manual	Yes
17	hydrostatic imbalance - adjacent lvls, height and temperature	Auto	No
18	hydrostatic imbalance - adjacent lvls, height and temperature	Manual	Yes
19-28	reserved		
29	zero height	Auto	No
30	zero height	Manual	Yes
31	double termination height	Auto	No
32	double termination height	Manual	Yes
33	temporal shift in height	Auto	No
34	temporal shift in height	Manual	Yes
35	suspect surface data	Auto	No
36	suspect surface data	Manual	Yes
37-40	reserved		
41-50	See the DELETE CODES at the end of this appendix.		
51	original value missing	No	No

:

52	original value missing	No	Yes
53	syntax	No	No
54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	reserved		
58	reserved		
59	height decreasing by level	No	No
60	height decreasing by level	No	Yes
61	hydrostatic imbalance - single level	No	No
62	hydrostatic imbalance - single level	No	Yes
63	hydrostatic imbalance - adjacent lvls	No	No
64	hydrostatic imbalance - adjacent lvls	No	Yes
65	hydrostatic imbalance - single level, both height and temperature	No	No
66	hydrostatic imbalance - single level, both height and temperature	No	Yes
67	hydrostatic imbalance - adjacent lvls, height and temperature	No	No
68	hydrostatic imbalance - adjacent lvls, height and temperature	No	Yes
69-78	reserved		
79	zero height	No	No
80	zero height	No	Yes
81	double termination height	No	No
82	double termination height	No	Yes
83	temporal shift in height	No	No
84	temporal shift in height	No	Yes
85	suspect surface data	No	No
86	suspect surface data	No	Yes
87-89	reserved		

Source-of-data quality control flags, when applicable:

90	Automatic QC at source (Field 19); determined to be correct.
91	Manual QC at source (Field 19); determined to be correct.
92	Automatic QC at source (Field 19); determined to be suspect.
93	Manual QC at source (Field 19); determined to be suspect.
94	Automatic QC at source (Field 19); determined to be incorrect.
95	Manual QC at source (Field 19); determined to be incorrect.
96	Automatic QC at source (Field 19); element replaced.
97	Manual QC at source (Field 19); element replaced.
98	QC at source (Field 19) is unknown/undetermined.
99	Element has not been quality controlled.

Temperature

MANUAL

FLAG	**DISCREPANCY DESCRIPTION**	**CORRECTED**	**REVIEW**
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	extraordinary lapse rate - temp shift	Auto	No
08	extraordinary lapse rate - temp shift	Manual	Yes

:

09	wet-bulb effect superadiabatic	Auto	No
10	wet-bulb effect superadiabatic	Manual	Yes
11	hydrostatic imbalance - single level	Auto	No
12	hydrostatic imbalance - single level	Manual	Yes
13	hydrostatic imbalance - adjacent lvls	Auto	No
14	hydrostatic imbalance - adjacent lvls	Manual	Yes
15	hydrostatic imbalance - single level, both height and temperature	Auto	No
16	hydrostatic imbalance - single level, both height and temperature	Manual	Yes
17	hydrostatic imbalance - adjacent lvls, height and temperature	Auto	No
18	hydrostatic imbalance - adjacent lvls, height and temperature	Manual	Yes
19	superadiabatic at termination	Auto	No
20	superadiabatic at termination	Manual	Yes
21	reserved		
22	reserved		
23	autoconvective lapse rate	Auto	No
24	autoconvective lapse rate	Manual	Yes
25	suspicious number of superadiabats	Auto	No
26	suspicious number of superadiabats	Manual	Yes
27	superadiabatic lapse rate	Auto	No
28	superadiabatic lapse rate	Manual	Yes
29	extraordinary lapse rate from sfc	Auto	No
30	extraordinary lapse rate from sfc	Manual	Yes
31	erratic temperature trace	Auto	No
32	erratic temperature trace	Manual	Yes
33	temporal temperature shift	Auto	No
34	temporal temperature shift	Manual	Yes
35	suspect surface data	Auto	No
36	suspect surface data	Manual	Yes
37-40	reserved		
41-50	See the DELETE CODES at the end of this appendix.		
51	original value missing	No	No
52	original value missing	No	Yes
53	syntax	No	No
54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	extraordinary lapse rate - temp shift	No	No
58	extraordinary lapse rate - temp shift	No	Yes
59	wet-bulb effect superadiabatic	No	No
60	wet-bulb effect superadiabatic	No	Yes
61	hydrostatic imbalance - single level	No	No
62	hydrostatic imbalance - single level	No	Yes
63	hydrostatic imbalance - adjacent lvls	No	No
64	hydrostatic imbalance - adjacent lvls	No	Yes
65	hydrostatic imbalance - single level, both height and temperature	No	No
66	hydrostatic imbalance - single level, both height and temperature	No	Yes
67	hydrostatic imbalance - adjacent lvls, height and temperature	No	No
68	hydrostatic imbalance - adjacent lvls, height and temperature	No	Yes
69	superadiabatic at termination	No	No

70	superadiabatic at termination	No	Yes
71	reserved		
72	reserved		
73	autoconvective lapse rate	No	No
74	autoconvective lapse rate	No	Yes
75	suspicious number of superadiabats	No	No
76	suspicious number of superadiabats	No	Yes
77	superadiabatic lapse rate	No	No
78	superadiabatic lapse rate	No	Yes
79	extraordinary lapse rate from sfc	No	No
80	extraordinary lapse rate from sfc	No	Yes
81	erratic temperature trace	No	No
82	erratic temperature trace	No	Yes
83	temporal temperature shift	No	No
84	temporal temperature shift	No	Yes
85	suspect surface data	No	Yes
86	suspect surface data	No	Yes
87-89	reserved		

Source-of-data quality control flags, when applicable:

90	Automatic QC at source (Field 19); determined to be correct.
91	Manual QC at source (Field 19); determined to be correct.
92	Automatic QC at source (Field 19); determined to be suspect.
93	Manual QC at source (Field 19); determined to be suspect.
94	Automatic QC at source (Field 19); determined to be incorrect.
95	Manual QC at source (Field 19); determined to be incorrect.
96	Automatic QC at source (Field 19); element replaced.
97	Manual QC at source (Field 19); element replaced.
98	QC at source (Field 19) is unknown/undetermined.
99	Element has not been quality controlled.

Humidity

MANUAL

FLAG	DISCREPANCY DESCRIPTION	CORRECTED	REVIEW
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	extremely erratic humidity	Auto	No
08	extremely erratic humidity	Manual	Yes
09	extraordinary change from surface	Auto	No
10	extraordinary change from surface	Manual	Yes
11-28	reserved		
29	extraordinary Temp & RH change from sfc	Auto	No
30	extraordinary Temp & RH change from sfc	Manual	Yes
31-34	reserved		
35	suspect surface data	Auto	No
36	suspect surface data	Manual	Yes
37-40	reserved		
41-50	See the DELETE CODES at the end of this appendix.		
51	original value missing	No	No
52	original value missing	No	Yes
53	syntax	No	No

:

54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	extremely erratic humidity	No	No
58	extremely erratic humidity	No	Yes
59	extraordinary change from surface	No	No
60	extraordinary change from surface	No	Yes
61-78	reserved		
79	extraordinary Temp & RH change from sfc	No	No
80	extraordinary Temp & RH change from sfc	No	Yes
81-84	reserved		
85	suspect surface data	No	No
86	suspect surface data	No	Yes
87-89	reserved		

Source-of-data quality control flags, when applicable:

90 Automatic QC at source (Field 19); determined to be correct.
91 Manual QC at source (Field 19); determined to be correct.
92 Automatic QC at source (Field 19); determined to be suspect.
93 Manual QC at source (Field 19); determined to be suspect.
94 Automatic QC at source (Field 19); determined to be incorrect.
95 Manual QC at source (Field 19); determined to be incorrect.
96 Automatic QC at source (Field 19); element replaced.
97 Manual QC at source (Field 19); element replaced.
98 QC at source (Field 19) is unknown/undetermined.
99 Element has not been quality controlled.

Dew-point Depression

FLAG	DISCREPANCY DESCRIPTION	CORRECTED	REVIEW
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	extremely erratic dew-point depression	Auto	No
08	extremely erratic dew-point depression	Manual	Yes
09	extraordinary change from surface	Auto	No
10	extraordinary change from surface	Manual	Yes
11-28	reserved		
29	extraordinary Temp & DSI change from sfc	Auto	No
30	extraordinary Temp & DSI change from sfc	Manual	Yes
31-34	reserved		
35	suspect surface data	Auto	No
36	suspect surface data	Manual	Yes
37-40	reserved		
41	element deleted-syntax/plausibility/ contradiction error	Auto	No
42	element deleted-syntax/plausibility/ contradiction error	Manual	Yes
43	element deleted-spatial or temporal error	Auto	No
44	element deleted-spatial or temporal error	Manual	Yes
45	element deleted-diagnostic or hydrostatic error	Auto	No

46	element deleted-diagnostic or hydrostatic error	Manual	Yes
47	element deleted-superadiabat/element profile error	Auto	No
48	element deleted-superadiabat/element profile error	Manual	YES
49	element deleted-other	Auto	No
50	element deleted-other	Manual	Yes
51	original value missing	No	No
52	original value missing	No	Yes
53	syntax	No	No
54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	extremely erratic dew-point depression	No	No
58	extremely erratic dew-point depression	No	Yes
59	extraordinary change from surface	No	No
60	extraordinary change from surface	No	Yes
61-78	reserved		
79	extraordinary Temp & DSI change from sfc	No	No
80	extraordinary Temp & DSI change from sfc	No	Yes
81-84	reserved		
85	suspect surface data	No	No
86	suspect surface data	No	Yes
87-89	reserved		

Source-of-data quality control flags, when applicable:

90 Automatic QC at source (Field 19); determined to be correct.
91 Manual QC at source (Field 19); determined to be correct.
92 Automatic QC at source (Field 19); determined to be suspect.
93 Manual QC at source (Field 19); determined to be suspect.
94 Automatic QC at source (Field 19); determined to be incorrect.
95 Manual QC at source (Field 19); determined to be incorrect.
96 Automatic QC at source (Field 19); element replaced.
97 Manual QC at source (Field 19); element replaced.
98 QC at source (Field 19) is unknown/undetermined.
99 Element has not been quality controlled.

Wind direction/speed

MANUAL

FLAG	**DISCREPANCY DESCRIPTION**	**CORRECTED**	**REVIEW**
00	none - value correct	None	No
01	original value missing	Auto	No
02	original value missing	Manual	Yes
03	syntax	Auto	No
04	syntax	Manual	Yes
05	plausibility	Auto	No
06	plausibility	Manual	Yes
07	low suspect shear	Auto	No
08	low suspect shear	Manual	Yes
09	high suspect shear	Auto	No
10	high suspect shear	Manual	Yes
11-40	reserved		
41	element deleted-syntax/plausibility/ contradiction error	Auto	No
42	element deleted-syntax/plausibility/	Manual	Yes

	contradiction error		
43	element deleted-spatial or temporal error	Auto	No
44	element deleted-spatial or temporal error	Manual	Yes
45	element deleted-diagnostic or hydrostatic error	Auto	No
46	element deleted-diagnostic or hydrostatic error	Manual	Yes
47	element deleted-superadiabat/element profile error	Auto	No
48	element deleted-superadiabat/element profile error	Manual	YES
49	element deleted-other	Auto	No
50	element deleted-other	Manual	Yes
51	original value missing	No	No
52	original value missing	No	Yes
53	syntax	No	No
54	syntax	No	Yes
55	plausibility	No	No
56	plausibility	No	Yes
57	low suspect shear	Auto	No
58	low suspect shear	Manual	Yes
59	high suspect shear	Auto	No
60	high suspect shear	Manual	Yes
61-89	reserved		

Source-of-data quality control flags, when applicable:

90	Automatic QC at source (Field 19); determined to be correct.
91	Manual QC at source (Field 19); determined to be correct.
92	Automatic QC at source (Field 19); determined to be suspect.
93	Manual QC at source (Field 19); determined to be suspect.
94	Automatic QC at source (Field 19); determined to be incorrect.
95	Manual QC at source (Field 19); determined to be incorrect.
96	Automatic QC at source (Field 19); element replaced.
97	Manual QC at source (Field 19); element replaced.
98	QC at source (Field 19) is unknown/undetermined.
99	Element has not been quality controlled.

Delete Flags (applies to all elements)

MANUAL

FLAG	**DISCREPANCY DESCRIPTION**	**CORRECTED**	**REVIEW**
41	element deleted-syntax error	Auto	No
42	element deleted-syntax error	Manual	Yes
43	element deleted-plausibility error	Auto	No
44	element deleted-plausibility error	Manual	Yes
45	element deleted-contradiction error	Auto	No
46	element deleted-contradiction error	Manual	Yes
47	element deleted-diagnostic error	Auto	No
48	element deleted-diagnostic error	Manual	Yes
49	element deleted	Auto	No
50	element deleted	Manual	Yes

11. Essential Companion Datasets: None.

12. References: No information provided with original documentation.

Appendix 01

DSI-6301

Historical NCDC data source (TD/DSI-6201); from TD/DSI-5600 and Card Decks 505 and 645/545.

The following National Climatic Data Center (NCDC) quality control flags apply only to those observations that indicate QC at NCDC prior to 1/93 ("1" in the QC EFFORT field):

ELEMENT QUALITY FLAGS -- These fields contain the result of any quality control procedures for identifying suspect and doubtful individual elements, and elements that failed QC checks (see table below). The Element Quality is assigned a value equivalent to the least correct flag.

The range of values is 00-99.

NCDC QUALITY CONTROL FLAGS (prior to 1/93)

00 = Element is correct
01 = Element is suspect
02 = Element is doubtful
03 = Element failed QC
04 = Replacement value (correction)
05 = Computed, estimated, or interpolated value
06 = Observer edited element
07 = Element is missing
08 = Unknown
09 = Element not checked
10-99 = reserved

NOTES:
1. In some instances, the TYP LVL code indicates "begin missing or doubtful..." and the next missing or doubtful data code also indicates the beginning of another missing or doubtful data stratum rather than the ending of the first missing or doubtful stratum. DSIF63 data users should interpret the second "begin..." as the ending of the first stratum and the beginning of the second stratum and that the level at which this multiple-meaning TYP LVL code occurs, includes the non-doubtful element.

2. For the period: January 1981 through June 1992, the element quality flag indicates that once a temperature element is doubtful, it remains doubtful throughout the remainder of the observation. This is not necessarily true -- unfortunately, the capability to distinguish between "begin doubtful temperature/altitude" and "end doubtful temperature" was lost during an earlier data format conversion.

3. Some mandatory levels are not indicated as such if selected for another reason, e.g., a tropopause level (type 26). This occurs through December 1990 when type of level codes were added to indicate that a level was…

APPENDIX 02

DSI-6302

NATIONAL METEOROLOGICAL CENTER

Source Description: These data were received from the National Meteorological Center, Washington, DC. Data have been received routinely from NMC since the early 1960's in a variety of formats. These formats are documented by NMC in a series of Office Notes, the current one being NO. 29. These data contain global coverage as data are received over the Global Telecommunications System (GTS). NMC decodes these data from the original WMO transmission format. Quality control has been performed on these data.

Source units:

Elements	Units	Conversion Specifications
Elapsed time	Not Available	
Height	whole meters	as received
Pressure	hPa to tenths	as received
Temperature	degrees C to tenths	as received
Relative Humidity	whole percent	as received
Dew Point Depression	degrees C to tenths	as received
Wind direction	nearest 5 degrees	as received
Wind speed	Knots	to MPS by *.514791

see note 1

Element Quality Control Flag Conversion:

The following flags were automatically entered by the NMC computer system and were preserved in the conversion to DSI6300:

A = Passed vertical consistency check with tight limits.
B = Failed vertical consistency check and has not been recomputed.
C = Failed vertical consistency check and was recomputed.
D = Failed vertical consistency check with tight limits and passed with loose limits.
E = Not assigned.
F = Has been checked but did not pass vertical consistency check with loose limits.
G = Not assigned.
Q = Base of stratum with missing data.
R = Top of stratum with missing data
T = Tropopause level (reported).
U = Surface data from Parts A and B do not agree, PART a or B chosen by test.
V = Surface data from Parts A and B agree.
W = Maximum wind level (reported) is not at the terminating level.
X = Maximum wind level (reported) is at the terminating level.
blank = Not specified.

The following were manually entered via human intervention at NMC. These flags were preserved in the conversion to DSI-6300.

H = Hold value for next analysis run.
I = Same as A.
J = Same as B.

K = Same as C.
L = Same as D.
M = Same as E.
N = Same as F.
O = Same as G.
P = Purge from analysis run.
Y = Same as Q.
Z = Same as R.
1 = Same as T.
2 = Same as U.
3 = Same as V.
4 = Same as W.
5 = Same as X.
$ = Not specified.

The following were not part of the NMC element flags but were introduced during conversion to DSI-6300:

00 = Element is correct
07 = Element is missing
09 = Element not checked

Identification Conversion:

Stations number	As received with addition of a zero as sixth digit
Date	As received
Hour	As received
Latitude/Longitude	As received
Elevation	As received
Clouds-Weather	Not available
Instrument code	NMC code plus 500

Conversion notes:
1. Wind speeds were truncated to whole MPS and shifted one position to the right, i.e., wind speed equals given wind speed times 10. Missing indicator is "0999".

2. Extrapolated mandatory levels above termination level are coded as type 46.

3. Wind levels by constant height (level type 43), as available, were added to the end of each sounding, i.e., after the last thermodynamic level. Selected for multiple reasons.

Appendix 07

CARDS Monthly Statistics

APPENDIX 16

DSI-6316

ARGENTINA NATIONAL

Source Description: These data were received from the Argentina Meteorological Service. Data from 21 stations with the overall period of record of 1958 - 1991 were received. This data set contained provisions for data for the surface level, mandatory levels through 2mb, and several standard pressure levels.

Source units:

ELEMENTS	UNITS	CONVERSION SPECIFICATIONS
Elapsed time	Not Available	
Height	geopotential meters	as received
Pressure	whole hPa	as received
Temperature	degrees C to tenths	as received
Relative Humidity	whole percent	as received
Dew point Depression	degrees C to tenths	Calculated from dewpoint
Wind direction	whole degrees	as received
Wind speed	whole knots	to MPS by *.514791

Element Quality Control Flag Conversion:

No indication of overall quality was received. No element quality control flags were received, therefore the following convention was followed:

Value as received (Pressure, Height, Temperature)	00
Value decoded correctly (Relative Humidity, Dew Point Depression, Winds)	98
Value did not decode correctly	51
Value missing	51

Identification Conversion:

Station number	See Table 1
Date	As received
Hour	As received
Latitude/Longitude	See Table 1
Elevation	See Table 1 and Note 3
Clouds-Weather	Not available
Instrument code	Not available

Conversion notes:

1. Available mandatory levels include: 1000, 850, 700, 500, 300, 250, 200, 150, 100, 70, 50, 40, 30, 20, 15, 10, 5, and 2mb.

   Available standard levels include: 900, 800, 600, and 400mb.

2. Data are ordered on the tape by the Argentina ID number. Illegal ID numbers were converted to all 9's.

3. To get the correct height, multiply the given height by 10.

Table 1
Station location table

Agrentina ID Number	WMO Number	Latitude	Longitude	Elev (m)	Data Avail Beg - End
012	87047	24.51S	65.29W	1221	6506-9112
045	87827	43.14S	65.18W	42	7307-7506
055	87157	27.28S	58.59W	51	5801-6109
100	87344	31.19S	64.13W	474	5901-9112
106	87092	25.18S	57.44W	63	8901-8901
131	87418	32.50S	68.47W	704	7401-9112
132	87420	32.53S	68.51W	827	6507-7312
169	88946	59.27S	27.17W	15	8006-8112
166	87576	34.49S	58.32W	20	5801-9112
192	87623	36.34S	64.16W	191	6507-9112
222	87748	38.44S	62.10W	74	6401-9112
227	87715	38.57S	68.05W	271	5801-9112
270	87860	45.47S	67.30W	46	5801-9112
296	87934	53.48S	67.45W	22	7708-8410
298	87938	54.48S	68.19W	14	6401-6703
299	88968	60.45S	44.43W	12	6401-8512
435	89055	64.14S	56.43W	198	8107-9112
452	88967	77.58S	38.48W	37	7101-7507
463	87926	51.38S	69.13W	Missing	6706-7707
489	87155	27.28S	58.59W	32	6110-9112
504	89051	63.28S	56.17W	20	6903-7110

APPENDIX 19
DSI-6319

KOREA NATIONAL

Source Description: These data were received from Mr. KUN-IL, JANG (Applied Meteorology Bureau, Korea Meteorological Administration) during a visit to NCDC in April 1993. Data from four stations with overall period of record 1984-92 were received on diskette. No documentation was received. A sample of these data were printed and the format and units reviewed with Mr. Kunil. This data set contained data for mandatory levels from 1000 hPa to 100 hPa, the surface level, tropopause level, and wind levels (maximum and constant pressure).

Source Units:

ELEMENTS	UNITS	CONVERSION SPECIFICATIONS
Elapsed time	not available	
Height	geopotential meters	as received
Pressure	whole hPa	as received
Temperature	degrees C to tenths	as received
Relative humidity	not available	
Dew Point Depression	degrees C to tenths	calculated from dew point
Wind Direction	whole degrees	as received
Wind Speed	whole meters per second	as received

Element Quality Control Flag Conversion:

No indication of overall quality was received. No element quality control flags were received, therefore, the following convention was followed:

Value as received (Pressure, Height, Temperature, Wind)	98
Value decoded correctly (Dew point depression)	98
Value missing (coded 999)	51
Value not an integer or otherwise syntactically incorrect	53
Value syntactically correct but clearly wrong (i.e., wind direction given but missing speed)	55

Identification Conversion:

Station number	As assigned - See Table 1
Date	As received
Hour	As received
Latitude/Longitude	As assigned - See Table 1
Elevation	As assigned - See Table 1
Clouds - Weather	Not Available
Instrument Code	Not Available

Conversion notes:

1. These data contained an indicator in each level. After much research it was decided to use the following convention on assigning "Type Level".

LEVEL INDICATOR	ASSIGNED VALUE TO TYPE LEVEL
0	32 (Mandatory)
1	31 (Surface)

1	(and pressure is mandatory)	83	(Surface and mandatory)
2		26	(Tropopause)
2	(and pressure is mandatory)	81	(Tropopause and mandatory)
3		27	(Maximum wind)
4		43	(Incremental wind)
5		90	(Tropopause and maximum wind)
5	(and pressure is mandatory)	89	(tropopause, maximum wind and mandatory pressure)

2. Available mandatory levels include: 1000, 925, 850, 700, 500, 400, 300, 250, 200, 150, and 100 hPa.

3. Each observation was sorted on descending pressure to ensure consistency within each sounding.

Table 1
Station Location Table

Korea ID Number	WMO Number	Latitude	Longitude	Elev (m)	Date Avail Beg - End
122	47122	37.10N	127.03E	52	1984-1992
138	47138	36.03N	129.38E	6	1984-1992
158	47158	35.12N	126.82E	13	1984-1992
185	47185	33.28N	126.17E	72	1988-1992

APPENDIX 20
DSI-6320

HUNGARY NATIONAL

Source Description: These data were received on tape from the Hungarian Meteorological Service. Observations are for 1962-1990 for two stations, Budapest (12843) and Szeged (12982). Data were received for significant levels of temperature-relative humidity, and wind direction-wind speed; mandatory levels; tropopause; and maximum wind levels.

Source Units:

ELEMENTS	UNITS	CONVERSION SPECIFICATIONS
Elapsed time	not available	
Height	geopotential meters	as received (see note 1)
Pressure	whole hPa	as received (see note 2)
Temperature	degrees C to tenths	as received
Relative Humidity	whole percent	as received
Dewpoint Depression	degrees C to tenths	as received
Wind Direction	whole degrees	as received
Wind Speed	whole meters per second	as received

Element Quality Control Flag Conversion:

No indication of overall quality was received. No element quality control flags were received, therefore, the following conversion was used:

Value received	98
Value missing	51

Identification Conversion:

Station number	as received
Date	as received
Hour	as received
Latitude/Longitude	as assigned - see Table 1
Elevation	as assigned - see Table 1
Clouds/weather	as received - see note 3
Instrument type	as assigned - see Table 2
Radiation correction	as assigned - code type 09

Conversion notes:

1. Significant levels reported in geopotential decameters.

2. Surface pressure to 0.1 hPa.

3. In the cloud-weather field a "/" was coded as "-". The eighth and ninth characters in the field will be 99 as only one WW group was received. Cloud group and present weather are in FM 11-V code.

4. There may be up to three tropopauses. These are coded Type Level 26 unless the pressure is mandatory, then code 81 is used.

5. The maximum wind is for the layer 500 - 100hPa. These levels are coded as Type Level 43.

6. The pressure levels available include: 1000, 925, 900*, 850, 800*, 700, 600*, 500, 400, 300, 250, 200, 150, 100, 70, 50, 30, 20, and 10 hPa.

At conversion the Type Level indicator was set to 32 except for levels indicated by an "*" which were set to 21. If a level contains only pressure and height then a Type Level 46 is used.

7. Significant Temperature-Relative Humidity levels have Type Level indicator of 38. The pressure and wind values are missing.

8. Significant wind levels have Type Level indicator of 43. The pressure, temperature, and relative humidity values are missing.

9. These data were processed through a program that merged duplicate levels that contained no pressures but had heights. Usually the surface level and the terminating level were affected. The result was one level with all available values present.

10. When an observation was missing, a record was entered, however, only the surface based measurements appear.

11. Missing periods include:

a. Only RAWIN measurements were made at Budapest from August 1975 to July 1977 at 06 and 18 UTC.

b. No observations were made at Budapest from March 1990 through December 1990 at 06 and 18 UTC.

Table 1
Station Location Table

WMO Number	Latitude	Longitude	Elev. (m)
12843	47.43N	19.18E	140
12982	46.25N	20.10E	83

Table 2
Instrumentation History and Coding

1962-76 Coded 070
- Soviet radiosonde type A-22
- radiotheodolite MALACHIT
- Temperature, humidity and atmospheric pressure were measured by bimetal thermometer, goldbeater's skin and Vidi box, respectively.

1977, January-March Coded 999
- Mixed instruments

1977, April - 1986, August Coded 311
- Soviet radiosonde type RKZ-II-5
- METEORIT-2 radiolocator
- Temperature was measured by thermistor, the humidity by goldbeater's skin. Atmospheric pressure measurements were not completed.

1986, September - 1990 Coded 225
- MARZ-2-2 Soviet radiosonde
- METEORIT-2 radiolocator
- Temperature measured by thermistor, the humidity by goldbeater's skin. Atmospheric pressure measurements were not completed.

APPENDIX 21
DSI-6321

NETHERLANDS NATIONAL

Source Description: These data were received from the Royal Netherlands Meteorological Institute in response to a request of the Secretary-General of the WMO. Data are available for one station De Bilt (06260) for the period October 16, 1945 through December 31, 1991. Data include mandatory and standard levels. There are also provisions for up to 34 significant levels and 2 tropopause, 2 maximum wind, and 3 zero-crossing levels.

Source units:

ELEMENTS	UNITS	CONVERSION SPECIFICATIONS
Elapsed time	Not Available	
Height	whole meters	as received
Pressure	whole hPa	as received (See Note 1)
Temperature	degrees C to tenths	as received
Relative Humidity	whole percent	as received
Dew Point Depression	Not available	
Wind direction	whole degrees	as received
Wind speed	whole knots	to MPS by *.514791

Element Quality Control (QC) Flag Conversion:

No indication of overall quality was received. No QC flags were received.

Identification Conversion:

Station number	062600 assigned
Date	As received
Hour	As received
Latitude/Longitude	52.10000N 5.18300E assigned
Elevation	7.0 meters (1945/10-1975/10) assigned
	2.0 meters (1975/11-1991/12) assigned
Clouds-Weather	Not available
Instrument code	Not available

Conversion notes:

1. The surface pressure, and only the surface pressure, is in dekapascals.

2. Standard levels include: 900, 800, 600, 175, 125, 80, 60, 40, and 15hPa.

3. A total of 36,645 observations were converted. Some 35,303 observations had one or more levels eliminated due to duplication.

4. A total of 231 levels had a wind speed of zero and a non-zero wind direction. The wind direction was set to zero (calm) for these levels.

5. A total of 27 levels contained illegal pressures, 20 levels contained illegal temperatures, 85 levels contained illegal relative humidity, and 74 levels contained illegal winds. These values were set to missing and the element quality flag of 55 assigned.

Filename: td6300.txt
Directory: Z:\onlinedocs\moved
Template: C:\Documents and Settings\chris.fenimore\Application Data\Microsoft\Templates\Normal.dot
Title: ABRIDGED
Subject:
Author: David P. Smith
Keywords:
Comments:
Creation Date: 10/14/2003 8:46 AM
Change Number: 2
Last Saved On: 10/14/2003 8:46 AM
Last Saved By: chris.fenimore
Total Editing Time: 0 Minutes
Last Printed On: 10/14/2003 8:47 AM
As of Last Complete Printing
Number of Pages: 48
Number of Words: 15,146 (approx.)
Number of Characters: 86,335 (approx.)